[ORAL ARGUMENT NOT YET SCHEDULED]

No. 17-1059

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

OGLALA SIOUX TRIBE,

Petitioner,

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and the UNITED STATES OF AMERICA,

Respondents,

and

POWERTECH (USA), INC.,

Intervenor.

PETITION FOR REVIEW OF FINAL ORDER OF THE UNITED STATES NUCLEAR REGULATORY COMMISSION

JOINT APPENDIX – VOLUME 1

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Petitioner,	)	**No. 17-1059**
	)	
v.	)	
	)	
UNITED STATES NUCLEAR REGULATORY COMMISSION and the UNITED STATES OF AMERICA,	)	
	)	
Respondents.	)	

CERTIFIED INDEX TO THE RECORD

I hereby certify that the documents listed and described below in the Certified Index to the Record constitute the record of the administrative proceeding of the U.S. Nuclear Regulatory Commission associated with the issuance of the NRC order *In the Matter of Powertech (USA), Inc.* (Dewey-Burdock *In Situ* Uranium Recovery Facility), CLI-16-20, 84 NRC __ (Dec. 23, 2013). This order is the most recent NRC order issued in the administrative proceeding in question and the most recent order listed in the petition for review. The ML numbers listed after each document reflect the document's accession number in the NRC's ADAMS public online database (http://www.nrc.gov/reading-rm/adams.html).

Respectfully submitted,

/s/ Annette Vietti-Cook

Annette Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland
this 6th day of April, 2017

CERTIFIED INDEX TO THE RECORD

OGLALA SIOUX TRIBE

VS.

U.S. NUCLEAR REGULATORY COMMISSION

Docket No. 17-1059

Thursday, April 06, 2017

IN THE MATTER OF POWERTECH

NRC DOCKET 40-9075-MLA

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1	PETITIONER'S CONSOLIDATED REPLY TO APPLICANT AND NRC STAFF ANSWERS TO HEARING REQUEST/PETITION TO INTERVENE (SEE RAS 17766 ML101110751 FOR CERTIFICATE OF SERVICE SUBMITTED SEPARATELY ON 4/21/10)	04/19/2010	ML101100001
2	CERTIFICATE OF SERVICE FOR 4/19/10 FILING OF "PETITIONER'S CONSOLIDATED REPLY TO APPLICANT AND NRC STAFF ANSWERS TO HEARING REQUEST/PETITION TO INTERVENE" (RAS 17741, ML101100001)	04/21/2010	ML101110751
3	CONSOLIDATED PETITIONERS' REQUEST FOR LEAVE TO FILE A NEW CONTENTION BASED ON SUNSI MATERIAL (ML101200674-EXH. 1/14/10 LETTER; ML101200675-PETITIONER'S REQUEST; ML101200676-EXH. 2/21/10 LETTER; ML101200677-EXH. REDMOND CV; ML101200673 PACKAGE)	04/30/2010	ML101200673

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
4	APPLICANT POWERTECH (USA) INC.'S RESPONSE TO PETITIONER OGLALA SIOUX TRIBE'S REQUEST FOR A HEARING/PETITION FOR INTERVENTION	05/03/2010	ML101230722
5	NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S HEARING REQUEST	05/03/2010	ML101230726
6	UNOPPOSED MOTION FOR EXTENSION OF TIME FOR THE OGLALA SIOUX TRIBE TO REPLY TO NRC STAFF AND APPLICANT RESPONSES TO THE TRIBE'S REQUEST FOR HEARING, AND PROPOSED MEMORANDUM AND ORDER (2 PARTS - MOTION-ML101290020; PROPOSED M&O-ML101290019; PKG-ML101290018)	05/07/2010	ML101290018
7	BOARD ORDER (GRANTING UNOPPOSED MOTION FOR EXTENSION OF TIME)	05/10/2010	ML101300718
8	REPLY TO NRC STAFF AND APPLICANT RESPONSES TO THE PETITION TO INTERVENE AND REQUEST FOR HEARING OF THE OGLALA SIOUX TRIBE, WITH ATTACHMENTS (5 PARTS - ML101340868 THRU ML101340872 - PACKAGE ML101340867)	05/14/2010	ML101340867
9	BOARD ORDER (SETTING ORAL ARGUMENT)	05/17/2010	ML101370310

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
10	NRC STAFF'S RESPONSE TO CONSOLIDATED PETITIONERS' CONTENTION FILED APRIL 30, 2010	05/21/2010	ML101410541
11	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S RESPONSE TO CONSOLIDATED PETITIONERS' REQUEST FOR LEAVE TO FILE A NEW CONTENTION BASED ON SUNSI MATERIAL	05/23/2010	ML101430009
12	NOTICE OF APPEARANCE [OF THOMAS BALLANCO ON BEHALF OF DAYTON HYDE], AND DECLARATION OF DAYTON HYDE (NOTICE-ML101470182; DECLARATION-ML101470181; PKG-ML101470180)	05/27/2010	ML101470180
13	BOARD NOTICE OF HEARING	08/20/2010	ML102320175
14	POWERTECH'S RESPONSE TO NRC STAFF'S MOTION FOR CLARIFICATION (ML102380606) AND CERTIFICATED OF SERVICE (ML102380598), (PKG ML102390048)	08/26/2010	ML102390048
15	POWERTECH'S] RESPONSE TO NRC STAFF'S MOTION FOR CLARIFICATION (ML102380606) - CERTIFICATE OF SERVICE (ML102380598) SUBMITTED SEPARATELY AS RAS 18468 (PKG ML102390048)	08/26/2010	ML102390048
16	BOARD ORDER (RESCHEDULING CONFERENCE CALL.)	08/31/2010	ML102430431

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
17	CONSOLIDATED INTERVENOR'S UNOPPOSED MOTION FOR LEAVE TO REPLY TO APPLICANT'S RESPONSE TO NRC STAFF MOTION FOR CLARIFICATION.	09/02/2010	ML102450202
18	CONSOLIDATED INTERVENORS' UNOPPOSED MOTION TO MAKE FILINGS BY EMAIL.	09/02/2010	ML102450203
19	JOINT MOTION FOR EXTENSION OF TIME TO PROVIDE INITIAL DISCOVERY.	09/02/2010	ML102450351
20	BOARD ORDER (GRANTING JOINT MOTION FOR EXTENSION OF TIME)	09/02/2010	ML102450625
21	NOTICE OF WITHDRAWAL OF GRACE DUGAN AS COUNSEL FOR OGLALA SIOUX TRIBE	09/03/2010	ML102460314
22	NOTICE OF APPEARANCE OF GRACE DUGAN AS CO-COUNSEL FOR ALIGNING FOR RESPONSIBLE MINING (ML102460585), WITH INTERVENOR DECLARATION BY DAVID FRANKEL (ML102460586) - PKG ML102460584	09/03/2010	ML102460584
23	BOARD ORDER (GRANTING IN PART AND DENYING IN PART MOTION FOR CLARIFICATION)	09/08/2010	ML102510353

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
24	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S INITIAL MANDATORY DISCLOSURES (ML102560541) - ATTACHMENTS A AND B, AND AFFIDAVIT SUBMITTED SEPARATELY - SEE RAS 18608, RAS 18609 AND RAS 18613 (ALL IN PKG ML102570085)	09/13/2010	ML102570085
25	ATTACHMENT A TO APPLICANT POWERTECH (USA) URANIUM CORPORATION'S INITIAL MANDATORY DISCLOSURES (TABLE OF DOCUMENTS) (ML102560551) (ADDED TO PKG ML102570085)	09/13/2010	ML102570085
26	ATTACHMENT B TO APPLICANT POWERTECH (USA) URANIUM CORPORATION'S INITIAL MANDATORY DISCLOSURES (LISTING FROM SOUTH DAKOTA STATE HISTORICAL SOCIETY) (ML1025605553) (ADDED TO PKG ML102570085)	09/13/2010	ML102570085
27	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, DELIBERATIVE PROCESS LOG, ATTORNEY-CLIENT PRIVILEGE LOG, SENSITIVE INFORMATION LOG, AND RELATED AFFIDAVITS)	09/13/2010	ML102560555
28	DAVID FRANKEL REQUEST FOR EXTENSION OF TIME TO FILE REQUESTS/PETITIONS AND REQUEST FOR THREE (3) ADDITIONAL PUBLIC COPIES	03/02/2010	ML100610001
29	RESPONSE TO OGLALA SIOUX TRIBE MOTION FOR EXTENSION OF TIME TO FILE A REQUEST FOR HEARING	03/02/2010	ML100610625

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
30	NRC STAFF'S OPPOSITION TO OGLALA SIOUX TRIBE'S REQUEST TO EXTEND THE DEADLINE FOR SUBMITTING HEARING REQUESTS	03/02/2010	ML100610688
31	ANSWER OF THE OGLALA SIOUX TRIBE TO MOTION FOR ENTRY OF A PROTECTIVE ORDER (ANSWER-ML100620004; ATTACHMENT 1-ML100620003; ATTACHMENT 2-ML100620002)	03/02/2010	ML100620001
32	RESPONSE TO PROPOSED INTERVENORS' MOTION FOR EXTENSION OF TIME TO FILE A REQUEST FOR HEARING	03/03/2010	ML100621054
33	NRC STAFF'S OPPOSITION TO REQUEST FROM DAVID FRANKEL TO EXTEND THE DEADLINE FOR SUBMITTING HEARING REQUESTS	03/03/2010	ML100621143
34	BOARD MEMORANDUM AND ORDER (PROTECTIVE ORDER GOVERNING THE DISCLOSURE OF SENSITIVE UNCLASSIFIED NON-SAFEGUARDS INFORMATION)	03/05/2010	ML100640405
35	ORDER OF THE SECRETARY [GRANTING IN PART TRIBE'S REQUEST FOR EXTENSION; DENYING FRANKEL'S REQUEST FOR EXTENSION]	03/05/2010	ML100640426
36	[DAVID FRANKEL ET AL] CONSOLIDATED REQUEST FOR HEARING AND PETITIOIN FOR LEAVE TO INTERVENE (WITH DECLARATIONS, AFFIDAVITS, ETC. - ML #'S 100680002 - 100680017)	03/08/2010	ML100680001

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
37	NOTICE OF APPEARANCE OF DAVID FRANKEL ON BEHALF OF MULTIPLE PETITIONERS (CLEAN WATER ALLIANCE; ALIGNING FOR RESPONSIBLE MINING; T. EBERT; G. HECKENLAIBLE; S. HENDERSON; D. HYDE; L. JONES JARDING)	03/08/2010	ML100680018
38	NON-DISCLOSURE AFFIDAVIT [JEFFREY C. PARSONS]	03/09/2010	ML100680434
39	NON-DISCLOSURE AFFIDAVIT [GRACE DUGAN]	03/09/2010	ML100680535
40	MEMORANDUM OF THE SECRETARY TO CHIEF ADMINISTRATIVE JUDGE, REFERRING TO THE BOARD THE CONSOLIDATED REQUEST FOR HEARING AND PETITION FOR LEAVE TO INTERVENE, SUBMITTED BY DAVID FRANKEL ET AL	03/11/2010	ML100700526
41	NRC STAFF NOTIFICATION [OF SUNSI DOCUMENT MAILING PROVIDED TO GRACE DUGAN AND JEFFREY PARSONS	03/11/2010	ML100700703
42	ESTABLISHMENT OF ATOMIC SAFETY AND LICENSING BOARD	03/12/2010	ML100710413
43	NOTICE OF FILING OF NON-DISCLOSURE AFFIDAVIT FOR TRAVIS E. STILLS, WITH EXECUTED NON-DISCLOSURE AFFIDAVIT (2 PARTS - NOTICE-ML100730028; AFFADAVIT-ML100730029; PACKAGE-ML100730027)	03/12/2010	ML100730027

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
44	NRC STAFF NOTIFICATION [OF SUNSI DOCUMENT MAILING PROVIDED TO TRAVIS STILLS	03/15/2010	ML100740357
45	NOTICE OF APPEARANCE OF BRUCE ELLISON ON BEHALF OF MULTIPLE PETITIONERS (CLEAN WATER ALLIANCE; ALIGNING FOR RESPONSIBLE MINING; T. EBERT; G. HECKENLAIBLE; S. HENDERSON; D. HYDE; L. JONES JARDING)	03/22/2010	ML100810081
46	JOINT MOTION FOR EXTENSION OF TIME FOR LATE-FILED CONTENTIONS AND TO RESPOND TO REQUEST FOR A HEARING	03/31/2010	ML100900058
47	BOARD ORDER (GRANTING MOTION FOR EXTENSION OF TIME)	04/01/2010	ML100910251
48	PETITION TO INTERVENE AND REQUEST FOR HEARING OF THE OGLALA SIOUX TRIBE (WITH 11 EXHIBITS) - PETITION-ML100960645; EXHIBITS-#'S ML100960635 THRU ML100960646; PACKAGE-ML100960634	04/06/2010	ML100960634
49	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S RESPONSE TO CONSOLIDATED PETITIONERS' REQUEST FOR A HEARING/PETITION FOR INTERVENTION	04/12/2010	ML101020722
50	NRC STAFF'S RESPONSE TO HEARING REQUEST OF CONSOLIDATED PETITIONERS (RESPONSE IS ML101020723; CERTIFICATE OF SERVICE SUBMITTED SEPARATELY - RAS 17706 ML101030079 - PACKAGE ML101030161)	04/12/2010	ML101030161

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
51	CERTIFICATE OF SERVICE FOR NRC STAFF'S RESPONSE TO HEARING REQUEST OF CONSOLIDATED PETITIONERS (CERTIFICATE IS ML101030079; RESPONSE SUBMITTED SEPARATELY - RAS 17704 ML101020723; PACKAGE IS ML101030161)	04/12/2010	ML101030161
52	ERRATUM TO NRC STAFF'S RESPONSE TO HEARING REQUEST OF CONSOLIDATED PETITIONERS	04/13/2010	ML101031406
53	BOARD ORDER (PROVIDING DETAILS FOR ORAL ARGUMENT)	06/01/2010	ML101520443
54	CERTIFICATE OF SERVICE [FOR NOTICE OF APPEARANCE OF TOM BALLANCO, SUBMITTED ON 5/27/10 - RAS 17937] [ADDED TO PKG ML101470180]	06/01/2010	ML101520651
55	TRANSCRIPT OF ORAL ARGUMENT HELD JUNE 8, 2010, IN CUSTER, SD, PGS. 1-273	06/08/2010	ML101660721
56	TRANSCRIPT OF ORAL ARGUMENT HELD JUNE 9, 2010, IN CUSTER, SD, PGS. 274-405	06/09/2010	ML101670389
57	BOARD ORDER (ESTABLISHING DATE OF FOR PROPOSED TRANSCRIPT CORRECTIONS	06/23/2010	ML101740221

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
58	NRC STAFF'S PROPOSED TRANSCRIPT CORRECTIONS (ML101790258), WITH SEPARATE CERTIFICATE OF SERVICE (ML101790259) - PACKAGE ML101790257)	06/28/2010	ML101790257
59	NOTICE OF APPEARANCE; CHANGE OF LAW FIRM NAME (ML101830201) - CERTIFICATE OF SERVICE (ML101830237) SUBMITTED SEPARATELY AS RAS 18111 - PACKAGE ML101830281	07/02/2010	ML101830281
60	POWERTECH (USA) URANIUM CORPORATION'S PROPOSED TRANSCRIPT CORRECTIONS (ML101830210); CERTIFICATE OF SERVICE (ML101830228) SUBMITTED SEPARATELY AS RAS 18109 - PACKAGE ML101830283	07/02/2010	ML101830283
61	BOARD ORDER (ADOPTING TRANSCRIPT CORRECTIONS)	07/09/2010	ML101900439
62	BOARD MEMORANDUM (NOTICE PURSUANT TO 10 CFR SEC. 2.309(I))	07/09/2010	ML101900442
63	PETITIONER THEODORE EBERT'S INVITATION FOR ASLB, PARTIES AND COUNSELS TO ATTEND LAKOTA CEREMONY (ML101970569), AND PETITIONER EBERT'S MOTION RE: INVITE TO LAKOTA CEREMONY (ML101970570) - PACKAGE ML101970568	07/16/2010	ML101970568

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
64	MOTION TO PERMIT UNTIMELY FILING OF OR ALTERNATIVELY, TAKING JUDICIAL NOTICE OF THE SD DENR LETTER TO POWERTECH CITED AT 6/8-9/10 HEARING (ML102010744), WITH EXHIBIT A (ML102010745), AND CERTIFICATE OF SERVICE (ML102010743) - PKG ML102010742	07/20/2010	ML102010742
65	RESPONSE TO CONSOLIDATED PETITIONERS' REGARDING INVITE TO LAKOTA CEREMONY (ML102070429), CERTIFICATE OF SERVICE (ML102070434 - FILED SEPARATELY AS #18284) - PKG ML102470090	07/26/2010	ML102470090
66	CERTIFICATE OF SERVICE (ML102070434] FOR RESPONSE TO CONSOLIDATED PETITIONERS' REGARDING INVITE TO LAKOTA CEREMONY (ML102070429 - FILED SEPARATELY AS #18283) - PKG ML102470090	07/26/2010	ML102470090
67	NRC STAFF'S OPPOSITION TO PETITIONER THEODORE EBERT'S MOTION FOR THE BOARD TO CONVENE A TRADITIONAL LAKOTA CEREMONY	07/26/2010	ML102070506
68	NRC STAFF'S OPPOSITION TO CONSOLIDATED PETITIONERS' MOTION TO PERMIT UNTIMELY FILING	07/30/2010	ML102110327
69	RESPONSE TO CONSOLIDATED PETITIONERS' MOTION FOR UNTIMELY FILING	07/30/2010	ML102110477

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70	BOARD MEMORANDUM AND ORDER (RULING ON PETITIONS TO INTERVENE AND REQUESTS FOR HEARING) (LBP-10-16)	08/05/2010	ML102170300
71	BOARD ORDER (DENYING MOTION TO PERMIT UNTIMELY FILING)	08/05/2010	ML102170312
72	BOARD ORDER (DENYING MOTION RE: INVITE TO LAKOTA CEREMONY	08/05/2010	ML102170316
73	BOARD ORDER (SCHEDULING INITIAL TELEPHONE PREHEARING CONFERENCE CALL)	08/13/2010	ML102250319
74	NRC STAFF'S NOTIFICATION UNDER 10 C.F.R. 2.1202(B)(2)	08/13/2010	ML102250489
75	INTERVENORS' RESPONSE TO MEMORANDUM AND ORDER REQUIRING ELECTIONI OF PETITIONERS HENDERSON AND FRANKEL TO PROCEED INDIVIDUALLY OR THROUGH CWA AND ARM RESPECTIVELY (ML102270001) - CERTIFICATE OF SERVICE SUBMITTED SEPARATELY AS 18403 (ML102270002)	08/13/2010	ML10228019

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
76	CERTIFICATE OF SERVICE (ML102270002), FOR INTERVENORS' RESPONSE TO MEMORANDUM AND ORDER REQUIRING ELECTIONI OF PETITIONERS HENDERSON AND FRANKEL TO PROCEED INDIVIDUALLY OR THROUGH CWA AND ARM RESPECTIVELY (ML102270001), SUBMITTED SEPARATELY AS 18402	08/13/2010	ML10228019
77	[NRC STAFF] MOTION FOR CLARIFICATION REGARDING SCOPE OF ADMITTED CONTENTIONS	08/16/2010	ML102280595
78	BOARD ORDER (ACCEPTING ELECTIONS REGARDING REPRESENTATION)	08/17/2010	ML102290244
79	INCORRECT ENTRY - DELETED		
80	INTERVENORS' JOINT INITIAL DISCLOSURES UNDER 10 CFR 2.336	09/13/2010	ML102560562
81	APPLICANT POWERTECH (USA) INC.'S INITIAL MANDATORY DISCLOSURES: AFFIDAVIT OF RICHARD E. BLUBAUGH (ML102571455) (ADDED TO PKG ML102570085)	09/13/2010	ML102570085
82	CONSOLIDATED INTERVENORS' WITHDRAWAL OF UNOPPOSED MOTION TO MAKE FILINGS BY E-MAIL	09/14/2010	ML102571925

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
83	BOARD ORDER (GRANTING WITHDRAWAL OF MOTION TO FILE BY E-MAIL	09/16/2010	ML102590128
84	TRANSCRIPT OF PRE-HEARING TELEPHONE CONFERENCE CALL HELD SEPTEMBER 23, 2010, PGS. 406-473	09/23/2010	ML102740042
85	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES (ML102740567) (ALSO SEE "ATTACHMENT TO OCTOBER UPDATE", SUBMITTED SEPARATELY AS RAS 18781 - ML102740576) (PKG ML102770049)	10/01/2010	ML102770049
86	ATTACHMENT TO OCTOBER UPDATE (ML102740576) (ALSO SEE "APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES" , SUBMITTED SEPARATELY AS RAS 18780 - ML102740567) (PKG ML102770049)	10/01/2010	ML102770049
87	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, DELIBERATIVE PROCESS LOG, ATTORNEY-CLIENT PRIVILEGE LOG, EMAIL WITH ATTACHMENT, AND RELATED AFFIDAVITS)	10/01/2010	ML102740578
88	BOARD ORDER (PREHEARING CONFERENCE CALL SUMMARY AND INITIAL SCHEDULING ORDER)	10/04/2010	ML102770545

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
89	BOARD ORDER (ESTABLISHING DATE FOR PROPOSED TRANSCRIPT CORRECTIONS)	10/05/2010	ML102780424
90	JOINT NOTICE TO ATOMIC SAFETY AND LICENSING BOARD REGARDING OUTSTANDING SCHEDULING ISSUES	10/15/2010	ML102880808
91	APPLICANT POWERTECH (USA) URANIUM CORPORTION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES	11/01/2010	ML103050507
92	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	11/01/2010	ML103050570
93	POWERTECH (USA), INC. MOTION FOR CLARIFICATION OF GROUNDS FOR TEMPORARY STAY OF NRC LICENSE NO. SUA-1600	05/06/2014	ML14126A771
94	ORDER (DENYING MOTION FOR CLARIFICATION)	05/07/2014	ML14127A155
95	OFFICIAL TRANSCRIPT OF MAY 13, 2014 ORAL ARGUMENTS TELECONFERENCE	05/13/2014	ML14134A218
96	INTERVENOR'S UPDATE TO DISCLOSURES WITH ATTACHMENTS [PKG # ML14138A090]	05/16/2014	ML14138A090

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
97	ORDER (REMOVING TEMPORARY STAY AND DENYING MOTIONS FOR STAY OF MATERIALS LICENSE NUMBER SUA-1600)	05/20/2014	ML14140A470
98	NRC STAFF HEARING FILE UPDATE JUNE 2014	06/02/2014	ML14153A418
99	NOTICE OF WITHDRAWAL, WOANSILAWIN C. GILLIS	05/29/2014	ML14153A429
100	ORDER (PROVIDING CASE MANAGEMENT INFORMATION)	06/02/2014	ML14153A605
101	MEMORANDUM AND ORDER (REQUESTING SCHEDULE INFORMATION)	06/02/2014	ML14153A608
102	ORDER (DENYING MOTIONS FOR SUMMARY DISPOSITION)	06/02/2014	ML14153A615
103	LICENSEE POWERTECH (USA) URANIUM CORPORATION'S UPDATE TO INITIAL MANDATORY DISCLOSURES (PACKAGE WITH ATTACHMENTS A THRU H).	06/02/2014	ML14153A693
104	JOINT REPORT ON LIMITED APPEARANCE STATEMENT SESSIONS	06/10/2014	ML14161A703

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105	APPLICANT PREFILED EXHIBIT APP-001 - DR. LYNNE SEBASTIAN INITIAL TESTIMONY	06/20/2014	ML14174B226
106	APPLICANT PREFILED EXHIBIT APP-013 - HAL DEMUTH INITIAL TESTIMONY	06/20/2014	ML14171A687
107	NRC STAFF'S STATUS REPORT FEBRUARY 2014	02/03/2014	ML14034A389
108	ORDER (SCHEDULING TELEPHONE CONFERENCE CALL)	02/05/2014	ML14036A286
109	CONSOLIDATED INTERVENORS' MOTION TO RESCHEDULE CALL	02/05/2014	ML14037A201
110	ORDER (GRANTING CONSOLIDATED INTERVENORS' MOTION TO RESCHEDULE TELEPHONE CONFERENCE CALL)	02/06/2014	ML14037A310
111	CONSOLIDATED INTERVENORS' MOTION TO MAKE FILINGS BY EMAIL.	02/10/2014	ML14041A266
112	NRC STAFF'S PROPOSED HEARING SCHEDULE	02/11/2014	ML14042A517

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
113	TRANSCRIPT OF PREHEARING TELECONFERENCE FEBRUARY 12, 2014, PAGES 541-577.	02/12/2014	ML14045A132
114	NRC STAFF'S PROPOSED HEARING SCHEDULE.	02/14/2014	ML14045A408
115	NRC STAFF'S UPDATE TO THE BOARD REGARDING THE PROPOSED SCHEDULING ORDER	02/18/2014	ML14049A473
116	MEMORANDUM (SUMMARIZING THE FEBRUARY 12, 2014 TELECONFERENCE)	02/20/2014	ML14051A561
117	ORDER (GRANTING MOTION TO FILE BY EMAIL)	02/20/2014	ML14051A625
118	CORRECTED FEBRUARY 12, 2014 PRE-HEARING TELECONFERENCE TRANSCRIPT	02/25/2014	ML14056A439
119	EMAIL FROM STANDING ROCK SIOUX TRIBE PROVIDNG COMMENTS DEWEY-BURDOCK IN-SITU URANIUM RECOVERY PROJECT.	02/20/2014	ML14059A199
120	NRC STAFF STATUS REPORT (PKG. # ML14063A676)	03/04/2014	ML14063A676

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
121	HEARING FILE UPDATE AND MANDATORY DISCLOSURES (PKG. # ML14063A675)	03/04/2014	ML14063A677
122	SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT. (PKG. # ML14077A001)	02/05/2014	ML14077A002
123	SECOND SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN. (PKG. # ML14077A001)	01/24/2014	ML14077A003
124	STATEMENT OF CONTENTIONS OF THE OGLALA SIOUX TRIBE FOLLOWING ISSUANCE OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. (PKG. # ML14077A001)	03/17/2014	ML14077A004
125	NRC STAFF HEARING FILE UPDATE - APRIL 2014	04/01/2014	ML14091B173
126	NRC STAFF STATUS REPORT - APRIL 2014	04/01/2014	ML14091B174
127	APPLICANT POWERTECH (USA) INC.'S RESPONSE TO CONSOLIDATED PETITIONERS' REQUEST FOR ADMISSION OF NEW OR AMENDED CONTENTIONS ON NUREG-1910, SUPPLEMENT 4	04/04/2014	ML14094A619

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
128	CONSOLIDATED INTERVENORS STATEMENT OF CONTENTIONS. [PKG. CONTAINS ML14098A112 AND ML14098A116]	03/17/2014	ML14098A103
129	NRC STAFF'S ANSWER TO CONTENTIONS ON FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	04/04/2014	ML14095A001
130	NRC STAFF NOTICE OF LICENSE ISSUANCE	04/08/2014	ML14098A492
131	NRC STAFF'S MOTION FOR SUMMARY DISPOSITION ON SAFETY CONTENTIONS 2 AND 3	04/11/2014	ML14102A001
132	CONSOLIDATED INTERVENORS' CONSOLIDATED REPLY TO APPLICANT AND NRC STAFF ANSWERS TO CONTENTIONS ON FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT [PKG ML14104A068]	04/11/2014	ML14104A081
133	EXHIBIT 1 TO CONSOLIDATED INTERVENORS' CONSOLIDATED REPLY TO APPLICANT AND NRC STAFF ANSWERS TO CONTENTIONS ON FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT [PKG ML14104A068]	04/11/2014	ML14104A146
134	OGLALA SIOUX TRIBE PREFILED EXHIBIT AND WITNESS LIST	06/20/2014	ML14171A780

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
135	INTERVENOR PREFILED EXHIBIT OST-4 - US EPA, JUNE 2011, CONSIDERATIONS RELATED TO POST -CLOSURE MONITORING OF URANIUM IN-SITU LEACH/IN-SITU RECOVERY (ISL/ISR) SITES, DRAFT TECHNICAL REPORT; INCLUDES ATTACHMENT A: DEVELOPMENT OF THE GROUNDWATER BASELINE ...	06/01/2011	ML14171A781
136	INTERVENOR PREFILED EXHIBIT OST-14 - DECLARATION OF MICHAEL CATCHESENEMY	04/14/2014	ML14171A782
137	INTERVENOR PREFILED EXHIBIT OST-9 - TVA DRAFT ENVIRONMENTAL STATEMENT, EDGEMONT URANIUM MINE	06/20/2014	ML14171A783
138	INTERVNOR PREFILE EXHIBIT OST-12 - OST STATEMENT OF CONTENTIONS ON FSEIS, WITH EXHIBITS	03/17/2014	ML14171A784
139	INTERVENOR PREFILED EXHIBIT OST-1 - OPENING WRITTEN TESTIMONY OF DR. ROBERT E. MORAN	06/20/2014	ML14171A785
140	INTEVENOR PREFILE HEARING EXHIBIT OST-11 - OST STATEMENT OF CONTENTIONS ON DSEIS, WITH EXHIBITS	01/25/2013	ML14171A786

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
141	INTERVENOR PREFILED EXHIBIT OST-6 - BOGS, JENKINS; "ANALYSIS OF AQUIFER TESTS CONDUCTED AT THE PROPOSED BURDOCK URANIUM MINE SITE, BURDOCK, SOUTH DAKOTA," TENNESSEE VALEY AUTHORITY, REPORT NO. WR28-1-520-1109, MAY 1980	06/20/2014	ML14171A772
142	INTERVENOR PREFILED EXHIBIT OST-10 - OST PETITION TO INTERVENE, WITH EXHIBITS	04/06/2010	ML14171A773
143	INTERVENOR PREFILED EXHIBIT OST-2 - US EPA, 2007, TENORM URANIUM OCCUPATIONAL AND PUBLIC RISKS ASSOCIATED WITH IN-SITU LEACHING; APPEND. III, PG 1-11	06/20/2014	ML14171A774
144	INTERVENOR PREFILED EXHIBIT OST-8 - KEENE, GROUNDWATER RESOURCES OF THE WESTERN HALF OF FALL RIVER COUNTY, SD, DEPT. OF NATURAL RESOURCE DEVELOPMENT GEOLOGICAL SURVEY, UNIV. SD, REPORT OF INVESTIGATIONS NO. 109 (1973)	12/31/1973	ML14171A775
145	OGLALA SIOUX TRIBE'S STATEMENT OF POSITION ON CONTENTIONS	06/20/2014	ML14171A776
146	EXHIBIT 5 - 01/14/2010 LETTER FROM LOUIS REDMOND (RED FEATHER ARCHEOLOGY) TO DAVID FRANKEL, COUNSEL FOR CONSOLIDATED INTERVENORS, RE DISTURBANCE OF CULTURAL MATERIALS [PACKAGE # ML14105A294]	01/24/2010	ML14105A370

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
147	EXHIBIT 6 - RED FEATHER ARCHEOLOGY REPORT - EVALUATION OF A REPORT BY AUGUSTANA COLLEGE FOR POWERTECH, INC., DATED 3/2008 [PACKAGE # ML14105A294]	04/21/2010	ML14105A374
148	EXHIBIT 7 - LETTER FROM LOUIS REDMOND (RED FEATHER ARCHEOLOGY) TO THOMAS COOK (ALIGNING FOR RESPONSIBLE MINING) RE PROJECT AREA CULTURAL IMPACTS [PACKAGE # ML14105A294]	11/29/2012	ML14105A381
149	EXHIBIT 8 - LETTER FROM LOUIS REDMOND (RED FEATHER ARCHEOLOGY) TO DAVE FRANKEL, COUNSEL FOR CONSOLIDATED INTERVENORS, RE SUBSURFACE TESTING [PACKAGE # ML14105A294]	04/11/2014	ML14105A397
150	EXHIBIT 9 - DECLARATION OF CHARMAINE WHITE FACE [PACKAGE # ML14105A294]	04/12/2014	ML14105A400
151	EXHIBIT 10 - LETTER FROM STAN MICHAELS, ENERGY AND MINERALS COORDINATOR (SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS) RE POWERTECH INC. EXPLORATION NOTICE OF INTENT FALL RIVER CUSTER COUNTIES [PACKAGE # ML14105A294]	10/17/2008	ML14105A407
152	EXHIBIT 11 - POWERTECH URANIUM CORP. - NEWS RELEASE ARCHIVE - "NRC ISSUES LICENSE TO OPERATE DEWEY-BURDOCK PROJECT" [PACKAGE # ML14105A294]	04/08/2014	ML14105A411

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
153	OGLALA SIOUX TRIBE'S MOTION FOR STAY OF EFFECTIVENESS OF LICENSE [PACKAGE # ML14105A001]	04/14/2014	ML14105A004
154	OGLALA SIOUX TRIBE'S MOTION FOR STAY OF EFFECTIVENESS OF LICENSE - EXHIBIT 1 - DECLARATION OF MICHAEL CATCHES ENEMY [PACKAGE # ML14105A001]	04/14/2014	ML14105A002
155	OGLALA SIOUX TRIBE'S MOTION FOR STAY OF EFFECTIVENESS OF LICENSE - EXHIBIT 2 - DECLARATION OF WILMER MESTETH [PACKAGE # ML14105A001]	04/01/2010	ML14105A003
156	OGLALA SIOUX TRIBE'S ANSWER IN SUPPORT OF CONSOLIDATED INTERNVENORS' MOTION FOR STAY OF EFFECTIVENESS OF LICENSE [PKG # ML14114A502]	04/24/2014	ML14114A504
157	OGLALA SIOUX TRIBE DELCARATION NO. 14-01 [PKG # ML14114A502]	04/18/2014	ML14114A503
158	NRC STAFF'S OPPOSITION TO APPLICATIONS FOR A STAY	04/24/2014	ML14114A767
159	POWERTECH (USA) INC.'S RESPONSE TO CONSOLIDATED INTERVENORS AND THE OGLALA SIOUX TRIBE MOTIONS FOR STAY OF THE EFFECTIVENESS OF NRC LICENSE NO. SUA-1600	04/24/2014	ML14114A768

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
160	NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S MOTION FOR SUMMARY DISPOSITION	04/25/2014	ML14115A313
161	POWERTECH (USA) INC'S RESPONSE TO OGLALA SIOUX TRIBE AND NRC STAFF MOTIONS FOR SUMMARY DISPOSITION	04/25/2014	ML14115A454
162	OGLALA SIOUX TRIBE'S RESPONSE TO NRC STAFF'S MOTION FOR SUMMARY DISPOSITION	04/25/2014	ML14116A001
163	CONSOLIDATED INTERVENORS' RESPONSE TO NRC STAFF'S MOTION FOR SUMMARY DISPOSITION ON CONTENTIONS 2 AND 3	04/25/2014	ML14118A020
164	MEMORANDUM AND ORDER (RULING ON PROPOSED CONTENTIONS RELATED TO THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT)	04/28/2014	ML14118A125
165	ORDER (TEMPORARILY GRANTING STAY OF MATERIALS LICENSE NUMBER SUA-1600)	04/30/2014	ML14120A193
166	JOINT MOTION TO CLARIFY FILING DEADLINES	04/30/2014	ML14120A499
167	ORDER (SCHEDULING ORAL ARGUMENT ON MOTION TO STAY POWERTECH'S NRC LICENSE)	05/01/2014	ML14121A458

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
168	NRC STAFF'S MAY 2014 HEARING FILE UPDATE	05/01/2014	ML14121A494
169	NRC STAFF'S MAY 2014 STATUS REPORT	05/01/2014	ML14121A496
170	RESPONSE TO 05/01/2014 EMAIL TO THE LICENSING BOARD	05/06/2014	ML14126A512
171	EMAIL FROM DAVID FRANKEL SUBMITTING THECONSOLIDATED INTERVENORS' CONSOLIDATED REPLY TO APPLICANT AND NRC STAFF ANSWERS TO CONTENTIONS ON FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT [PKG ML14104A068]	04/11/2014	ML14104A152
172	REPLY OF THE OGLALA SIOUX TRIBE REGARDING CONTENTIONS FOLLOWING ISSUANCE OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	04/11/2014	ML14102A002
173	OGLALA SIOUX TRIBE'S MOTION FOR SUMMARY DISPOSITION NATIONAL ENVIRONMENTAL POLICY ACT CONTENTIONS 1A AND 6 - MITIGATION MEASURES [PKG -ML14102A003]	04/11/2014	ML14102A004
174	OGLALA SIOUX TRIBE'S STATEMENT OF UNDISPUTED MATERIAL FACTS [PKG - ML14102A003]	04/11/2014	ML14102A005

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
175	CONSOLIDATED INTERVENORS' APPLICATION FOR A STAY OF THE ISSUANCE OF LICENSE NO. SUA-1600 UNDER 10 CFR SECTION 2.1213 [PACKAGE # ML14105A294]	04/14/2014	ML14105A336
176	EXHIBIT 1 - DECLARATION OF DEBRA WHITE PLUME IN SUPPORT OF MOTION TO STAY [PACKAGE # ML14105A294]	04/14/2014	ML14105A337
177	EXHIBIT 1 - DECLARATION OF DEBRA WHITE PLUME IN SUPPORT OF MOTION TO STAY - EXHIBIT A1: SUMMARY OF RESEARCH ON SOUTH GOBI RESOURCES MONGOLIA COAL MINING HUMAN RIGHTS ABUSES [PACKAGE # ML14105A294]	04/14/2014	ML14105A339
178	EXHIBIT 1 - DECLARATION OF DEBRA WHITE PLUME IN SUPPORT OF MOTION TO STAY - EXHIBIT A2: BLUMONT PRESS RELEASE [PACKAGE # ML14105A294]	04/14/2014	ML14105A348
179	EXHIBIT 2 - APRIL 1, 2010 DECLARATION OF WILMER MESTETH [PACKAGE # ML14105A294]	04/01/2010	ML14105A353
180	EXHIBIT 3 - OGLALA SIOUX TIBE LETTER TO HAIMANOT YILMA (NRC/FSME) RE SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT [PACKAGE # ML14105A294]	02/05/2014	ML14105A361

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
181	EXHIBIT 4 - E-MAIL FROM WASTE WIN YOUNG TO NRC STAFF RE SRST COMMENTS - FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO COMMENTS [PACKAGE # ML14105A294]	02/20/2014	ML14105A367
182	APPLICANT PREFILED EXHIBIT APP-007 - NATIONAL PARK SERVICE, SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR ARCHEOLOGY AND HISTORIC PRESERVATION, 1983	06/14/2014	ML14171A692
183	APPLICANT PREFILED EXHIBIT APP-014 - HAL DEMUTH CV	06/20/2014	ML14171A693
184	APPLICANT PREFILED EXHIBIT APP-003 - DR. ADRIEN HANNUS INITIAL TESTIMONY	06/20/2014	ML14171A694
185	APPLICANT PREFILED EXHIBIT APP-004 - DR. ADRIEN HANNUS CV	06/20/2014	ML14171A695
186	APPLICANT PREFILED EXHIBIT APP-005 - REPRESENTATIVE SAMPLE OF ALAC PROJECTS	06/20/2014	ML14171A696
187	APPLICANT PREFILED EXHIBIT APP-006 - ACHP SECTION 106 REGULATIONS: TEXT OF ACHP'S REGULATIONS, "PROTECTION OF HISTORIC PROPERTIES: (36 CFR PART 800) (INCORPORATES AMENDMENTS EFFECTIVE AUG. 5, 2004)"	06/20/2014	ML14174B230

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
188	APPLICANT PREFILED EXHIBIT APP-010 - MICHAEL FOSHA INITIAL TESTIMONY	06/19/2014	ML14171A697
189	APPLICANT PREFILED EXHIBIT APP-012 - FEBRUARY 11, 2013 LETTER FROM MICHAEL FOSHA TO SDDENR	02/11/2014	ML14171A698
190	APPLICANT PREFILED EXHIBIT APP-008 - SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE, GUIDELINES FOR CULTURAL RESOURCE SURVEYS AND SURVEY REPORTS IN SOUTH DAKOTA (FOR REVIEW AND COMPLIANCE), 2005	09/30/2005	ML14171A688
191	APPLICANT PREFILED EXHIBIT APP-009 - LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH (USA) INC.'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT (PUBLIC VERISON), VOL. 3 PART 6; ML100670366	03/31/2008	ML14171A689
192	APPLICANT PREFILED EXHIBIT APP-002 - DR. LYNNE SEBASTIAN CV	06/20/2014	ML14171A690
193	APPLICANT PREFILED EXHIBIT APP-011 - MICHAEL FOSHA CV	06/20/2014	ML14171A691

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
194	APPLICANT PREFILED EXHIBIT APP-019 - NATIONAL MINING ASSOCIATION'S (NMA) GENERIC ENVIRONMENTAL REPORT IN SUPPORT OF THE NUCLEAR REGULATORY COMMISSION'S GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN SITU URANIUM RECOVERY FACILITIES; ML080170159	11/30/2007	ML14171A699
195	MEMORANDUM (MEMORIALIZING SITE VISIT)	09/24/2013	ML13267A169
196	NRC STAFF HEARING FILE UPDATE OCTOBER 2013.	10/01/2013	ML13274A564
197	STAFF STATUS REPORT FOR OCTOBER 2013 IN THE MATTER OF POWERTECH (USA) INC.	10/01/2013	ML13274A566
198	NOTICE OF THE SECRETARY REGARDING AGENCY SHUTDOWN.	10/10/2013	ML13283A118
199	NOTICE OF THE SECRETARY LIFTING SUSPENSION IN THE MATTER OF DEWEY-BURDOCK IN SITU URANIUM RECOVERY FACILITY.	10/17/2013	ML13290A512
200	NRC STAFF HEARING FILE INDEX AND MANDATORY DISCLOSURES (PKG. # ML13305B048)	11/01/2013	ML13305B049

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
201	NRC STAFF STATUS REPORT (PKG. # ML13305B048)	11/01/2013	ML13305B050
202	NRC STAFF TRANSMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, DECEMBER 2, 2013 UPDATE.	12/02/2013	ML13336A701
203	NRC STAFF STATUS REPORT DECEMBER 2013	12/02/2013	ML13336A703
204	HEARING FILE UPDATE IN THE MATTER OF POWERTECH (USA) INC. (PKG. # ML14002A283)	01/02/2014	ML14002A284
205	NRC STAFF TRANSMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, JANUARY 2, 2014 UPDATE. (PKG. # ML14002A283)	01/02/2014	ML14002A285
206	NRC STAFF'S NOTICE OF AVAILABILITY OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	01/29/2014	ML14029A663
207	PUBLICATION OF FEDERAL REGISTER NOTICE OF FINAL SEIS AVAILABILITY	01/31/2014	ML14031A310
208	NRC STAFF TRANSMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, FEBRUARY 3, 2014 UPDATE	02/03/2014	ML14034A386

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
209	APPLICANT PREFILED EXHIBIT APP-025 - NUMERIC MODELING OF HYDROGEOLOGIC CONDITIONS, DEWEY-BURDOCK PROJECT, FEBRUARY 2012; ML12062A096	02/28/2012	ML14171A700
210	APPLICANT PREFILED EXHIBIT APP-017 - FIGURES TO ACCOMPANY DEMUTH INITIAL TESTIMONY	04/25/2011	ML14171A701
211	APPLICANT PREFILED EXHIBIT APP-023 - URANIUM IN-SITU RECOVERY AND THE PROPOSED DEWEY BURDOCK SITE, EDGEMONT, SD, PUBLIC MEETING TALK GIVEN BY DR. RAYMOND JOHNSON, U.S. GEOLOGICAL SURVEY, IN HOT SPRINGS, SD ON FEB. 7, 2013 AND CUSTER, SD ON MAY 22, 2013	05/22/2013	ML14171A702
212	APPLICANT PREFILED EXHIBIT APP-024 - PRE-LICENSING WELL CONSTRUCTION, LOST CREEK ISR URANIUM RECOVERY PROJECT; ML091520101	07/24/2009	ML14171A703
213	APPLICANT PREFILED EXHIBIT APP-018 - USGS WATER-SUPPLY PAPER 2220, BASIC GROUND-WATER HYDROLOGY, 1983	12/31/2004	ML14171A704
214	APP-022 - GEOCHEMICAL DATA FROM GROUNDWATER AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA; U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 2012-1070	12/31/2012	ML14171A705

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
215	APP-026 - UPDATE ON USGS RESEARCH AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA, PRESENTATION TO EPA REGION 8 IN DENVER, CO ON FEB. 22, 2012, BASE ON USGS OFR 2012-1070	02/22/2012	ML14171A706
216	APP-027-A - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012; ML12193A239	06/01/2012	ML14176B019
217	APP-27-B - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012, APPENDIX A; ML12193A235	06/20/2014	ML14171A734
218	APPLICANT PREFILED EXHIBIT APP-027-C - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012, APPENDIX B; ML12193A235	12/31/2012	ML14171A737
219	APPLICANT PREFILED EXHIBIT APP-028 - REPORT TO THE CHIEF ENGINEER ON WATER PERMIT APPLICATION NO. 2685-2 [MADISON AQUIFER], ADAMS ACCESSION NO. ML13165A160, NOVEMBER 2, 2012	11/02/2012	ML14171A735
220	POWERTECH (USA), INC. INITIAL STATEMENT OF POSITION	06/20/2014	ML14171A736
221	APPLICANT PREFILED EXHIBIT APP-029 - LETTER AGREEMENT BETWEEN POWERTECH AND FALL RIVER COUNTY COMMISSION	01/12/2007	ML14171A738

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
222	POWERTECH (USA) INC. PREFILED WITNESS LIST	06/20/2014	ML14171A739
223	POWERTECH (USA) INC. PRE-FILED HEARING EXHIBIT LIST	06/20/2014	ML14171A740
224	APPLICANT PREFILED EXHIBIT APP-038 - ERROL LAWRENCE CV	06/20/2014	ML14171A748
225	APPLICANT PREFILED EXHIBIT APP-054 - GWYN MCKEE CV	06/20/2014	ML14171A749
226	APPLICANT PREFILED EXHIBIT APP-046 - DOYL FIRTZ INITIAL TESTIMONY	06/20/2014	ML14171A750
227	APP-047 - DOYL FITZ CV	06/20/2014	ML14171A751
228	APPLICANT PREFILED EXHIBIT APP-034 - SAFETY EVALUATION REPORT FOR THE NICHOLS RANCH IN SITU RECOVERY PROJECT IN JOHNSON AND CAMPBELL COUNTIES, WYOMING, MATERIAL LICENSE NO. SUA-1597; ML102240206	07/31/2011	ML14171A752

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
229	APPLICANT PREFILED EXHIBIT APP-031 - DECISION OF THE TCEQ EXECUTIVE DIRECTOR REGARDING URANIUM ENERGY CORPORATION'S PERMIT NO. URO3075.	11/06/2008	ML14171A753
230	APPLICANT PREFILED EXHIBIT APP-053 - GWYN MCKEE INITIAL TESTIMONY	06/20/2014	ML14171A754
231	APPLICANT PREFILED EXHIBIT APP-033 - SAFETY EVALUATION REPORT FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1596; ML101310291	09/30/2010	ML14171A755
232	APPLICNAT PREFILED EXHIBIT APP-037 - ERROL LAWRENCE INITIAL TESTIMONY	06/20/2014	ML14171A756
233	APP-032 - IN-SITU LEACH URANIUM MINING IN THE USA: PAST, PRESENT AND FUTURE, BY D.H. UNDERHILL, IN EAEA TECDOC-720, URANIUM IN SITU LEACHING, PROCEEDINGS OF A TECHNICAL COMMITTEE HELD IN VIENNA, 5-8 OCT 1992, SEPT 1993	10/08/1992	ML14171A757
234	APP-044 - RESULTS OF ACCEPTANCE REVIEW FOR TR RAI RESPONSES; ML110470245	05/06/2011	ML14175B604
235	APP-043 - REVISED RESPONSE TO TR RAI 5.7.8-3(B), JUNE 27, 2012, ML12179A534	06/27/2012	ML14171A762

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
236	APPLICANT PREFILED EXHIBIT APP-041 - USING GROUNDWATER AND SOLID-PHASE GEOCHEMISTRY FOR REACTIVE TRANSPORT MODELING AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY SITE, EDGEMONT, SOUTH DAKOTA, PRESENTATION GIVEN TO EPA ON APRIL 11, 2012	04/11/2012	ML14171A763
237	APP-048 - REPORT TO THE CHIEF ENGINEER ON WATR PERMIT APPLICATION NO. 2686-2 [INYAN KARA AQUIFER], ADAMS ACCESSION NO. ML13165A168, NOVEMBER 2, 2012	11/02/2012	ML14171A764
238	APPLICANT PREFILED EXHIBIT APP-059 - FREQUENTLY ASKED QUESTIONS ON ESA CONSULTATIONS, USFWS	06/12/2014	ML14171A765
239	APP-039 - MATERIALS LICENSE SUA-1597 FOR THE NICHOLS RANCH ISR PROJECT, JULY 2011; ML111751649	07/19/2011	ML14171A766
240	APPLICANT PREFILED EXHIBIT APP-035 - SAFETY EVALUATION REPORT FOR THE LOST CREEK PROJECT IN SWEETWATER COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1598; ML112231724	08/31/2011	ML14171A767
241	INTERVENOR PREFILED EXHIBIT OST-15 - DECLARATION OF WILMER MESTETH	06/20/2014	ML14176B032
242	INTERVENOR PREFILED EXHIBIT OST-13 - OST STATEMENT OF UNDISPUTED FACTS SUBMITTED WITH OST MOTION FOR SUMMARY DISPOSITION	04/11/2014	ML14171A771

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
243	INTERVENOR PREFILED EXHIBIT OST-5 - POWERPOINT PRESENTATION BY DR. ROBER E. MORAN	06/20/2014	ML14171A779
244	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, DELIBERATIVE PROCESS LOG, ATTORNEY-CLIENT PRIVILEGE LOG, AND RELATED AFFIDAVITS/DECLARATIONS)	11/01/2010	ML103050572
245	BOARD ORDER (SUPPLEMENTING INITIAL SCHEDULING ORDER)	11/02/2010	ML103060353
246	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, DELIBERATIVE PROCESS LOG, ATTORNEY-CLIENT PRIVILEGE LOG, AND RELATED AFFIDAVITS/DECLARATIONS)	12/01/2010	ML103350712
247	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	12/01/2010	ML103350713
248	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES	12/01/2010	ML103350726
249	INTERVENOR [OGLALA SIOUX TRIBE] UPDATE TO DISCLOSURES UNDER 10 CFR SECTION 2.336	12/01/2010	ML103350728

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250	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, DELIBERATIVE PROCESS LOG, ATTORNEY-CLIENT PRIVILEGE LOG, AND RELATED AFFIDAVITS/DECLARATIONS	12/13/2010	ML103470717
251	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSUSRES	01/03/2011	ML110030885
252	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	01/03/2011	ML110030959
253	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	01/03/2011	ML110030961
254	LETTER FROM NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	02/01/2011	ML110320295
255	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	02/01/2011	ML110320298
256	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES	02/01/2011	ML110320618

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257	INTERVENOR UPDATE TO DISCLOSURES UNDER 10 CFR SECTION 2.336, WITH EXHIBITS 1, 2, 3, 3-1, 4	02/01/2011	ML110320696
258	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	03/01/2011	ML110601235
259	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	03/01/2011	ML110601253
260	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	04/01/2011	ML110910418
261	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	04/01/2011	ML110910428
262	INTERVENOR UPDATE TO DISCLOSURES UNDER 10 CFR 2.336, WITH ATTACHED REPORT ENTITLED "URANIUM MINING IN TEXAS: WHY IS IT DONE THAT WAY?, DATED MARCH 28, 2011, BY RONALD SASS	05/02/2011	ML111220636
263	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	05/02/2011	ML111220657

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
264	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	05/02/2011	ML111220670
265	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	06/01/2011	ML111520590
266	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS	06/01/2011	ML111520592
267	LICENSING BOARD ORDER (POSTPONING DISCUSSIONS REGARDING SITE VISIT)	06/16/2011	ML111671927
268	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	07/01/2011	ML11182C078
269	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	07/01/2011	ML11182C079
270	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	08/01/2011	ML11213A348

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
271	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	08/01/2011	ML11213A349
272	APPLICANT POWERTECH (USA) URANIUM CORPORATION'S MONTHLY UPDATE TO INITIAL MANDATORY DISCLOSURES	08/01/2011	ML11213A352
273	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	09/01/2011	ML11244A082
274	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	09/01/2011	ML11244A083
275	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	10/03/2011	ML11276A124
276	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	10/03/2011	ML11276A126
277	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	11/01/2011	ML11305A252

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
278	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	11/01/2011	ML11305A255
279	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD TRANSMITTING HEARING FILE UPDATE (HEARING FILE INDEX, AND RELATED AFFIDAVITS/DECLARATIONS)	12/01/2011	ML11335A216
280	LETTER FROM COUNSEL FOR NRC STAFF TO BOARD PROVIDING STATUS REPORT OF STAFF'S BEST ESTIMATES OF ISSUANCE DATES FOR DRAFT/FINAL SEIS AND SER	12/01/2011	ML11335A219
281	JANUARY 2012 NRC STAFF HEARING FILE UPDATE	01/03/2012	ML12003A292
282	JANUARY 2012 NRC STAFF STATUS REPORT WITH C.O.S.	01/03/2012	ML12003A294
283	NRC STAFF HEARING FILE UPDATE FEBRUARY 2012	02/01/2012	ML12032A306
284	NRC STAFF STATUS REPORT REBRUARY 2012	02/01/2012	ML12032A307
285	NRC STAFF HEARING FILE UPDATE	03/01/2012	ML12061A456

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
286	NRC STAFF'S MARCH STATUS REPORT	03/01/2012	ML12061A457
287	STAFF MONTHLY STATUS REPORT (PACKAGE ML12156A221)	06/04/2012	ML12156A221
288	NRC STAFF HEARING FILE UPDATE	06/04/2012	ML12156A223
289	POWERTECH HEARING FILE AND MANDATORY DISCLOSURES JULY 2012	07/02/2012	ML12184A337
290	NRC STAFF MONTHLY STATUS REPORT	07/02/2012	ML12184A339
291	NRC STAFF HEARING FILE UPDATE	08/01/2012	ML12214A499
292	NRC STAFF STATUS REPORT AUGUST 2012	08/01/2012	ML12214A500
293	ORDER (CONCERNING CHANGES TO 10 CFR PART 2)	08/21/2012	ML12234A527

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
294	NRC STAFF HEARING FILE UPDATE	09/04/2012	ML12248A399
295	NRC STAFF STATUS REPORT	09/04/2012	ML12248A400
296	NRC STAFF SUPPLEMENTAL STATUS REPORT	09/28/2012	ML12272A086
297	ORDER (SCHEDULING TELEPHONE STATUS CONFERENCE CALL)	09/28/2012	ML12272A269
298	NRC STAFF HEARING FILE INDEX OCTOBER 2012	10/01/2012	ML12275A581
299	NRC STAFF STATUS REPORT OCTOBER 2012	10/01/2012	ML12275A583
300	NOTICE OF APPEARANCE OF WAONSILAWIN C. GILLIS ON BEHALF OF THE OGLALA SIOUX TRIBE	10/02/2012	ML12276A490
301	NOTICE OF UPDATED CONTACT INFORMATION FOR TRAVIS STILLS, COUNSEL FOR OGLALA SIOUX TRIBE	10/02/2012	ML12278A274

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
302	TRANSCRIPT OF OCTOBER 4, 2012 (TELECONFERENCE)	10/09/2012	ML12283A364
303	ORDER (SECOND PREHEARING CONFERENCE CALL SUMMARY AND SUPPLEMENTAL INITIAL SCHEDULING ORDER)	10/16/2012	ML12290A200
304	NRC STAFF HEARING FILE UPDATE FOR NOVEMBER 2012.	11/01/2012	ML12306A560
305	NRC STAFF'S SUPPLEMENTAL STATUS REPORT FOR NOVEMBER 2012.	11/01/2012	ML12306A564
306	NRC STAFF'S NOTICE OF AVAILABAILITY OF DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	11/15/2012	ML12320A623
307	STAFF HEARING FILE INDEX DECEMBER 2012	12/03/2012	ML12338A299
308	NRC STAFF STATUS REPORT DECEMBER 2012	12/03/2012	ML12338A301

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
309	UNOPPOSED JOINT MOTION FOR EXTENSION OF TIME FOR THE OGLALA SIOUX TRIBE AND CONSOLIDATED INTERVENORS TO SUBMIT CONTENTIONS BASED ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	12/14/2012	ML12349A413
310	ORDER GRANTING UNOPPOSED JOINT MOTION FOR EXTENSION OF TIME TO FILE CONTENTIONS	12/18/2012	ML12353A321
311	HEARING FILE UPDATE	01/02/2013	ML13002A477
312	NRC STAFF STATUS REPORT	01/02/2013	ML13002A479
313	LIST OF CONTENTIONS OF THE OGLALA SIOUX TRIBE BASED ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. (PKG. ML13026Z003)	01/25/2013	ML13026A004
314	CONSOLIDATED INTERVENORS' NEW CONTENTIONS BASED ON DSEIS	01/25/2013	ML13026A010
315	STAFF HEARING FILE UPDATE FEBRUARY 2013	02/01/2013	ML13032A545

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
316	NRC STAFF STATUS REPORT FEBRUARY 2013	02/01/2013	ML13032A546
317	NRC STAFF'S JOINT MOTION FOR EXTENSIONS OF TIME	02/13/2013	ML13044A574
318	ORDER GRANTING JOINT MOTION FOR EXTENSIONS OF TIME	02/14/2013	ML13045A398
319	NRC STAFF SUPPLEMENTAL STATUS REPORT	02/25/2013	ML13056A608
320	JOINT MOTION FOR EXTENSION OF TIME FOR RESPONDING TO CONSOLIDATED INTERVENORS' AND THE OGLALA SIOUX TRIBE'S NEW AND AMENDED CONTENTIONS [PKG # ML13060A248]	03/01/2013	ML13060A250
321	CERTIFICATE OF SERVICE FOR JOINT MOTION FOR EXTENSION OF TIME FOR RESPONDING TO CONSOLIDATED INTERVENORS' AND THE OGLALA SIOUX TRIBE'S NEW AND AMENDED CONTENTIONS [PKG # ML13060A248]	03/01/2013	ML13060A249
322	NRC STAFF CLARIFICATION LETTER RE: JOINT MOTION FOR EXTENSION OF TIME FOR RESPONDING TO CONSOLIDATED INTERVENORS' AND THE OGLALA SIOUX TRIBE'S NEW AND AMENDED CONTENTIONS	03/01/2013	ML13060A330

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
323	STAFF HEARING FILE UPDATE FOR MARCH 2013	03/01/2013	ML13060A431
324	NRC STAFF STATUS REPORT FOR MARCH 2013	03/01/2013	ML13060A433
325	ORDER GRANTING SECOND MOTION FOR EXTENSIONS OF TIME	03/04/2013	ML13063A155
326	NRC STAFF'S ANSWER TO CONTENTIONS ON DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT	03/07/2013	ML13066B030
327	POWERTECH'S RESPONSE TO INTERVENOR'S NEW CONTENTIONS	03/11/2013	ML13070A378
328	NOTICE OF AVAILABILITY OF SER	03/20/2013	ML13079A409
329	CONSOLIDATED REPLY OF THE OGLALA SIOUX TRIBE	03/25/2013	ML13084A453
330	STAFF HEARING FILE UPDATE APRIL 2013	04/01/2013	ML13091A352

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
331	NRC STAFF STATUS REPORT APRIL 2013	04/01/2013	ML13091A358
332	POWERTECH RESPONSE TO NRC STAFF STATUS REPORT	04/04/2013	ML13094A410
333	COMMENTS ON DOCKET ID NRC-2012-0277; DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, PROPOSED DEWEY-BURDOCK IN-SITU LEACH URANIUM MINE, SOUTH DAKOTA. (PKG. 13026A003)	01/10/2013	ML13029A366
334	SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN IN THE MATTER OF DEWEY-BURDOCK IN-SITU URANIUM RECOVERY FACILITY. (PKG. ML13026A368)	01/24/2013	ML13029A368
335	LETTER FROM JOHN YELLOW BIRD STEELE, PRESIDENT OF THE OGALALA SIOUX TRIBE RE: REFUSAL TO ACCEPT DEWEY-BURDOCK IN-SITU RECOVERY PROJECT PROPOSAL. (PKG. ML13026A003)	11/05/2012	ML13026A005
336	LETTER FROM LOUIS A. REDMOND, PRESIDENT/OWNER, RED FEATHER ARCHEOLOGY	11/29/2012	ML13026A011
337	SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN	01/24/2013	ML13026A012

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
338	NRC STAFF SUBMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, MAY 1, 2013 UPDATE. (PKG. # ML13121A484)	05/01/2013	ML13121A485
339	NRC STAFF STATUS REPORT ON BEST ESTIMATES OF THE ISSUANCE DATES FOR DRAFT AND FINAL DOCUMENTS ASSOCIATED WITH REVIEW OF POWERTECH'S APPLICATION. (PKG. # ML13121A484)	05/01/2013	ML13121A486
340	NRC STAFF HEARING FILE AND MANDATORY DISCLOSURES UPDATE	06/03/2013	ML13154A490
341	NRC STAFF'S JUNE 2013 STATUS REPORT REPORT REGARDING BEST EXTIMATES OF THE ISSUANCE DATES FOR DRAFT AND FINAL DOCUMENTS ASSOCIATED WITH REVIEW OF POWERTECH'S APPLICATION.	06/03/2013	ML13154A496
342	ORDER (REGARDING AUGUST 12, 2013, TELEPHONE CONFERENCE CALL)	08/06/2013	ML13218A296
343	OFFICIAL TRANSCRIPT OF AUGUST 12, 2013 TELECONFERENCE	08/15/2013	ML13227A029
344	MEMORANDUM (SUMMARIZIG THE AUGUST 12, 2013, TELECONFERENCE)	08/16/2013	ML13228A172

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
345	ORDER (SCHEDULING SITE VISIT)	08/21/2013	ML13233A330
346	NRC STAFF'S HEARING FILE UPDATE SEPTEMBER 2013	09/03/2013	ML13246A482
347	NRC STAFF'S STATUS REPORT DATED SEPTEMBER 3, 2013	09/03/2013	ML13246A484
348	JOHNSON, RAYMOND H., TUTU, HLANGANANI, "REACTIVE TRANSPORT MODELING AT UNRANIUM IN SITU RECOVERY SITES; UNCERTAINTIES IN URANIUM SORPTION ON IRON HYDROXIDES," RELIABLE MINE WATER TECHNOLOGY, IMWA 2013 (PKG. # ML13246A525)	09/03/2013	ML13246A526
349	INTERVENOR UPDATE TO DISCLOSURES UNDER 10 CFR 2.336 AND REPLACEMENT PAGE INSERTED PROVIDING HYPERLINK TO DOCUMENT ONLINE. [PUBLIC VERSION]	09/03/2013	ML13246A527
350	NOTICE OF OPPORTUNITY TO SUBMIT WRITTEN LIMITED APPEARANCE STATEMENTS	09/05/2013	ML13248A110
351	NOTICE (CORRECTED VERSION OF INITIAL SEPTEMBER 5, 2013 NOTICE REGARDING OPPORTUNITY TO SUBMIT WRITTEN LIMITED APPEARANCE STATEMENTS)	09/05/2013	ML13248A470

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
352	CONSOLIDATED INTERVENORS' NOTICE RE: SITE VISIT PARTICIPANTS	09/16/2013	ML13256A461
353	ORDER (SITE VISIT INFORMATION AND SCHEDULE)	09/17/2013	ML13260A524
354	INTERVENOR UPDATE TO DISCLOSURES UNDER 10 CFR SEC. 2.336, AND COPYRIGHT ATTACHMENT. (NON-PUBLIC VERSION).	09/03/2013	ML13266A411
355	INTERVENOR PREFILED EXHIBIT OST-3 - US EPA TECHNICAL REPORT ON TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE MATERIALS FROM URANIUM MINING, VOLUME 1; MINING AND RECLAMATION BACKGROUND; PREVIOUSLY PUBLISHED ON-LINE AND PRINTED AS VOL. 1 OF ...	06/20/2014	ML14171A777
356	INTERVENOR PREFILED EXHIBIT OST-7 - BOGGS, HYDROGEOLOGIC INVESTIGATIONS AT PROPOSED URANIUM MINE NEAR DEWEY, SOUTH DAKOTA (1983)	09/30/2012	ML14171A778
357	APPLICANT PREFILED EXHIBIT APP-036 - SAFETY EVALUATION REPORT FOR THE STRATA ENERGY, INC. ROSS ISR PROJECT, CROOK COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1601; ML14002A107	01/01/2014	ML14175B605
358	APP-052 - DEWEY- BURDOCK BLM SITE DETERMINATIONS; JANUARY 10, 2014 LETTER FROM BLM TO SD SHPO; ML14014A303	01/10/2014	ML14171A788

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
359	NRC STAFF PREFILED EXHIBIT LIST (PKG. # ML14171A794)	06/20/2014	ML14171A795
360	NRC STAFF INITIAL STATEMENT OF POSITION (PKG. # ML14171A794)	06/20/2014	ML14171A796
361	APP-055 - GREATER SAGE-GROUSE MANAGEMENT PLAN, SOUTH DAKOTA, 2008-2017; ML12241A215	12/31/2008	ML14171A798
362	APP-057 - GREATER SAGE-GROUSE (CENTROCERUS UROPHAIANUS) CONSERVATION OBJECTIVES; FINAL REPORT	03/22/2013	ML14171A799
363	APP-060 - WHOOPING CRANE (GRUS AMERICANA) 5-YEAR REVIEW; SUMMARY AND EVALUATION, USFWS	06/20/2014	ML14171A800
364	APP-058 - ENDANGERED SPECIES ACT CONSULTATION HANDBOOK, PROCEDURES FOR CONDUCTING SECTION 7 CONSULTATIONS AND CONFERENCES, U.S. FISH AND WILDLIFE SERVICE AND NATIONAL MARINE FISHERIES SERVICE, 1998	03/31/1998	ML14171A801
365	APP-061 - DIVISION OF MIGRATORY BIRD MANAGEMENT, IMPORTANT INFORMATION FOR SANDHILL HUNTERS, FALL WHOOPING CRANE SIGHTING 1943-1999	06/12/2014	ML14171A802

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
366	APP-056 - A REPORT ON NATIONAL GREATER SAGE-GROUSE CONSERVATION MEASURES	12/21/2011	ML14171A803
367	NRC STAFF PREFILED EXHIBIT NRC-005 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF THOMAS LANCASTER	06/20/2014	ML14171A804
368	NRC STAFF PREFILED EXHIBIT NRC-001 - INITIAL TESTIMONY AND AFFIDAVITS FROM HAIMANOT YILMA, KELLEE L. JAMERSON, THOMAS LANCASTER, JAMES PRIKRYL, AND AMY HESTER.	06/20/2014	ML14171A805
369	NRC STAFF PREFILED EXHIBIT NRC-006 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF JAMES PRIKRYL	06/20/2014	ML14171A806
370	NRC STAFF PREFILED HEARING EXHIBIT NRC-007 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF AMY HESTER	06/20/2014	ML14171A807
371	NRC STAFF PREFILED EXHIBIT NRC-004 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF KELLEE L. JAMERSON	06/20/2014	ML14171A808
372	NRC STAFF PREFILED EXHIBIT NRC-003 - STATEMENT OF PROFESSIONAL QUALIFIATIONS OF HAIMANOT YILMA	06/20/2014	ML14171A809

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
373	APPLICANT PREFILED EXHIBIT APP-015-B - REVISED TR FOR THE DEWEY BURDOCK PROJECT; PART 2 OF 22; TEXT THROUGH SEC. 2.8.5.7; ML14035A029	06/20/2014	ML14175B606
374	APPLICANT PREFILED EXHIBIT APP-015-C - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 3 OF 22; TEXT SEC. 2.9 THROUGH 10.2; ML4035A030	12/31/2013	ML14171A810
375	APPLICANT PREFILED EXHIBIT APP-015-G, REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 7 OF 22; PLATES 2.6-16 THROUGH 2.7-2; ML14035A034	06/20/2014	ML14175B607
376	APPLICANT EXHIBIT APP-015-D - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 4 OF 22; PLATES 1.5-1 THROUGH 2.6-8; ML14035A031	12/31/2013	ML14171A817
377	APPLICANT PREFILED EXHIBIT APP-015-F - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 6 OF 22; PLATES 2.6-13 THROUGH 2.6-12; ML14035A032	12/31/2013	ML14171A818
378	NRC STAFF PREFILED EXHIBIT NRC-018-C, NRC PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML14098A464)	03/19/2014	ML14175B608
379	NRC STAFF PREFILED EXHIBIT NRC-021 - 3/19/2010 NRC SENT INITIAL SECTION 106 INVITATION LETTERS TO 17 TRIBES REQUESTING THEIR INPUT ON THE PROPOSED ACTION. ADAMS ACCESSION NO. ML100331999.	03/19/2010	ML14172A000

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
380	NRC STAFF PREFILED EXHIBIT NRC-023 - POWERTECH DEWEY-BURDOCK DRAFT SCOPE OF WORK AND FIGURES - IDENTIFICATION OF PROPERTIES OF RELIGIOUS AND CULTURAL SIGNIFICANCE (MAR. 7, 2012) (ADAMS ACCESSION NO. ML120870197)	03/07/2012	ML14172A010
381	NRC STAFF PREFILED EXHIBIT NRC-011 - DEWEY-BURDOCK RECORD OF DECISION (APR. 8, 2014) (ADAMS ACCESSION NO. ML14066A466)	04/08/2014	ML14172A011
382	NRC STAFF PREFILED EXHIBIT NRC-016 - SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT. (ADAMS ACCESSION NO. ML1477A002).	02/05/2014	ML14172A012
383	NRC STAFF PREFILED EXHIBIT NRC-018-E - ACHP PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML14098A55).	04/07/2014	ML14172A013
384	NRC STAFF PREFILED EXHIBIT NRC-017 - DEWEY-BURDOCK ISR PROJECT DOCUMENTS PERTAINING TO SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (JUNE 10, 2014), AVAILABLE AT HTTP://WWW.NRC.GOV/INFO-FINDER/MATERIALS/URANIUM/LICENSED-FACILITIES/DEWEY-BURDOCK..	06/20/2014	ML14172A014
385	NRC STAFF PREFILED EXHIBIT NRC-018-F - BLM SUGNATURE ON PA; (MAR. 25, 2014) (ADAMS ACCESSION NO. ML14098A102).	03/25/2014	ML14172A015

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
386	NRC STAFF PREFILED EXHIBIT NRC-018-H - POWERTECH PA SIGNATURE PAGE, (ADAMS ACCESSION NO. NL14098A110)	03/24/2014	ML14172A016
387	NRC STAFF PREFILED EXHIBIT NRC-018-A - FINAL PA FOR THE DEWEY-BURDOCK PROJECT. (ADAMS ACCESSION NO. ML14066A347)	03/19/2014	ML14172A017
388	NRC STAFF PREFILED HEARING EXHIBIT NRC-018-D - LETTER FROM ACHP FINALIZING SECTION 106. (ADAMS ACCESSION NO. ML14099A025)	04/07/2014	ML14172A001
389	NRC STAFF PREFILED EXHIBIT NRC-18-G - SOUTH DAKOTA SHPO PA SIGNATURE PAGE (ADAMS ACCESSION NO. ML14098A107)	03/24/2014	ML14172A002
390	NRC STAFF PREFILED EXHIBIT NRC-018-B - FINAL APPENDIX FOR THE DEWEY-BURDOCK PROJECT PA. (ADAMS ACCESSION NO. ML14066A350)	06/20/2014	ML14172A003
391	NRC STAFF PREFILED EXHIBIT NRC-022 - LETTER TO OGLALA SIOUX TRIBE RE: REQUEST FOR UPDATED TRIBAL COUNCIL MEMBERS CONSULTATION (SEP. 8, 2010) (ADAMS ACCESSION NO. ML102450647).	09/08/2010	ML14172A004
392	NRC STAFF PREFILED EXHIBIT NRC-012 - MATERIALS LICENSE SUA-1600, POWERTECH (USA), INC. (APR. 8, 2014) (ADAMS ACCESSION NO. ML14043A392).	04/08/2014	ML14172A005

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
393	NRC STAFF PREFILED EXHIBIT NRC-024 - NRC STAFF LETTER POSTPONING FALL 1012 TRIBAL SURVEY. (12/14/2012). ADAMS ACCESSION NO. ML12335A175.	12/14/2012	ML14172A006
394	NRC STAFF PREFILED EXHIBIT NRC-015 - DEWEY-BURDOCK ISR PROJECT SUMMARY OF TRIBAL OUTREACH TIMELINE (APR. 8, 2014) (ADAMS ACCESSION NO. ML14099A010)	04/08/2014	ML14172A007
395	NRC STAFF PREFILED EXHIBIT NRC-020 - NRC LETTER TRANSMITTING THE APPLICANT'S STATEMENT OF WORK TO ALL CONSULTING PARTIES. (MAY 7, 2012). (ADAMS ACCESSION NO. ML121250102).	05/07/2012	ML14172A008
396	NRC PREFILED EXHIBIT NRC-019 - SUMMARY REPORT REGARDING THE TRIBAL CULTURAL SURVEYS COMPLETED FOR THE DEWEY-BURDOCK URANIUM IN SITU RECOVERY PROJECT. (DEC. 16, 2013) (ADAMS ACCESSION NO. ML13343A142)	06/20/2014	ML14172A009
397	NRC STAFF PREFILED EXHIBIT NRC-028 - EMAIL FROM WASTE WIN YOUNG TO NRC STAFF RE SRST COMMENTS FINAL DRAFT PA DEWEY-BURDOCK SRST THPO COMMENTS (FEB. 20, 2014) (ADAMS ACCESSION NO. ML12262A055).	02/14/2014	ML14172A021
398	NRC STAFF PREFILED EXHIBIT NRC-038-A - INVITATION FOR INFORMAL INFORMATION-GATHERING MEETING PERTAINING TO THE DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LICENSE RENEWAL, IN-SITU URANIUM RECOVERY PROJECT (MAY 12, 2011) (ML110030430)	02/20/2014	ML14172A022

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
399	NRC STAFF PREFILED EXHIBIT NRC-036 - LETTER TO CROW TRIBE OF MONTANA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 4, 2011) (ML110550535)	03/04/2011	ML14172A025
400	NRC STAFF PREFILE EXHIBIT NRC-037 - 12/3/2010 YANKTON SIOUX TRIBE REQUESTS FACE-TO-FACE MEETING TO DISCUSS PAST AND CURRENT PROJECT AS WELL AS REQUEST FOR TCP SURVEY. SISSETON WAHPETON AND FOR PECK TRIBES ALSO ASKED TO FACE-TO-FACE MEETING VIA PHONE.	12/03/2010	ML14172A026
401	NRC STAFF PREFILED EXHIBIT NRC-034 - LETTER TO PONCA TRIBE OF NEBRASKA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 4, 2011) (ML110550372)	03/04/2011	ML14172A027
402	NRC STAFF PREFILED EXHIBIT NRC-030 - STANDING ROCK SIOUX TRIBE COMMENTS - FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO COMMENTS (FEB. 05, 2014) (ADAMS ACCESSION NO. ML14055A513).	02/05/2014	ML14172A028
403	NRC STAFF PREFILED EXHIBIT NRC-029 - LETTER TO CHEYENNE RIVER SIOUX TRIBE RE: RESPONSE RECEIVED REGARDING TRIBAL SURVEY FOR DEWEY-BURDOCK (DEC. 14, 2012) (ML12335A175)	12/14/2012	ML14172A029

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404	NRC STAFF PREFILED EXHIBIT NRC-035 - LETTER TO SANTEE SIOUX TRIBE OF NEBRASKA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 4, 2011) (ML110550172)	03/04/2011	ML14172A030
405	NRC STAFF PREFILED EXHIBIT NRC-031 - 04/07/2014 LETTER FROM THE ADVISORY COUNCIL ON HISTORIC PRESERVATION TO THE STANDING ROCK SIOUX TRIBE CONCERNING THE DEWEY-BURDOCK ISR PROJECT, SD. (ML14115A448)	04/07/2014	ML14172A031
406	NRC STAFF PREFILED EXHIBIT NRC-027 - ACHP, NATIONAL REGISTER EVALUATION CRITERIA, ADVISORY COUNCIL ON HISTORIC PRESERVATION. (MAR. 11, 2008) (ML14055A175)	08/28/2012	ML14172A032
407	NRC STAFF PREFILED EXHIBIT NRC-033 - 09/13/2012 SUMMARY OF AUGUST 30, 2012 PUBLIC MEETING WITH POWERTECH INC. TO DISCH\USS POWERTECH'S PROPOSED ENVIRONMENTAL MONITORING PROGRAM RELATED TO THE PROPOSED DEWEY-BURDOCK PROJECT. (ML12255A258)	09/13/2012	ML14172A023
408	NRC STAFF PREFILED EXHIBIT NRC-026 - WY SHPO (WYOMING STATE HISTORIC PRESERVATION OFFICE). "DEWEY-BURDOCK LINE OF SIGHT ANALYSIS." EMAIL (SEPTEMBER 4) FROM R. CURRIT, SENIOR ARCHAEOLOGIST, WYOMING STATE HISTORIC PRESERVATION OFFICE TO H. YILMA, NRC. . . .	09/04/2013	ML14172A024

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409	APPLICANT PREFILED EXHIBIT APP-015-H - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 8 OF 22; PLATE 2.8-1 THROUGH 5.7-1; ML14035A035	11/11/2008	ML14175B609
410	APPLICANT PREFILED EXHIBIT APP-015-J - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 10 OF 22; APP. 2.6-A THROUGH 2.6-G; ML14035A037.	12/31/2013	ML14175B610
411	APPLICANT PREFILED EXHIBIT APP-015-K - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 11 OF 22; APP. 2.6-H THROUGH 2.7-E; ML14035A038	06/20/2011	ML14172A040
412	APP-015-I - REVISED TR FOR THE DEWEY BURDOCK PROJECT; PART 9 OF 22; APP. 2.2-A THROUGH 2.5-F; ML14035A036	12/31/2013	ML14172A041
413	NRC - O41- 8/31/2011 NRC LETTER FROM POWERTECH LETTER AND PROPOSAL IN RESPONSE TO THE AUG 12, 2011 REQUEST FOR NHPA SECTION 106 INTO. THISLETTER ENCLOSED A PROPOSAL WHICH OUTLINED A PHASED APPROACH TO COLLECT INFORMATION ABOUT PROPERTIES OF RELIGIOUS..	08/31/2011	ML14175A611
414	NRC-039 - MEETING AGENDA FOR INFORMAL GATHERING PERTAINING TO DEWEY-BURDOCK, CROW BUTTE. ACCOMPANYING NRC LETTER WITH MAP OF THE PROPOSED PROJECT BOUNDARY AND DIGITAL COPIES OF THE CLASS III ARCHAEOLOGICAL SURVEY. (MAY 12, 2011 (ML111250120).	06/07/2011	ML14172A042

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
415	NRC-038-E - TRANSCRIPT RE: INFORMAL INFORMATION-GATHERING MEETING PERTAINING TO CROW BUTTE INC. AND POWERTECH INC. PROPOSED ISR FACILITIES (JUNE 8, 2011) (ADAMS ACCESSION NO. ML111721938) (PAGES 1-195).	06/08/2011	ML14172A048
416	NRC-045 - 2/01/2012 (FEBRUARY 14-15, 2012 MEETING AGENDA). (ADAMS ACESSION NO. ML120320436)	02/14/2012	ML14172A049
417	NRC-049 - LETTER TO CROW CREEK SIOUX TRIBE RE: TRANSMITTAL OF APPLICANT'S DRAFT STATEMENT OF WORK (MAY 7, 2012) (ADAMS ACCESSION NO. ML 121250102).	05/07/2012	ML14172A050
418	NRC-050, LETTER TO OGLALA SIOUX TRIBE RE: TRANSMITTAL OF TRANSCRIPT FROM TELECONFERENCE CONDUCTED ON APRIL 24, 2012 (JUNE 26, 2012) (ADAMS ACCESSION NO. ML12177A109).	06/26/2012	ML14172A051
419	NRC-038-D - ATTENDEE LIST - INFORMAL INFORMATION GATHERING MEETING HELD IN PINE RIDGE, SD (JULY 8, 2011) (ADAMS ACCESSION NO. ML111870624).	06/20/2014	ML14172A052
420	NRC-044 - 1/19/2012 NRC INVITATION LETTERS TO ALL THPOS FOR A PLANNED FEB 2012 MEETING TO DISCUSS HOW BEST TO CONDUCT THE TCP SURVEY. (ADAMS ACCESSION NO. ML12031A280).	01/19/2012	ML14172A053

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421	NRC-046 - 3/28/2012 - NRC TRANSMITTED TRANSCRIPTS OF THE NRC FACE-TO-FACE MEETING IN RAPID CITY, SD TO DISCUSS HOW BEST TO CONDUCT THE TCP SURVEY. (ADAMS ACCESSION NOS. ML120670319).	03/26/2012	ML14172A054
422	NRC-038-C - MEMO TO KEVIN HSUEH RE: TRANSCRIPT FOR THE JUNE 8, 2011 INFORMAL INFORMATION - GATHERING MEETING HELD IN PINE RIDGE, SD (JULY 8, 2011) (ADAMS ACCESSION NO. ML111870623).	07/08/2011	ML14172A055
423	NRC-047 - MEETING THE "REASONABLE AND GOOD FAITH" IDENTIFICATION STANDARD IN SECTION 106 REVIEW (ACHP), AVAILABLAE AT HTTP://WWW.ACHP.GOV/DOCS/REASONABLE_GOOD_FAITH_IDENTIFICATION.PDF.	06/20/2014	ML14172A043
424	NRC-048 - NEPA AND NHPA, A HANDBOOK FOR INTEGRATING NEPA AND SECTION 106 (CEQ AND ACHP), AVAILABLE AT HTTP://WWW.ACHP.GOV/DOCS/NEPA NHPA SECTION 106 HANDBOOK MAR2013.PDF.	03/31/2013	ML14172A044
425	NRC-040 - LETTER TO RICHARD BLUBAUGH, POWERTECH, RE: NRC INFORMATION REQUEST RELATING TO SECTION 106 AND NEPA REVIEWS FOR THE PROPOSED DEWEY-BURDOCK PROJECT (AUG. 12, 2011) (ADAMS ACCESSION NO. ML112170237).	08/12/2011	ML14172A045

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426	NRC-038-F - PRESENTATION SLIDES FOR THE SECTION 106 CONSULTATION MEETING PERTAINING TO THE PROPOSED DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LR IN-SITU URANIUM RECOVERY PROJECTS (JUNE 8, 2011) (ADAMS ACCESSION NO. ML111661428).	06/08/2011	ML14172A046
427	NRC-042 - 10/20/2011 NRC PROVIDED COPIES OF THE 6/8/2011 MEETING TRANSCRIPTS TO ALL THE TRIBES. THANK YOU LETTER TO JAMES LAYSBAD OF OGLALA SIOUX TRIBE ENCLOSING THE TRANSCRIPT OF THE INFORMATION-GATHERING MEETING AND UNREDACTED SURVEY PERTAINING..	10/20/2011	ML14172A047
428	APP-015-M - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 13 OF 22; APP. 2.7-H 1 OF 3; ML14035A040.	06/20/2014	ML14175B613
429	APP-015-L - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 12 OF 22; APP 2.7-F THROUGH 2.7-G; ML14035A039.	06/30/2011	ML14172A056
430	APP-015-N - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 14 OF 22; APP. 2.7-H 2 OF 3; ML14035A041.	07/29/2008	ML14175B614
431	APP-015-O - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 15 OF 22; APP. 2.7-H 3 OF 3; ML14035A042.	06/30/2011	ML14172A057

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
432	NRC-054 - LETTER TO JAMES LAYSBAD, OGLALA SIOUX TRIBE, RE: INFORMATION RELATED TO TRADITIONAL CULTURAL PROPERTIES; DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LR ISP PROJECTS (OCT. 28, 2011) (ADAMS ACCESSION NO. ML112980555)	10/28/2011	ML14177A564
433	NRC-060 - STB FINANCE DOCKET NO. 33407, DAKOTA, MINNESOTA & EASTERN RAILROAD CORPORATION CONSTRUCTION INTO THE POWDER RIVER BASIN: REQUEST FOR REVIEW AND COMMENT ON 21 ARCHAEOLOGICAL SITES, SURFACE TRANSPORTATION BOARD....	02/08/2013	ML14172A059
434	NRC-068 - EMAIL RE: TRANSMITTAL OF A FOLLOW-UP EMAIL PERTAINING TO AN UPCOMING FIELD SURVEY FOR THE DEWEY-BURDOCK PROJECT (FEB. 08, 2013) (ADAMS ACCESSION NO. ML13039A336).	02/08/2013	ML14172A070
435	NRC-057 - DEWEY-BURDOCK PROJECT DRAFT PROGRAMMATIC AGREEMENT (NOV. 22, 2013) (ADAMS ACCESSION NO. ML ML13329A466).	11/22/2013	ML14172A074
436	NRC-052 - NRC REQUEST RE: SCOPE OF WORK WITH COVERAGE RATE, START DATE, DURATION, AND COST (AUG 30, 2012) (ADAMS ACCESSION NO. ML12261A470).	08/30/2012	ML14172A075

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
437	NRC-073 - A LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH (USA) INCORPORATED'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT LOCALITY WITHIN THE SOUTHERN BLACK HILLS, CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA (PAGES 5.53 THROUGH 5.106)....	03/31/2008	ML14172A076
438	NRC-061 - LETTER TO OGLALA SIOUX TRIBE RE: TRANSMITTAL OF TCP SURVEY REPORT FOR DEWEY-BURDOCK PROJECT (DEC. 23, 2013) (ADAMS ACCESSION NO. ML13357A234).	12/23/2013	ML14172A077
439	NRC-059 - TABLE 1.0 - NRC NRHP DETERMINATIONS FOR DEWEY-BURDOCK DRAFT PA (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A470).	11/22/2013	ML14172A078
440	NRC-065 - LETTER FROM SISSETON WAHPETON OYAYE TRIBE RE: REFUSAL TO ACCEPT DEWEY-BURDOCK IN SITU RECOVERY PROJECT PROPOSAL (NOV. 6, 2012) (ADAMS ACCESSION NO. ML13036A104).	11/06/2012	ML14172A079
441	NRC-053 - LETTER TO TRIBAL HISTORIC PRESERVATION OFFICER RE: TRANSMITTAL OF TRIBES' PROPOSAL AND COST ESTIMATE OF THE DEWEY-BURDOCK ISR PROJECT (OCT. 12, 2012) (ADAMS ACCESSION NO. ML12286A310).	10/21/2012	ML14172A080

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442	NRC-055 - LETTER TO TRIBAL HISTORIC PRESERVATION OFFICERS RE: REQUEST FOR A PROPOSAL WITH COST ESTIMATE FOR DEWEY BURDOCK PROJECT (SEP. 18, 2012) (ADAMS ACCESSION NO. ML12264A594).	09/18/2012	ML14172A060
443	NRC-070 - LETTER TO J. FOWLER, ACHP, RE: NOTIFICATION OF INTENTION TO SEPARATE THE NHPA SECTION 106 PROCESS FROM NEPA REVIEW FOR DEWEY-BURDOCK IS PROJECT (NOV. 13, 2013) (ADAMS ACCESSION NO. ML13311B184).	11/13/2013	ML14172A061
444	NRC-069 - LETTER TO OGLALA SIOUX TRIBE RE: NOTIFICATION OF INTENTION TO SEPARATE THE NHPA SECTION 106 PROCESS FROM NEPA REVIEW FOR DEWEY-BURDOCK ISR PROJECT (NOV. 6, 2013) (ADAMS ACCESSION NO. ML13308B524.	11/06/2013	ML14172A062
445	NRC-058 - DRAFT APPENDIX A FOR DEWEY-BURDOCK PROJECT PA (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A468).	11/22/2013	ML14172A063
446	NRC-051 - NRC EMAIL RE: AUGUST 9, 2012 TELECONFERENCE INVITATION AND REVISED STATEMENT OF WORK TRANSMITTAL (AUG. 07, 2012) (ADAMS ACCESSION NO. ML12261A375).	08/07/2012	ML14172A064
447	NRC-062 - NRC OVERALL DETERMINATIONS OF ELIGIBILITY AND ASSESSMENTS OF EFFECTS (DEC. 16, 2013) (ADAMS ACCESSION NO. ML13343A155).	06/20/2014	ML14172A065

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448	NRC-071 - LETTER FROM DEPARTMENT OF STATE RE: KEYSTONE XL PIPELINE PROJECT TRADITIONAL CULTURAL PROPERTY (TCP) STUDIES (AUG. 4, 2009).	08/04/2009	ML14172A066
449	NRC-063 - DRAFT NRC NRHP DETERMINATIONS - TABLE 1.0 FOR DRAFT PA (DEC. 13, 2013) (ADAMS ACCESSION NO. ML13354B948).	06/20/2014	ML14172A067
450	NRC-072 - A LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH (USA) INCORPORATED'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT LOCALITY WITHIN THE SOUTHERN BLACK HILLS, CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA, VOL. I, (PAGE 1.2 THROUGH PAGE 4.18)....	03/31/2008	ML14172A068
451	NRC-066 - LETTER FROM STANDING ROCK SIOUX TRIBE RE: TRIBAL SURVEY USING PERSONS WITHOUT SIOUX TCP EXPERTISE TO IDENTIFY SIOUX TCP (NOV. 5, 2012) (ADAMS ACCESSION NO. ML13036A110).	11/05/2012	ML14172A069
452	NRC-064 - LETTER FROM JOHN YELLOW BIRD STEELE, PRESIDENT OF THE OGLALA SIOUX TRIBE RE: REFUSAL TO ACCEPT DEWEY-BURDOCK IN SITU PROJECT PROPOSAL (NOV. 5, 2012) (ADAMS ACCESSION NO. ML13026A005).	11/05/2012	ML14172A071
453	NRC-067 - EMAIL FROM STANDING ROCK SIOUX TRIBE PROVIDING COMMENTS ON FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO (FEB. 20, 2014) (ADAMS ACCESSION NO. ML14059A199).	02/20/2014	ML14172A072

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454	NRC-056 - H. YILMA EMAIL RE: DRAFT PA FOR DEWEY-BURDOCK PROJECT (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A420).	11/22/2013	ML14172A073
455	APP-015-P - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 16 OF 22; APP. 2.7-J THROUGH 2.7-L 1 OF 2; ML14035A043.	06/20/2014	ML14175B615
456	APP-015-S - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 19 OF 22; APP 2.7-N THROUGH 2.8-H; ML14035A046.	06/20/2014	ML14172A081
457	NRC-079 - 09/09/2013 NRC STAFF RAI: EMAIL CONCERNING REVIEW OF POWERTECH'S ADDITIONAL STATISTICAL ANALYSIS OF RADIUM-226 SOIL SAMPLING DATA AND GAMMA MEASUREMENTS AND REQUEST FOR INFORMATION. ADAMS (ACCESSION NO.	09/09/2013	ML14176B052
458	NRC-038-B - INFORMAL INFORMATION GATHERING MEETING - PINE RIDGE, SD INVITATION TO SECTION 106 CONSULTATION REGARDING DEWEY-BURDOCK PROJECT (ADAMS ACCESSION NO. ML111870622) (PACKAGE).	07/08/2011	ML14172A082
459	NRC-089 - NUREG-1910, FINAL REPORT, SUPPLEMENT 3, ENVIRONMENTAL IMPACT STATEMENT FOR THE LOST CREEK ISR PROJECT IN SWEETWATER COUNTY, WYOMING. SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES....	06/30/2011	ML14172A085

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460	APP-015-U - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 21 OF 22; APP. 2.9-M THROUGH 3.1-A; ML14035A048.	12/31/2013	ML14176B072
461	APP-016-B - REVISED TR RAI RESPONSE; TEXT PART 1: ML11208B712.	06/30/2011	ML14172A093
462	APP-016-AA - REVISED TR RAI RESPONSE; APPENDICES PART 19; APP. 3.1-A 2 OF 2; ML11208B924.	06/20/2014	ML14172A094
463	APP-015-V - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 22 OF 22; APP. 3.1-B THROUGH 7.3-D; ML14035A049.	06/20/2014	ML14172A095
464	APP-016-A - REVISED RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR THE TECHNICAL REPORT (TR) FOR THE DEWEY-BURDOCK PROJECT; COVER LETTER; ML11207A711.	06/20/2014	ML14172A096
465	APP-016-C - REVISED TR RAI RESPONSE; TEXT PART 2; ML11208B719.	06/20/2014	ML14172A097
466	APP-016-I - REVISED TR RAI RESPONSE; APPENDICES PART 1; APP. 2.5-D THROUGH 2.6-G; ML11208B765.	06/30/2011	ML14176B079

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467	APP-016-D - REVISED TR RAI RESPONSE; TEXT PART 3; ML11208B714.	06/20/2014	ML14172A106
468	APP-016-J - REVISED TR RAI RESPONSE; APPENDICES PART 2; APP. 2.6-H 1 OF 3; ML11208B766.	06/20/2014	ML14172A108
469	APP-016-V, REVISED TR RAI RESPONSE; APPENDICES PART 14; APP. 2.7-L 4 OF 4; ML11208B865.	06/20/2014	ML14172A109
470	APP-016-R - REVISED TR RAI RESPONSE; APPENDICES PART 10; APP. 2.7-K; ML11208B832.	06/20/2014	ML14172A110
471	APP-016-W, REVISED TR RAI RESPONSE; APPENDICES PART 15; APP. VOL. 4 COVER; ML11208B870.	06/20/2014	ML14172A111
472	APP-016-F - REVISED TR RAI RESPONSE; EXHIBITS PART 2; EXH. 2.6-5; ML11208B763.	06/20/2014	ML14172A112
473	APP-016-L - REVISED TR RAI RESPONSE; APPENDICES PART 4; APP. 2.6-H 3 OF 3; ML11208B770.	06/20/2014	ML14172A113
474	APP-016-K - REVISED TR RAI RESPONSE; APPENDICES PART 3; APP. 2.6-H 2 OF 3; ML11208B769.	06/30/2011	ML14172A114

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475	APP-016-E - REVISED TR RAI RESPONSE; EXHIBITS PART 1; EXH. 2.6-1 THROUGH 2.6-4; ML11208B716.	06/30/2011	ML14172A115
476	APP-016-BB - REVISED TR RAI RESPONSE; APPENDICES PART 20; APP. 6.1-A THROUGH 7.3-C; ML11208B925.	06/20/2014	ML14172A107
477	NRC-098 - FWS. WHOOPING CRANES AND WIND DEVELOPMENT - AN ISSUE PAPER. (APR. 2009)....	04/30/2009	ML14172A134
478	NRC-111 - BLM. "WYOMING SAGE-GROUSE RPM AMENDMENTS." MAP 8: SAGE-GROUSE LEKS. RELEASED AUGUST 2011. (JAN. 23, 2013), AVAILABLE AT HTTPS://222.BLM.GOV/EPL-FRONT-OFFICE/EPLANNING/PLANANDPROJECTSITE.DO?METHODNAME=DISPATCHTOPATTERNPAGE&CURRENTPAGEID=18704	06/20/2014	ML14172A135
479	NRC-090 - SDDENR. "REPORT TO THE CHIEF ENGINEER ON WATER PERMIT APPLICATION NO. 2686-2, POWERTECH (USA) INC., NOVEMBER 2, 2012." NOVEMBER 2012A. ADAMS ACCESSION NO.	11/02/2012	ML14172A136
480	NRC-104 - BLM. "DRAFT ENVIRONMENTAL IMPACT STATEMENT, DEWEY CONVEYOR PROJECT." DOI-BLM-MT-040-2009-002-EIS. (JAN. 2009B) (ADAMS ACCESSION NO. ML12209A089).	01/31/2009	ML14172A137

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481	NRC-100 - INFORMAL INFORMATION-GATHERING MEETINGS TRIP SUMMERY (DEC. 9, 2010) (ADAMS ACCESSION NO. ML093631627).	12/09/2010	ML14172A138
482	NRC-102 - USGS. "FRAGILE LEGACY, ENDANGERED, THREATENED, AND RARE ANIMALS OF SOUTH DAKOTA, BLACK-FOOTED FERRET (MUSTELA NIGRIPES)." (2006), AVAILABLE AT HTTP://WWW.NPWRC.USGS.GOV/RESOURCE/WILDLIFE/SDRARE/SPECIES/MUSTNIGR.HTM.	06/13/2014	ML14172A139
483	NRC-106 - FWS. "SOUTH DAKOTA FIELD OFFICE, BLACK-FOOTED FERRET," (SEP. 9, 2013), AVAILABLE AT HTTP://WWW.FWS.GOV/SOUTHDAKOTAFIELDOFFICE/B-FFERRET.HTM.	06/13/2014	ML14172A140
484	NRC-096 - COMMENT (14) OF ROBERT F. STEWART ON BEHALF OF THE DEPT. OF THE INTERIOR, OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE ON DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DSEIS), DEWEY-BURDOCK PROJECT.....	01/04/2014	ML14172A141
485	NRC-095 - LETTER TO P. STROBEL RE: EPAS RESPONSE COMMENT TO FSEIS (MAR. 25, 2014) (ADAMS ACCESSION NO. ML14078A044).	06/20/2014	ML14172A127
486	NRC-103 - FWS. "SPECIES PROFILE, WHOOPING CRANE (GRUS AMERICANA)".	06/20/2014	ML14172A128

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
487	NRC-105 - BLM. "FINAL STATEWIDE PROGRAMMATIC BIOLOGICAL ASSESSMENT: BLACK-FOOTED FERRET (MUSTELA NIGRIPES)." AUGUST, 2005. CHEYENNE, WYOMING: U.S. BUREAU OF LAND MANAGEMENT, WYOMING STATE OFFICE.	08/25/2005	ML14172A129
488	NRC-099 - AVIAN POWER LINE INTERACTION COMMITTEE. "SUGGESTED PRACTICES FOR AVIAN PROTECTION ON POWER LINES: THE STATE OF THE ART IN 2006" (ADAMS ACCESSION NO. ML12243A391).	06/20/2014	ML14172A130
489	NRC-101 - EMAIL FROM MITCHELL IVERSON OF BLM. (JUNE 25, 2012) & WILDLIFE STIPULATIONS IN THE CURRENT 1986 SOUTH DAKOTA RESOURCE MANAGEMENT PLAN. (ADAMS ACCESSION NO. ML12249A030).	06/28/2012	ML14172A131
490	NRC-094 - NRC REGULATORY GUIDE 3.11, REV. 3, DESIGN, CONSTRUCTION, AND INSPECTION OF EMBANKMENT RETENTION SYSTEMS AT URANIUM RECOVERY FACILITIES, NOVEMBER 2008, (ADAMS ACCESSION NO. ML082380144).	11/30/2008	ML14172A132
491	NRC-091 - NRC. "STAFF ASSESSMENT OF GROUNDWATER IMPACTS FROM PREVIOUSLY LICENSED IN-SITU URANIUM RECOVERY FACILITIES." MEMORANDUM TO CHAIRMAN JACZKO, COMMISSIONER KLEIN, AND COMMISSIONER SVINICKI, NRC FROM C. MILLER....	07/10/2009	ML14172A133

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492	APP-021-A - DEWEY-BURDOCK PROJECT TECHNICAL REPORT (TR); RE-SUBMITTED AUGUST 2009; PART 1; TEXT THRU SEC. 2.7.1; ML092870298	02/28/2009	ML14176B145
493	APP-016-T - REVISED TR RAI RESPONSE; APPENDICES PART 12; APP. 2.7-L 2 OF 4; ML11208B868.	06/30/2011	ML14172A144
494	APP-016-P - REVISED TR RAI RESPONSE; APPENDICES PART 8; APP. 2.7-H 3 OF 4; ML11208B784.	10/03/2008	ML14172A145
495	APP-021-B, DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 2; TEXT SEC. 2.7.2 THRU 2.9; ML092870295.	06/20/2014	ML14172A146
496	APP-021-BB - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 28; APP. 2.6-C THRU 2.7-B(PARTIAL); ML092870351	06/20/2014	ML14172A150
497	APP-021-EE - DEWEY-BURDOCK TR; RE-SUBMITTED AUGUST 2009; PART 31; APP. 2-8.F (PARTIAL); ML092870357.	06/20/2014	ML14172A151
498	APP-021-H - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 8; PLATE 2.6-2; ML092870317.	06/20/2014	ML14172A158

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
499	NRC-156 - JOHNSON, R.H. "REACTIVE TRANSPORT MODELING FOR THE PROPOSED DEWEY-BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA, USA." INTERNATIONAL MINE WATER ASSOCIATION, MINE WATER - MANAGING THE CHALLENGES. 2011	07/15/2014	ML14196A575
500	NRC STAFF REVISED HEARING EXHIBIT LIST	07/15/2014	ML14196A576
501	NRC-151 - NRC STAFF REBUTTAL TESTIMONY	07/15/2014	ML14196A577
502	NRC STAFF'S REBUTTAL STATEMENT OF POSITION	07/15/2014	ML14196A578
503	NRC-154 - EXCEPT FROM BATES, R. AND J. JACKSON. DICTIONARY OF GEOLOGICAL TERMS 3RD EDITION. (1984).	07/15/2014	ML14196A579
504	NRC-155 - LETTER FROM SOUTH DAKOTA HISTORICAL SOCIETY RE: DEWEY-BURDOCK PROJECT, (JAN. 2014) (ADAMS ACCESSION NO. ML14014A307).	01/14/2014	ML14196A580
505	NRC-153 - EXCEPT FROM PARKER, P. AND T. KING. GUIDELINES FOR EVALUATING AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES,NATINAL REGISTER OF HISTORIC PLACES BULLETIN 38. (1990) (ADAMS ACCESSION NO. ML12240A371)	07/15/2014	ML14196A581

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
506	STATEMENT OF PROFESSIONAL QUALIFICATIONS OF PO WEN (KEVIN HSUEH	07/15/2014	ML14196A582
507	OGLALA SIOUX TRIBE'S REBUTTAL STATEMENT	07/15/2014	ML14197A000
508	OST-18 - REBUTTAL TESTIMONY OF DR. ROBERT E. MORAN	07/15/2014	ML14197A005
509	OST-16 - FEBRUARY 20, 2013 LETTER FROM STANDING ROCK SIOUX TO NRC STAFF	02/20/2013	ML14197A002
510	OST-017 - MARCH 22, 2013 LETTER FROM OGLALA SIOUX TRIBE TO NRC STAFF	03/22/2013	ML14197A003
511	OGLALA SIOUX TRIBE HEARING EXHIBITS	07/15/2014	ML14197A004
512	APP-021-K - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 11; PLATE 2.6-5; ML092870306.	06/20/2014	ML14172A159
513	APP-021-O - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 15; PLATE 2.6-9; ML092870311.	07/31/2008	ML14172A160

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
514	APP-021-L - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 12; PLATE 2.6-6; ML092870307.	07/31/2008	ML14172A161
515	APP-021-N - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 14; PLATE 2.6-8; ML092870310.	06/20/2014	ML14172A162
516	APP-021-F - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 6; PLATE 2.5-1; ML092870315.	08/31/2009	ML14172A163
517	APP-021-M - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 13; PLATE 2.6-7; ML092870309.	06/20/2014	ML14172A164
518	APP-021-G - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 7; PLATE 2.6-1; ML092870316.	05/19/1982	ML14172A165
519	APP-021-I - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 9; PLATE 2.6-3; ML092870318.	06/30/2009	ML14172A152
520	APP-021-D - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 4; PLATE 1.5-1; ML092870313.	06/20/2014	ML14172A153
521	APP-021-J - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 10; PLATE 2.6-4; ML092870305.	08/31/2009	ML14172A154

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
522	APP-021-HH - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 34; APP. 7.3-A (PARTIAL) THRU 7.3-B; ML092870344.	08/21/2008	ML14177A566
523	APP-021-C - DEWEY BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009, PART 3; TEXT SEC 3 THRU END; ML092870299.	06/20/2014	ML14172A156
524	APP-021-CC - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 29, APP. 2.7-B (PARTIAL) THRU 2.7-F; ML092870370.	06/20/2014	ML14172A157
525	NRC-122 - SAGE-GROUSE WORKING GROUP (NORTHEAST WYOMING SAGE-GROUSE WORKING GROUP). "NORTHEAST WYOMING SAGE-GROUSE CONSERVATION PLAN." (2006) (ADAMS ACCESSION NO. ML12240A374).	08/15/2006	ML14175B619
526	NRC-131, E-MAIL FROM TERRY QUESINBERRY, FISH AND WILDLIFE BIOLOGIST, U.S. FISH AND WILDLIFE SERVICE, TO HAIMANOT YILMA, ENVIRONMENTAL PROJECT MANAGER FOR DEWEY-BURDOCK, OFFICE OF FEDERAL AND STATE MATERIALS AND ENVIRONMENTAL....	06/20/2014	ML14172A166
527	NRC-120 - PETERSON, R.A. "THE SOUTH DAKOTA BREEDING BIRD ATLAS." JAMESTOWN, NORTH DAKOTA: NORTHERN PRAIRIE WILDLIFE RESEARCH CENTER. 1995.HTTP://WWW.NPWRC.USGS.GOV/%20% 20RESOURCE/BIRDS/SDATLAS/INDEX.HTM	06/20/2014	ML14172A174

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
528	NRC-130, E-MAIL FROM TERRY QUESINBERRY, FISH AND WILDLIFE BIOLOGIST, U.S. FISH AND WILDLIFE SERVICE, TO AMY HESTER, RESEARCH SCIENTIST, CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES, SOUTHWEST RESEARCH INSTITUTE.....	08/27/2012	ML14172A175
529	NRC-115 - EMAIL WITH ATTACHMENTS FROM MITCHELL IVERSON, BLM, RE: MEETING AT 11:30 EST(JUNE 25, 2012) (ADAMS ACCESSION NO. ML12250A802).	06/25/2012	ML14172A176
530	NRC-116 - ATTACHMENT 1, APPENDIX C, SOUTH DAKOTA FIELD OFFICE MITIGATION GUIDELINES (JUNE 25, 2012) (ADAMS ACCESSION NO. ML12250A827).	06/20/2014	ML14172A177
531	NRC-117 - APPENDIX D SOUTH DAKOTA FIELD OFFICE RECLAMATION GUIDELINES.	06/20/2014	ML14172A178
532	NRC-127 - DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES RECOMMENDATION POWERTECH (USA) INC. LARGE SCALE MINE PERMIT APPLICATION. (APRIL 15, 2013), AVAILABLE AT HTTP://DENR.SD.GOV/DES/MM/DOCUMENTS/POWERTECH1/DENRREC4-15-13.PDF.	06/20/2014	ML14172A179
533	NRC-121 - BLM. "NEWCASTLE RESOURCE MANAGEMENT PLAN."(2000) (ADAMS ACCESSION NO. ML12209A101).	06/20/2014	ML14172A180

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
534	NRC-113 - ENDANGERED AND THREATENED WILDLIFE AND PLANTS; 12-MONTH FINDINGS FOR PETITIONS TO LIST THE GREATER SAGE-GROUSE (CENTROCERCUS UROPHASIANUS) AS THREATENED OR ENDANGERED. 75 FED. REG. 13,909-13,959....	03/23/2010	ML14172A181
535	NRC-129 - S. LARSON, FWS LETTER RE ENVIRONMENTAL COMMENTS ON POWERTECH DEWEY-BURDOCK PROJECT, CUSTER AND FALL RIVER COUNTY, SOUTH DAKOTA. (MAR. 29, 2010) (ADAMS ACCESSION NO. ML1009705560).	03/29/2010	ML14172A167
536	NRC-112 - TRAVSKY, A., BEAUVAIS, G.P. "SPECIES ASSESSMENT FOR THE WHOOPING CRANE (GRUS AMERICANA) IN WYOMING." OCTOBER 2004.CHEYENNE, WYOMING: UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT,....	10/31/2004	ML14172A168
537	NRC-123 - SDGFP. "SAGE GROUSE POPULATION DYNAMICS."(NOV. 20, 2009), AVAILABLE AT HTTP://GFP.SD.GOV/HUNTING/SMALL-GAME/SAGE-GROUSE-POPULATION-DYNAMICS.ASPX	06/20/2014	ML14172A169
538	NRC-119 - BLM. EMAIL SUBJECT "WILDLIFE AND SPECIAL STATUS STIPULATIONS IN THE 1896 SOUTH DAKOTA RESOURCE MANAGEMENT PLAN" AND ATTACHMENT. FROM M. IVERSON, BLM, ACTING FIELD MANAGER, SOUTH DAKOTA FIELD OFFICE, TO H. YILMA, PROJECT MANAGER....	06/20/2014	ML14172A170

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
539	NRC-126 - U.S. FISH AND WILDLIFE SERVICE. "GREATER SAGE-GROUSE (CENTROCERCUS UROPHASIANUS) CONSERVATION OBJECTIVES: FINAL REPORT"(FEB. 2013), AVAILABLE AT HTTP://WWW.FWS.GOV/MOUNTAIN-PRAIRIE/EA/03252013_COT_REPORT.PDF	06/20/2014	ML14172A171
540	NRC-114 - HABITAT ASSESSMENT AND CONSERVATION STRATEGY FOR SAGE GROUSE AND OTHER SELECTED SPECIES ON BUFFALO GAP NATIONAL GRASSLAND, U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE (SEP. 2005) (ADAMS ACCESSION NO.....	06/20/2014	ML14172A172
541	NRC-118 - BLM. EMAIL SUBJECT "APPENDIX E WILDLIFE STIPULATIONS" AND ATTACHMENTS. FROM M. IVERSON, BLM, ACTING FIELD MANAGER, SOUTH DAKOTA FIELD OFFICE, TO A. HESTER, CNWRA, SOUTHWEST RESEARCH INSTITUTE. (JUNE 25, 2012.)	04/02/2012	ML14172A173
542	NRC-136-A - PALMER, L. AND J.M. KRUSE. "EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS." BLACK HILLS ARCHAEOLOGICAL REGION. VOLUMES I AND II. ARCHAEOLOGICAL CONTRACT SERIES NO. 251....	06/20/2014	ML14172A182
543	NRC-136-B - PALMER, L. AND J.M. KRUSE EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS BLACK HILLS ARCHAEOLOGICAL REGION VOLUMES I AND II....	04/13/2012	ML14172A183

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
544	NRC-134, SAFETY EVALUATION REPORT FOR THE DEWEY-BURDOCK PROJECT FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA. MATERIALS LICENSE NO. SUA-1600 (APRIL 2014) ADAMS ACCESSION NO. ML14043A347.	04/30/2014	ML14172A184
545	NRC-132 - IMPROVING THE PROCESS FOR PREPARING EFFICIENT AND TIMELY ENVIRONMENTAL REVIEWS UNDER NEPA.	03/06/2012	ML14172A185
546	NRC-137 - DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, RECOMMENDATION, POWERTECH (USA) INC, LARGE SCALE MINE PERMIT APPLICATION AT 6 (APRIL 15, 2013), AVAILABLE AT HTTP://DENR.SD.GOV/DES/MM/DOCUMENTS/POWERTECH1/DENRREC4-15-13.PDF.	04/15/2013	ML14172A186
547	NRC-136-C - PALMER, L. AND J.M. KRUSE. "EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS." BLACK HILLS ARCHAEOLOGICAL REGION. VOLUMES I AND II. ARCHAEOLOGICAL	04/13/2012	ML14172A187
548	NRC-135, SAFETY EVALUATION REPORT FOR THE DEWEY-BURDOCK PROJECT FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA, MATERIALS LICENSE NO. SUA-1600, DOCKET NO. 40-9075 (MARCH 2013), ADAMS ACCESSION NO. ML13052A182.	04/30/2014	ML14172A188
549	APP-040-G - ER PLATE 3.3-3; ML092870383.	07/31/2008	ML14176B152

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
550	APP-016-U - REVISED TR RAI RESPONSE; APPENDICES PART 13; APP. 2.7-L 3 OF 4; ML11208B864.	06/30/2011	ML14172A189
551	APP-021-Z - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 26; PLATE 3.1-2; ML092870329.	06/11/2008	ML14172A200
552	APP-040-D - ER PLATE 3.1-1; ML092870380.	06/20/2014	ML14172A201
553	APP-021-R - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 18; PLATE 2.6-12; ML092870321.	06/20/2014	ML14172A202
554	APP-021-V - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 22; PLATE 2.8-1; ML092870325.	06/20/2014	ML14172A203
555	APP-040-E - ER PLATE 3.3-1; ML0921870381.	06/20/2014	ML14172A204
556	APP-021-X - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 24; PLATE 2.8-3; ML092870327.	06/20/2014	ML14172A205

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
557	APP-030 - NUREG/CR-6733, A BASELINE RISK-INFORMED, PERFORMANCE-BASED APPROACH FOR IN SITU LEACH URANIUM EXTRACTION LICENSEES - FINAL REPORT, JULY 2001; ML012840152.	09/30/2001	ML14172A206
558	APP-021-U - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 21; PLATE 2.6-15; ML092870324.	06/20/2014	ML14172A207
559	APP-021-P - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 16; PLATE 2.6-10; ML092870312.	08/31/2009	ML14172A190
560	APP-021-Q - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 17; PLATE 2.6-11; ML092870320.	06/20/2014	ML14172A191
561	APP-021-Y - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 25; PLATE 3.1-1; ML092870328.	06/20/2014	ML14172A192
562	APP-021-W - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 23; PLATE 2.8-2; ML092870326.	06/20/2014	ML14172A193
563	APP-021-T - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 20; PLATE 2.6-14; ML092870323.	08/31/2009	ML14172A194

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
564	APP-021-S - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 19; PLATE 2.6-13; ML092870322.	06/20/2014	ML14172A195
565	APP-040-F - ER PLATE 3.3-1; ML092870381.	07/31/2008	ML14172A196
566	APP-040-J - ER PLATE 3.3-6; ML092870387.	07/31/2008	ML14172A197
567	APP-040-A - DEWEY-BURDOCK PROJECT ENVIRONMENT REPORT (ER); RE-SUBMITTAL AUGUST 2009; PART 1; COVER THRU SEC. 3.4.2.1.1; ML09270345.	02/28/2009	ML14172A198
568	APP-040-I - ER PLATE 3.3-5; ML092870386.	11/11/2008	ML14172A199
569	NRC-081 - GOTT, G.B., D.E. WOLCOTT, AND C.G. BOWLES. STRATIGRAPHY OF THE INYAN KARA GROUP AND LOCALIZATION OF URANIUM DEPOSITS, SOUTHERN BLACK HILLS, SOUTH DAKOTA AND WYOMING. ML120310042. U.S. GEOLOGICAL SURVEY WATER RESOURCES INVESTIGATION REPORT....	12/31/1974	ML14172A086
570	NRC-076 - NUREG/CR-6705, HISTORICAL CASE ANALYSIS OF URANIUM PLUME ATTENUATION.. (FEB. 28, 2001) (ADAMS ACCESSION NO. ML010460162).	02/28/2001	ML14172A087

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
571	NRC-082 - DRISCOLL, D.G., J.M. CARTER, J.E. WILLIAMSON, AND L.D. PUTNAM. HYDROLOGY OF THE BLACK HILLS AREA, SOUTH DAKOTA. U.S. GEOLOGICAL SURVEY WATER RESOURCES INVESTIGATION REPORT 02-4094. (ADAMS ACCESSION NO. ML12240A218). 2002.	06/20/2014	ML14172A088
572	NRC-082 - DRISCOLL, D.G., J.M. CARTER, J.E. WILLIAMSON, AND L.D. PUTNAM. HYDROLOGY OF THE BLACK HILLS AREA, SOUTH DAKOTA. U.S. GEOLOGICAL SURVEY WATER RESOURCES INVESTIGATION REPORT 02-4094. (ADAMS ACCESSION NO. ML12240A218). 2002.	06/20/2014	ML14172A088
573	NRC-080 - 12/09/2013 NRC STAFF RAI: NRC STAFF REVIEW OF REVISED STATISTICAL ANALYSIS OF THE RADIUM 226 (SOIL) AND GAMMA RADIATION CORRELATION FOR SCREENING SURVEYS AT THE PROPOSED DEWEY-BURDOCK PROJECT REQUESTING ADDITIONAL INFORMATION....	12/09/2013	ML14172A090
574	NRC-074 - NRC (1980). REGULATORY GUIDE 4.14, RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING AT URANIUM MILLS. ADAMS ACCESSION NO. ML003739941.	04/25/1980	ML14172A091
575	NRC-075 - NRC, 2009. STAFF ASSESSMENT OF GROUND WATER IMPACTS FROM PREVIOUSLY LICENSED IN-SITU URANIUM RECOVERY FACILITIES, MEMORANDUM FROM C. MILLER TO CHAIRMAN JACZKO , ET AL. WASHINGTON DC: USNRC, JULY 10, 2009D ADAMS ACCESSION NO. ML091770385.	06/20/2014	ML14172A092

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
576	NRC-083 - BRADDOCK,W.A. GEOLOGY OF THE JEWEL CAVE SW QUADRANGLE CUSTER COUNTY, SOUTH DAKOTA. U.S. GEOLOGICAL SURVEY BULLETIN 1063-G. (08 APRIL 2013)....	06/20/2014	ML14172A083
577	NRC-078 - 09/13/2012 NRC STAFF RAI: SUMMARY OF AUGUST 30, 2012 PUBLIC MEETING WITH POWERTECH INC, TO DISCUSS POWERTECH'S PROPOSED ENVIRONMENTAL MONITORING PROGRAM RELATED TO THE PROPOSED DEWEY-BURDOCK PROJECT. (ADAMS ACCESSION NO. ML12255A258).	09/13/2014	ML14172A084
578	APP-016-M - REVISED TR RAI RESPONSE; APPENDICES PART 5; APP. 2.7-B THROUGH 2.7-G; ML11208B771.	06/20/2014	ML14176B094
579	APP-016-H - REVISED TR RAI RESPONSES; EXHIBITS PART 4; EXH. 3.1-2 THROUGH 5.7-1; ML11208B767.	06/22/2011	ML14172A118
580	APP-016-Q - REVISED TR RAI RESPONSE; APPENDICES PART 9; APP 2.7-H 4 OF 4; ML11208B827.	04/14/2009	ML14172A119
581	APP-016-S - REVISED TR RAI RESPONSE; APPENDICES PART 11; APP. 2.7-L 1 OF 4; ML112088833.	06/30/2011	ML14176B117
582	APP-016-O - REVISED TR RAI RESPONSE; APPENDICES PART 7; APP. 2.7-H 2 OF 4; ML11208B778.	06/20/2014	ML14172A122

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583	APP-016-N - REVISED TR RAI RESPONSE; APPENDICES PART 6; APP. 2.7-H 1 OF 4; ML11208B777.	06/20/2014	ML14172A123
584	APP-021-E - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 5; PLATE 1.5-2; ML092870314.	06/20/2014	ML14172A124
585	APP-016-Y - REVISED TR RAI RESPONSE; APPENDICES PART 17; APP.2.9-B THROUGH 2.9-K; ML112150229.	06/20/2014	ML14172A125
586	NRC-107 - FWS. "BLACK-FOOTED FERRET DRAFT RECOVERY PLAN." SECOND REVISION, (FEB. 2013), AVAILABLE AT HTTP://WWW.FWS.GOV/MOUNTAIN-PRAIRIE/SPECIES/MAMMALS/BLACKFOOTEDFERRET/2013DRAFTREVISEDRECOVERYPLAN.PDF.	02/28/2013	ML14176B137
587	NRC-097 - REQUEST FOR INFORMATION REGARDING ENDANGERED OR THREATENED SPECIES AND CRITICAL HABITAT FOR THE POWERTECH INC. PROPOSED DEWEY-BURDOCK IN-SITU RECOVERY FACILITY NEAR EDGEMONT SOUTH DAKOTA (MAR. 15, 2010).(ADAMS ACCESSION NO. ML100331503).	03/15/2010	ML14172A126
588	APP-040-B - DEWEY-BURDOCK PROJECT ENVIRONMENTAL REPORT (ER); RE-SUBMITTED AUGUST 2009; PART 2; SEC. 3.4.2.1.2 THRU 3.12; ML092870346.	02/28/2009	ML14175B621

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
589	APP-040-L - ER PLATE 3.3-8; ML092870389.	07/31/2008	ML14172A208
590	APP-040-K - ER PLATE 3.3-7; ML092870388.	07/31/2008	ML14172A215
591	APP-040-W - ER REPLACEMENT PLATES; ML093370652.	06/20/2014	ML14172A216
592	APP-040-T - ER PLATE 3.5-1; ML092870395.	11/11/2008	ML14172A217
593	APP-040-H - ER PLATE 3.3-4; ML092870591.	11/14/2008	ML14172A218
594	APP-040-R - ER PLATE 3.3-14; ML092870590.	06/20/2014	ML14172A219
595	APP-040-M - ER PLATE 3.3-9; ML092870390.	07/31/2008	ML14172A220
596	APP-040-O - ER PLATE 3.3-11; ML092870586.	06/20/2014	ML14172A221

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597	APP-040-P - ER PLATE 3.3-12; ML092870588.	06/20/2014	ML14172A222
598	APP-040-Q - ER PLATE 3.3-13; ML092870589.	06/20/2014	ML14172A209
599	APP-040-N - ER PLATE 3.3-10; ML092870592.	12/03/2008	ML14172A210
600	APP-040-U - ER PLATE 3.5-2; ML092870397.	11/04/2008	ML14172A211
601	APP-040-C - DEWEY-BURDOCK PROJECT ENVIRONMENTAL REPORT (ER); RE-SUBMITTED AUGUST 2009; PART 1; SEC. 4 THRU END; ML092870360.	06/20/2014	ML14172A212
602	APP-040-V - ER PLATE 6.1-1; ML092870593.	01/15/2009	ML14172A213
603	APP-040-S - ER PLATE 3.3-15; ML092870394.	11/11/2008	ML14172A214
604	APP-040-CC - ER APP. 3.5-J THRU 3.6-C; ML092870407.	06/20/2014	ML14176B178

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
605	APP-051 - GROUNDWATER DISCHARGE PLAN (GDP) PERMIT APPLICATION, AS UPDATED WITH REPLACEMENT PAGES THROUGH NOVEMBER 2012.	03/31/2012	ML14172A251
606	APP-015-T - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 20 OF 22; APP. 2.8-I THROUGH 2.9-L; ML14035A047.	12/31/2013	ML14175B627
607	APP-015-R - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 18 OF 22; APP. 2.7-M; ML14035A045.	06/30/2011	ML14172A255
608	NRC-014 - NUREG-1748, FINAL REPORT, ENVIRONMENTAL REVIEW GUIDANCE FOR LICENSING ACTIONS ASSOCIATED WITH NMSS PROGRAMS (AUG. 2003) (ADAMS ACCESSION NO. ML032450279).	08/31/2003	ML14175B628
609	NRC-025-A - HDR, ENGINEERING INC., "ASSESSMENT OF THE VISUAL EFFECTS OF THE POWDER RIVER BASIN PROJECT, NEW BUILD SEGMENT, ON PREVIOUSLY IDENTIFIED HISTORIC PROPERTIES IN SOUTH DAKOTA AND WYOMING"....	10/20/2009	ML14172A256
610	NRC-013 - NUREG-1569, STANDARD REVIEW PLAN FOR IN-SITU LEACH URANIUM EXTRACTION LICENSE APPLICATIONS (JUNE 4, 2003) (ADAMS ACCESSION NO. ML031550272).	06/30/2003	ML14172A257

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
611	NRC-025-B - HDR, ENGINEERING INC. "ASSESSMENT OF THE VISUAL EFFECTS OF THE POWDER RIVER BASIN PROJECT, NEW BUILD SEGMENT, ON PREVIOUSLY IDENTIFIED HISTORIC PROPERTIES IN SOUTH DAKOTA AND WYOMING."....	10/31/2009	ML14172A258
612	APP-016-X - REVISED TR RAI RESPONSE; APPENDICES PART 16; APP. 2.7-M; ML11208B872.	06/30/2011	ML14177A565
613	APP-021-AA - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 27; APP. 2.2-A THRU 2.6-B; ML092870350.	10/01/2008	ML14175b634
614	APP-021-FF - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 32; APP. 2.8-G THRU 2.9-A; ML092870358.	06/20/2014	ML14172A260
615	APP-040-Z - ER APP. 3.4-B THRU 3.4-E; ML092870414.	06/20/2014	ML14172A224
616	APP-040-Y - ER APP. 3.3-F THRU 3.4-A; ML092870421.	06/20/2014	ML14172A225
617	APP-040-X - ER APP. 3.3-A THRU 3.3-E; ML092870411.	06/20/2014	ML14172A226

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618	APP-042-A - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, COVER LETTER; ML12244A519.	08/01/2012	ML14172A227
619	NRC-148 - LETTER FROM OGLALA SIOUX TRIBE IN RESPONSE TO FEBRUARY 8, 2013 LETTER TO TRIBAL HISTORIC PRESERVATION OFFICER MARCH 23, 2013 (ADAMS ACCESSION NO. ML13141A362).	03/22/2013	ML14175B622
620	NRC-139 - U.S. GEOLOGICAL SURVEY, 2006, QUATERNARY FAULT AND FOLD DATABASE FOR THE UNITED STATES, ACCESSED JUNE 20, 2014, FROM USGS WEB SITE: HTTP//EARTHQUAKES.USGS.GOV/REGIONAL/ QFAULTS/.	06/20/2014	ML14172A228
621	NRC-125 - U.S. FISH AND WILDLIFE SERVICE PRESS RELEASE AND DRAFT REPORT TO HELP SAGE-GROUSE CONSERVATION OBJECTIVES (AUGUST 23, 2012) (ADAMS ACCESSION NO. ML12276A248)....	06/20/2014	ML14172A235
622	NRC-143 - LETTER TO OGLALA SIOUX TRIBE RE: INVITATION FOR GOVERNMENT-TO-GOVERNMENT MEETING CONCERNING LICENSING ACTIONS FOR PROPOSED URANIUM RECOVERY PROJECTS. (MAR. 12, 2013) (ADAMS ACCESSION NO. ML13071A653).	03/12/2013	ML14172A236
623	NRC-149 - 2013/08/30 POWERTECH DEWEY-BURDOCK LA - REQUEST FOR AVAILABILITY TO DISCUSS DEVELOPMENT OF A PA FOR THE DEWEY BURDOCK PROJECT. (AUG. 30, 2013) (ADAMS ACCESSION NO. ML13267A221).	08/30/2013	ML14172A237

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624	NRC-109 - SOUTH DAKOTA STATE UNIVERSITY. "SUITABLE HABITAT PREDICTED FOR THE BLACK-FOOTED FERRET IN SOUTH DAKOTA." AVAILABLE AT HTTP://WWW.SDSTATE.EDU/NRM/GAP/MAMMALS/UPLOAD/BLFOOTFERRET-MODEL.PDF.	06/20/2014	ML14172A238
625	NRC-138 - JACK R. KEENE (1973). GROUND-WATER RESOURCES OF THE WESTERN HALF OF FALL RIVER COUNTY, SOUTH DAKOTA. SOUTH DAKOTA DEPARTMENT OF NATURAL RESOURCE DEVELOPMENT, GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS, NO. 109, 90 PG....	12/31/1973	ML14172A239
626	NRC-142 - SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT. (MAR. 17, 2014) (ADAMS ACCESSION NO. ML14077A002. PAGES 5-1	02/05/2014	ML14172A240
627	NRC-093 - EPA COMMENTS ON FSEIS; (ADAMS ACCESSION NO. ML14070A230).	03/10/2014	ML14172A241
628	NRC-146 - 2013/03/13 POWERTECH DEWEY-BURDOCK LA - RE: FIELD SURVEY IN THE SPRING OF 2013. (MAR. 13, 2013) (ADAMS ACCESSION NO. ML13078A388).	06/20/2014	ML14172A242
629	NRC-144 - SRI (SRI FOUNDATION). "OVERVIEW OF PLACES OF TRADITIONAL AND CULTURAL SIGNIFICANCE, CAMECO/POWERTECH PROJECT AREAS." RIO RANCHO, NEW MEXICO: SRI FOUNDATION. (JUNE 8, 2012) (ADAMS ACCESSION NO. ML12262A113).	06/08/2014	ML14172A229

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
630	NRC-147 - 2013/03/13 POWERTECH DEWEY-BURDOCK LA - RE: FIELD SURVEY FOR DEWEY-BURDOCK. (MAR. 13, 2013) (ADAMS ACCESSION NO. ML13078A384).	03/13/2014	ML14172A230
631	NRC-108 - SOUTH DAKOTA STATE UNIVERSITY. "SOUTH DAKOTA GAP ANALYSIS PROJECT." BROOKINGS, SOUTH DAKOTA: SOUTH DAKOTA STATE UNIVERSITY, DEPARTMENT OF WILDLIFE AND FISHERIES SCIENCES (JAN. 13, 2012), AVAILABLE AT HTTP://WWW.SDSTATE.EDU/NRM/GAP/INDEX.CFM.	06/20/2014	ML14172A231
632	NRC-085 - DARTON, N.H. GEOLOGY AND WATER RESOURCES OF THE NORTHERN PORTION OF THE BLACK HILLS AND ADJOINING REGIONS OF SOUTH DAKOTA AND WYOMING. U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 65. 1909....	06/20/2014	ML14172A232
633	NRC-150 - 2013/11/14 POWERTECH DEWEY-BURDOCK LA - REMINDER: TELECONFERENCE TO DISCUSS THE DEVELOPMENT OF THE PA FOR THE DEWEY BURDOCK PROJECT IS SCHEDULED FOR FRIDAY. (NOV. 15, 2013. (ADAMS ACCESSION NO. ML13322B658).	11/14/2013	ML14172A233
634	NRC-086 - EPSTEIN, J.B. "HYDROLOGY, HAZARDS, AND GEOMORPHIC DEVELOPMENT OF GYPSUM KARST IN THE NORTHERN BLACK HILLS, SOUTH DAKOTA AND WYOMING. "U.S. GEOLOGICAL SURVEY WATER-RESOURCE INVESTIGATION REPORT 01-4011....	12/31/2001	ML14175B625

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635	NRC-088 - NUREG-1910, FINAL REPORT, SUPPLEMENT 1, ENVIRONMENTAL IMPACT STATEMENT FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES....	01/31/2011	ML14172A243
636	NRC-087 - NUREG-1910, FINAL REPORT, SUPPLEMENT 1, ENVIRONMENTAL IMPACT STATEMENT FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES....	08/31/2010	ML14172A244
637	APP-049 - WATER RIGHT PERMIT NO. 2626-2 APPLICATION AND PERMIT.	06/20/2014	ML14176B162
638	APP-042-C - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT SEC. 5 THRU 8; ML12244A520.	07/12/2012	ML14172A245
639	APP-050 - ER RAI RESPONSES, TRANSMITTAL LETTER AND TEXT; ML102380516.	08/12/2010	ML14172A246
640	APP-040-DD - ER APP. 4.6-A; ML092870409.	06/20/2014	ML14172A247

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641	APP-040-BB - ER APP. 3.5-F THRU 3.5-I; ML092870422.	06/20/2014	ML14172A248
642	APP-040-EE - ER APP. 4.14-C THRU 6.1-G; ML092870413.	10/01/2008	ML14175B632
643	APP-042-D - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT SEC. 9 THRU END; ML12244A521.	07/31/2012	ML14172A249
644	APP-045 - RESPONSES TO TECHNICAL REVIEW COMMENTS FOR DEWEY-BURDOCK LARGE SCALE MINE PERMIT APPLICATION; ML13144A182.	04/01/2013	ML14172A250
645	APP-015-E - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 5 OF 22; PLATES 2.6-9 THROUGH 2.6-12; ML14035A032.	06/20/2014	ML14175B633
646	APP-021-GG - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 33; APP. 4.2-A THRU 7.3-A (PARTIAL); ML092870343.	06/20/2014	ML14172A261
647	APP-016-G - REVISED TR RAI RESPONSE; EXHIBITS PART 3; EXH. 2.6-6 THROUGH 3.1-1; ML11208B764.	06/20/2014	ML14175B635

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648	APP-021-DD - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 30; APP. 2.7-G THRU 2.8-F (PARTIAL); ML092870354.	06/20/2014	ML14175B595
649	APP-016-Z - REVISED TR RAI RESPONSE; APPENDICES PART 18; APP. 3.1-A 1 OF 2; ML11208B922.	07/31/2010	ML14172A262
650	NRC-008-A-1 - NUREG-1910, SUPPLEMENT 4, VOL. 1, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT	01/31/2014	ML14175B597
651	NRC-008-A-2 - NUREG-1910, SUPPLEMENT 4, VOL. 1, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL....	06/20/2014	ML14172A263
652	NRC-009-A-1 - NUREG-1910, SUPPLEMENT 4, VOL. 1, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT....	06/20/2014	ML14177A568

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653	NRC-008-B-1 - NUREG-1910, SUPPLEMENT 4, VOL. 2, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL	01/31/2014	ML14172A264
654	NRC-008-B-2 - NUREG-1910, SUPPLEMENT 4, VOL. 2., FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH....	01/31/2014	ML14175B636
655	NRC-010-A-2 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4)(MAY 2009) (ADAMS ACCESSION NO. ML091480244 PAGE 153-512	06/20/2014	ML14176B166
656	NRC-010-A-1 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4) (MAY 2009) (ADAMS ACCESSION NO.	05/31/2009	ML14172A265
657	NRC-009-A-2 - NUREG-1910, SUPPLEMENT 4, VOL. 1, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC	11/30/2012	ML14172A266

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658	NRC-009-B-1 - NUREG-1910, S4, V2, DFC, EIS FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPL TO THE GEIS FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTER 5 TO 11 AND APPENDICES)....	11/30/2012	ML14172A267
659	NRC-009-B-2 - NUREG-1910, SUPPLEMENT 4, VOL. 2, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC	11/30/2012	ML14172A268
660	NRC-010-B-2 - NUREG-1910, VOL. 2, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 5 THROUGH 12 AND APPENDICES) (MAY 2009) (ADAMS ACCESSION NO. ML091480188). PAGES 273-612.	06/20/2014	ML14175B598
661	NRC-010-B-1 - NUREG-1910, VOL. 2, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 5 THROUGH 12 AND APPENDICES) (MAY 2009) (ADAMS ACCESSION NO. ML091480188). PAGES 1-272.	05/31/2009	ML14172A269
662	NRC-010-A-3 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4) (MAY 2009) (ADAMS ACCESSION NO. ML091480244) PAGES 513-704.	08/31/2003	ML14172A270

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663	NRC-141-B - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION	08/31/2009	ML14172A271
664	NRC-141-A - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION NO. ML092870155). PAGES 1-42	06/20/2014	ML14172A272
665	NRC-141-E - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION NO. ML092870155).	06/20/2014	ML14175B599
666	NRC-141-C - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION NO. ML092870155). PAGES 124-132	06/20/2014	ML14172A273

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667	NRC-141-D - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION NO. ML092870155). PAGES 133-143	06/20/2014	ML14172A274
668	NRC-145-B - GUIDELINES FOR EVALUATION AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES. NATIONAL REGISTER BULLETIN, U.S. DEPARTMENT OF THE INTERIOR. NATIONAL PARK SERVICE. (ADAMS ACCESSION NO. ML12240A371). PAGES 15-18	06/20/2014	ML14175B601
669	NRC-145-A - GUIDELINES FOR EVALUATION AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES. NATIONAL REGISTER BULLETIN, U.S. DEPARTMENT OF THE INTERIOR. NATIONAL PARK SERVICE. (ADAMS ACCESSION NO. ML12240A371). PAGES 1-14	12/31/1998	ML14172A275
670	NRC-084-C - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVEY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM....	06/20/2014	ML14175B603
671	NRC-128 - SDGFP. "COLONY ACREAGE AND DISTRIBUTION OF THE BLACK-TAILED PRAIRIE DOG IN SOUTH DAKOTA, 2008" (AUG. 2008), AVAILABLE AT HTTP://GFP.SD.GOV/WILDLIFE/DOCS/PRAIRE DOG-DISTRIBUTION-REPORT.PDF	06/20/2014	ML14172A276

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672	NRC-084-D - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE EVALUATION (NURE) PROGRAM....	06/20/2014	ML14172A277
673	NRC STAFF HEARING FILE UPDATE FOR JULY 2014: IN THE MATTER OF POWERTECH (USA) INC.	07/01/2014	ML14182A690
674	ORDER (REJECTING FILINGS, DIRECTING COMPLIANCE WITH CASE MANAGEMENT ORDER AND PROVIDING OPPORTUNITY FOR RESUBMISSION OF REJECTED MATERIALS).	07/02/2014	ML14183B590
675	NRC STAFF JULY 2014 STATUS UPDATE LETTER.	07/03/2014	ML14184B091
676	NOTICE (OF OPPORTUNITY TO MAKE ORAL AND WRITTEN LIMITED APPEARANCE STATEMENTS).	07/03/2014	ML14184B095
677	APP-015-A - REVISED TECHNICAL REPORT (TR) FOR THE DEWEY-BURDOCK PROJECT; PART 1 OF 22; TRANSMITTAL LETTER, CHANGE INDEX AND REVISED TR RAI RESPONSES; ML14035A052.	01/06/2014	ML14190B145
678	APP-062 - BLACK-FOOTED FERRET RECOVERY PLAN, SECOND REVISION, NOV. 2013.	11/30/2013	ML14190B144

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679	APP-042-B - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT THRU SEC. 4; ML12244A522.	07/31/2012	ML14190B143
680	APP-015-Q - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 17 OF 22; APP.2.7-L 2 OF 2; ML14035A044ML	06/20/2014	ML14190B146
681	APP-040-AA - ER APP.3.5-A THRU 3.5-F; ML092870416.	06/20/2014	ML14190B142
682	APP-020 - ISR ANIMATION (VIDEO OF ISR OPERATION).	06/20/2014	ML14191B264
683	CONSOLIDATED INTERVENORS' RESPONSE TO POWERTECH MOTION TO DISMISS CONTENTION 14	07/13/2014	ML14195A181
684	POWERTECH (USA), INC. OBJECTION TO CONSOLIDATED INTERVENORS' RESPONSE TO MOTION TO DISMISS CONTENTION 14	07/14/2014	ML14195A500
685	NOTICE OF AVAILABILITY OF DR. LOUIS REDMOND	07/15/2014	ML14196A436

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686	NRC-084-B - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVEY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE EVALUATION (NURE) PROGRAM,....	06/20/2014	ML14172A278
687	NRC-084-A - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE EVALUATION (NURE) PROGRAM....	05/31/1980	ML14172A279
688	NRC-084-F - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM	06/20/2014	ML14175B588
689	NRC-084-E - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE EVALUATION (NURE) PROGRAM....	06/20/2014	ML14172A280
690	NRC STAFF REVISED HEARING EXHIBIT LIST	06/21/2014	ML14172A281

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
691	CERTIFICATE OF SERVICE SIGNED BY PATRICIA JEHLE FOR SUBMITALL OF NRC STAFF'S INITIAL STATEMENT OF POSITION, EXHIBIT LIST AND REVISED EXHIBIT LIST.	06/21/2014	ML14172A282
692	ERRATUM TO NRC STAFF'S STATEMENT OF POSITION.	06/24/2014	ML14175B630
693	POWERTECH (USA), INC., NOTICE OF ERRATA FOR INITIAL STATEMENT OF POSITION.	06/27/2014	ML14178B367
694	POWERTECH (USA), INC. MOTION TO DISMISS ENVIRONMENTAL CONTENTION 14A/B.	06/30/2014	ML14181B367
695	POWERTECH (USA) INC. HEARING EXHIBITS.	06/20/2014	ML14182A615
696	POWERTECH (USA) INC. WITNESS LIST. (PKG. NO. ML14182A614)	06/20/2014	ML14182A616
697	APPLICANT POWERTECH (USA) URANIUM CORPORATIONS UPDATED MANDATORY DISCLOSURES. (PKG. NO. ML14182A614)	07/01/2014	ML14182A617
698	INT-022C - VIOLATION HISTORY - SMITH HIGHLAND RANCH	07/18/2014	ML14200A000

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699	NRC STAFF'S MOTION IN LIMINE	07/22/2014	ML14203A657
700	POWERTECH (USA), INC. MOTIONS IN LIMINE, MOTION FOR CROSS-EXAMINATION, AND MOTION TO STRIKE/EXCLUDE	07/22/2014	ML14203A667
701	CONSOLIDATED INTERVENORS' MOTION IN LIMINE	07/22/2014	ML14204A200
702	POWERTECH (USA), INC. AMENDED MOTIONS IN LIMINE, MOTION FOR CROSS-EXAMINATION, AND MOTION TO STRIKE/EXCLUDE	07/22/2014	ML14203A672
703	OST-019 - POWERTECH PRESS RELEASE	07/16/2014	ML14203A673
704	OGLALA SIOUX TRIBE'S MOTION TO STRIKE	07/22/2014	ML14203A676
705	NRC STAFF'S RESPONSE TO PREHEARING MOTIONS	07/29/2014	ML14210A671

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706	POWERTECH (USA), INC. RESPONSE TO NRC STAFF'S, CONSOLIDATED INTERVENORS', AND THE OGLALA SIOUX TRIBE'S MOTIONS IN LIMINE, MOTION FOR CROSS-EXAMINATION, AND MOTION TO STRIKE/EXCLUDE	07/29/2014	ML14210A672
707	OGLALA SIOUX TRIBE'S CONSOLIDATED RESPONSE TO POWERTECH AND NRC STAFF MOTIONS IN LIMINE AND STRIKE/EXCLUDE	07/29/2014	ML14210A674
708	CONSOLIDATED INTERVENORS' RESPONSE TO POWERTECH AND NRC STAFF MOTIONS IN LIMINE AND TO STRIKE/EXCLUDE	07/29/2014	ML14211A215
709	ORDER (SCHEDULING TELEPHONIC PREHEARING CONFERENCE CALL)	07/31/2014	ML14212A363
710	NOTICE REGARDING WEAPONS AT ATOMIC SAFETY AND LICENSING BOARD PROCEEDINGS	07/31/2014	ML14212A709
711	ORDER (RULING ON THE MOTIONS IN LIMINE: MOTIONS TO STRIKE AND FOR CROSS- EXAMINATION)	08/01/2014	ML14213A352
712	LIMITED APPEARANCE STATEMENT FROM EDWARD HARVEY REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/09/2014	ML14042A309

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713	LIMITED APPEARANCE STATEMENT FROM JERRY WILSON REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/10/2014	ML14042A317
714	LIMITED APPEARANCE STATEMENT FROM KATHY DURRUM REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/10/2014	ML14042A323
715	LIMITED APPEARANCE STATEMENT FROM THE FALL RIVER CONSERVATION DISTRICT BOARD OF HOT SPRINGS, SOUTH DAKOTA REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/11/2014	ML14045A207
716	LIMITED APPEARANCE STATEMENT FROM GARDNER GRAY REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/12/2014	ML14045A213
717	LIMITED APPEARANCE STATEMENT FROM NANCY GREGORY REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/13/2014	ML14045A216
718	LIMITED APPEARANCE STATEMENT FROM GARDNER GRAY DATED FEBRUARY 15, 2014, REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/15/2014	ML14049A101

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
719	LIMITED APPEARANCE STATEMENT FROM SARAH PETERSON REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/10/2014	ML14051A353
720	LIMITED APPEARANCE STATEMENT FROM REBECCA LEAS REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/14/2014	ML14055A289
721	LIMITED APPEARANCE STATEMENT FROM CATHY SOTHERLAND REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/21/2014	ML14055A294
722	LIMITED APPEARANCE STATEMENT FROM LINEA SUNDSTROM REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/22/2014	ML14055A306
723	E-MAIL FROM STANDING ROCK SIOUX TRIBE PROVIDING COMMENTS ON FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO.	02/20/2014	ML14059A199
724	LIMITED APPEARANCE STATEMENT FROM SYLVIA LAMBERT REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/05/2014	ML14077A277
725	LIMITED APPEARANCE FROM STEPHANIE ANISE REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/03/2014	ML14077A284

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
726	LIMITED APPEARANCE STATEMENT FROM JON AND CHERYL FAIR REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/03/2014	ML14077A288
727	LIMITED APPEARANCE STATEMENT FROM DAHL MCLEAN REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/03/2014	ML14077A294
728	LIMITED APPEARANCE STATEMENT FROM LILIAS JARDING REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/02/2014	ML14077A310
729	LIMITED APPEARANCE STATEMENT FROM DON KELLEY REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/03/2014	ML14077A313
730	LIMITED APPEARANCE STATEMENT FROM JERRI BAKER REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/22/2014	ML14077A498
731	LIMITED APPEARANCE STATEMENT FROM JERRI BAKER REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	03/24/2014	ML14083A207
732	LIMITED APPEARANCE STATEMENT FROM JOSEPH LESSAR REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	04/10/2014	ML14100A451

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
733	LIMITED APPEARANCE STATEMENT FROM NATE CORTNEY, PRESIDENT, EDGEMONT AREA CHAMBER OF COMMERCE, REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	05/08/2014	ML14133A565
734	LIMITED APPEARANCE STATEMENT FROM CARL A. SHAW, MAYOR, CITY OF EDGEMONT, SOUTH DAKOTA, REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	05/08/2014	ML14134A310
735	LIMITED APPEARANCE STATEMENT FROM RODNEY G. KNUDSON REGARDING POWERTECH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	08/05/2014	ML14217A284
736	NRC STAFF'S MOTION TO ADMIT EXHIBIT NRC-002-R	08/13/2014	ML14225A848
737	NRC-002-R - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF PO WEN (KEVIN) HSUEH.	08/13/2014	ML14225A850
738	LIMITED APPEARANCE STATEMENT FROM OLETA MEDNANSKY REGARDING POWERTECH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY	08/09/2014	ML14227A280

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
739	LIMITED APPEARANCE STATEMENT FROM MARV LEWIS REGARDING POWERTECH (USA), INC.'S LICENSE APPLICTION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	08/15/2014	ML14227A917
740	LIMITED APPEARANCE STATEMENT FROM RUTH THOMAS REGARDING POWERTECH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	08/15/2014	ML14230A040
741	OST-021 - POWERTECH QUARTERLY MANAGEMENT DISCUSSION AND ANALYSIS	08/16/2014	ML14228A105
742	OGLALA SIOUX TRIBE'S MOTION TO ENFORCE MANDATORY DISCLOSURE DUTIES UNDER 10 CFF 2.336	08/16/2014	ML14228A106
743	LIMITED APPEARANCE STATEMENT FROM LAUREN BURDEN REGARDING POWERTECH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	08/17/3025	ML14230A081
744	LIMITED APPEARANCE STATEMENT FROM LINEA SUNDSTROM REGARDING POWERTECH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY	08/18/2014	ML14231A630
745	INT-010Q - IPAC	06/17/2014	ML14231A963

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
746	OFFICIAL EXHIBIT - APP-011-00-BD01 - MICHAEL FOSHA CV.	06/20/2014	ML14240A420
747	OFFICIAL EXHIBIT - APP-012-00-BD01 - FEBRUARY 11, 2013 LETTER FROM MICHAEL FOSHA TO SDDENR.	02/11/2013	ML14240A428
748	OFFICIAL EXHIBIT - APP-013-00-BD01 - HAL DEMUTH INITIAL TESTIMONY.	06/20/2014	ML14240A415
749	OFFICIAL EXHIBIT - APP-014-00-BD01 - HAL DEMUTH CV.	06/20/2014	ML14240A422
750	OFFICIAL EXHIBIT - APP-015-A-00-BD01 - REVISED TECHNICAL REPORT (TR) FOR THE DEWEY-BURDOCK PROJECT; PART 1 OF 22; TRANSMITTAL LETTER, CHANGE INDEX AND REVISED TR RAI RESPONSES; ML14035A052.	01/06/2014	ML14247A384
751	NRC STAFF HEARING FILE UPDATE	09/15/2014	ML14258B229
752	OFFICIAL EXHIBIT - APP-015-B-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 2 OF 22; TEXT THROUGH SEC. 2.8.5.7; ML14035A029.	06/20/2014	ML14246A357

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
753	OFFICIAL EXHIBIT - APP-015-C-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 3 OF 22; TEXT SEC. 2.9 THROUGH 10.2; ML14035A030.	12/31/2913	ML14241A539
754	OFFICIAL EXHIBIT - APP-015-D-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 4 OF 22; PLATES 1.5-1 THROUGH 2.6-8; ML14035A031.	12/31/2013	ML14241A540
755	OFFICIAL EXHIBIT - APP-015-E-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 5 OF 22; PLATES 2.6-9 THROUGH 2.6-12; ML14035A032.	06/21/2014	ML14247A331
756	OFFICIAL EXHIBIT - APP-015-F-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 6 OF 22; PLATES 2.6-13 THROUGH 2.6-15; ML14035A033.	12/31/2014	ML14241A541
757	OFFICIAL EXHIBIT - APP-015-G-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 7 OF 22; PLATES 2.6-16 THROUGH 2.7-2; ML14035A034.	06/20/2014	ML14246A358
758	OFFICIAL EXHIBIT - APP-015-H-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 8 OF 22; PLATES 2.8-1 THROUGH 5.7-1; ML14035A035.	11/11/2008	ML14246A360
759	OFFICIAL EXHIBIT - APP-015-I-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 9 OF 22; APP. 2.2-A THROUGH 2.5-F; ML14035A036.	12/31/2013	ML14241A476

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
760	OFFICIAL EXHIBIT - APP-015-J-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 10 OF 22; APP. 2.6-A THROUGH 2.6-G; ML14035A037.	12/31/2013	ML14246A361
761	OFFICIAL EXHIBIT - APP-015-K-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 11 OF 22; APP. 2.6-H THROUGH 2.7-E; ML14035A038.	06/30/2011	ML14241A475
762	OFFICIAL EXHIBIT - APP-015-L-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 12 OF 22; APP 2.7-F THROUGH 2.7-G; ML14035A039.	06/30/2011	ML14245A248
763	OFFICIAL EXHIBIT - APP-015-M-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 13 OF 22; APP. 2.7-H 1 OF 3; ML14035A040.	06/21/2014	ML14246A363
764	OFFICIAL EXHIBIT - APP-015-N-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 14 OF 22; APP. 2.7-H 2 OF 3; ML14035A041.	06/21/2014	ML14246A364
765	OFFICIAL EXHIBIT - APP-015-O-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 15 OF 22; APP. 2.7-H 3 OF 3; ML14035A042.	06/30/2011	ML14245A250
766	OFFICIAL EXHIBIT - APP-015-P-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 16 OF 22; APP. 2.7-J THROUGH 2.7-L 1 OF 2; ML14035A043.	06/21/2014	ML14246A366

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
767	OFFICIAL EXHIBIT - APP-015-Q-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 17 OF 22; APP.2.7-L 2 OF 2; ML14035A044	06/20/2014	ML14247A385
768	OFFICIAL EXHIBIT - APP-015-R-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 18 OF 22; APP. 2.7-M; ML14035A045.	06/30/2011	ML14246A318
769	NRC STAFF'S APRIL 1, 2016 HEARING FILE UPDATE	04/01/2016	ML16092A109
770	NRC STAFF'S MAY 2016 HEARING FILE UPDATE, NOTICE OF CHANGE OF CONTACT INFORMATION FOR NRC STAFF COUNSEL, AND NRC STAFF'S TRIBAL CONSULTATION UPDATE (ML16123A160, ML16123A161, AND ML16123A162).	05/02/2016	ML16123A159
771	NRC STAFF'S JUNE 2016 HEARING FILE UPDATE AND CONSULTATION STATUS REPORT (ML16153A447 AND ML16153A448).	06/01/2016	ML16153A446
772	NRC STAFF JULY 2016 HEARING FILE UPDATE	07/01/2016	ML16183A259
773	NRC STAFF JULY 2016 CONSULTATION UPDATE	07/01/2016	ML16183A260

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
774	NRC STAFF'S HEARING FILE UPDATE - AUGUST 2016	08/01/2016	ML16214A320
775	NRC STAFF CONSULTATION STATUS UPDATE - AUGUST 2016	08/01/2016	ML16214A322
776	NRC STAFF HEARING FILE UPDATE	09/01/2016	ML16245A787
777	NRC STAFF STATUS REPORT UPDATE	09/01/2016	ML16245A791
778	NRC STAFF HEARING FILE UPDATE AND STATUS REPORT (ML16277A529 AND ML16277A530).	10/03/2016	ML16277A528
779	MEMORANDUM AND ORDER (REQUESTING SCHEDULING INFORMATION FOR TELEPHONE CONFERENCE CALL).	10/13/2016	ML16287A631
780	NOTICE OF APPEARANCE FOR EMILY MONTEITH ON BEHALF OF NRC STAFF	10/24/2016	ML16298A179
781	ORDER (SCHEDULING TELEPHONIC STATUS CONFERENCE)	10/24/2016	ML16298A331

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
782	NRC STAFF STATUS REPORT AND HEARING FILE UPDATES (ML16306A427 AND ML17306A428).	11/01/2016	ML16306A426
783	NOVEMBER 7, 2016 HEARING TRANSCRIPT FOR SCHEDULING TELEPHONIC STATUS CONFERENCE	11/09/2016	ML16314A843
784	OFFICIAL EXHIBIT - APP-015-S-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 19 OF 22; APP 2.7-N THROUGH 2.8-H; ML14035A046.	06/21/2014	ML14245A282
785	OFFICIAL EXHIBIT - APP-015-T-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 20 OF 22; APP. 2.8-I THROUGH 2.9-L; ML14035A047.	06/21/2014	ML14247A328
786	OFFICIAL EXHIBIT - APP-015-U-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 21 OF 22; APP. 2.9-M THROUGH 3.1-A; ML14035A048.	12/31/2013	ML14247A338
787	OFFICIAL EXHIBIT - APP-015-V-00-BD01 - REVISED TR FOR THE DEWEY-BURDOCK PROJECT; PART 22 OF 22; APP. 3.1-B THROUGH 7.3-D; ML14035A049.	06/21/2014	ML14245A297
788	OFFICIAL EXHIBIT - APP-016-A-00-BD01 - REVISED RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR THE TECHNICAL REPORT (TR) FOR THE DEWEY-BURDOCK PROJECT; COVER LETTER; ML11207A711.	06/21/2014	ML14245A299

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
789	OFFICIAL EXHIBIT - APP-016-AA-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 19; APP. 3.1-A 2 OF 2; ML11208B924.	06/21/2014	ML14245A296
790	OFFICIAL EXHIBIT - APP-016-B-00-BD01 - REVISED TR RAI RESPONSE; TEXT PART 1: ML11208B712.	06/30/2011	ML14245A295
791	OFFICIAL EXHIBIT - APP-016-BB-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 20; APP. 6.1-A THROUGH 7.3-C; ML11208B925.	06/21/2014	ML14245A302
792	OFFICIAL EXHIBIT - APP-016-C-00-BD01 - REVISED TR RAI RESPONSE; TEXT PART 2; ML11208B719.	06/21/2014	ML14245A300
793	OFFICIAL EXHIBIT - APP-016-D-00-BD01 - REVISED TR RAI RESPONSE; TEXT PART 3; ML11208B714.	06/14/2014	ML14245A301
794	OFFICIAL EXHIBIT - APP-016-E-00-BD01 - REVISED TR RAI RESPONSE; EXHIBITS PART 1; EXH. 2.6-1 THROUGH 2.6-4; ML11208B716.	06/30/2011	ML14245A311
795	OFFICIAL EXHIBIT - APP-016-F-00-BD01 - REVISED TR RAI RESPONSE; EXHIBITS PART 2; EXH. 2.6-5; ML11208B763.	06/21/2014	ML14245A308

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
796	EMAIL REQUEST FROM GRACE DUGAN, COUNSEL FOR OGLALA SIOUX TRIBE, REQUESTING ACCESS TO SUNSI INFORMATION REGARDING LICENSE APPLICATION OF POWERTECH (USA) INC. DEWEY-BURDOCK IN SITU URANIUM RECOVERY FACILITY	01/14/2010	ML100210203
797	EMAIL REQUEST FROM DAVID FRANKEL, COUNSEL FOR MULTIPLE PETITIONERS, REQUESTING ACCESS TO SUNSI INFORMATION REGARDING LICENSE APPLICATION OF POWERTECH (USA) INC. DEWEY-BURDOCK IN SITU URANIUM RECOVERY FACILITY	01/15/2010	ML100192098
798	NRC STAFF RESPONSE TO REQUESTS FOR ACCESS TO SUNSI INFO [FROM GRACE DUGAN AND DAVID FRANKEL], NOTICES OF APPEARANCE FOR MICHAEL CLARK AND PATRICIA JEHL (DUGAN ML100252219; FRANKEL ML100252221; CLARK NOA ML100252222; JEHLE NOA ML100252220)	01/25/2010	ML100252218
799	NOTICE OF APPEARANCE FOR ANTHONY J. THOMPSON AND CHRISTOPHER S. PUGSLEY, THOMPSON & SIMMONS, ON BEHALF OF POWERTECH URANIUM (USA) COMPANY	02/02/2010	ML100330580
800	NRC STAFF MOTION FOR ENTRY OF A PROTECTIVE ORDER, WITH MEMORANDUM AND ORDER AND NON-DISCLOSURE AFFIDAVIT (MOTION- ML100471146; LIST OF DOCUMENTS-ML100471145; MEMO AND ORDER-ML100471144; NON-DISCLOSURE-ML100471143)	02/16/2010	ML100471142

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
801	NOTICE OF APPEARANCE OF GRACE DUGAN, GONZALEZ LAW FIRM, ON BEHALF OF OGLALA SIOUX TRIBE	02/19/2010	ML100501645
802	NOTICE OF APPEARANCE OF TRAVIS STILLS, ENERGY MINERALS LAW CENTER, ON BEHALF OF OGLALA SIOUX TRIBE	02/19/2010	ML100530128
803	NOTICE OF APPEARANCE OF JEFFREY C. PARSONS, WESTERN MINING ACTION PROJECT, ON BEHALF OF OGLALA SIOUX TRIBE	02/19/2010	ML100530207
804	UNOPPOSED MOTION FOR EXTENSION OF TIME TO FILE AN ANSWER TO MOTION FOR ENTRY OF PROTECTIVE ORDER	02/26/2010	ML100570478
805	[PROPOSED] MEMORANDUM AND ORDER [GRANTING UNOPPOSED MOTION FOR EXTENSION OF TIME TO FILE ANSWER TO MOTION FOR ENTRY OF PROTECTIVE ORDER]	02/26/2010	ML100570479
806	OGLALA SIOUX TRIBE REQUEST FOR 90-DAY EXTENSION OF TIME TO FILE REQUEST FOR HEARING	02/26/2010	ML100570481
807	BOARD MEMORANDUM AND ORDER [GRANTING OGLALA SIOUX TRIBE'S UNOPPOSED MOTION FOR EXTENSION OF TIME TO FILE ANSWER TO MOTION FOR ENTRY OF PROTECTIVE ORDER]	03/01/2010	ML100601127

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
808	OFFICIAL EXHIBIT - APP-016-G-00-BD01 - REVISED TR RAI RESPONSE; EXHIBITS PART 3; EXH. 2.6-6 THROUGH 3.1-1; ML11208B764.	06/21/2014	ML14247A333
809	OFFICIAL EXHIBIT - APP-016-H-00-BD01 - REVISED TR RAI RESPONSES; EXHIBITS PART 4; EXH. 3.1-2 THROUGH 5.7-1; ML11208B767.	06/22/2014	ML14245A312
810	OFFICIAL EXHIBIT - APP-016-I-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 1; APP. 2.5-D THROUGH 2.6-G; ML11208B765.	06/30/2011	ML14247A339
811	OFFICIAL EXHIBIT - APP-016-I-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 1; APP. 2.5-D THROUGH 2.6-G; ML11208B765.	06/30/2011	ML14247A339
812	OFFICIAL EXHIBIT - APP-016-J-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 2; APP. 2.6-H 1 OF 3; ML11208B766.	06/21/2014	ML14245A303
813	OFFICIAL EXHIBIT - APP-016-K-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 3; APP. 2.6-H 2 OF 3; ML11208B769.	06/30/2011	ML14245A310
814	OFFICIAL EXHIBIT - APP-016-L-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 4; APP. 2.6-H 3 OF 3; ML11208B770.	06/21/2014	ML14245A309

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
815	OFFICIAL EXHIBIT - APP-016-M-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 5; APP. 2.7-B THROUGH 2.7-G; ML11208B771.	06/21/2014	ML14247A340
816	OFFICIAL EXHIBIT - APP-016-N-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 6; APP. 2.7-H 1 OF 4; ML11208B777.	06/21/2014	ML14245A315
817	OFFICIAL EXHIBIT - APP-016-O-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 7; APP. 2.7-H 2 OF 4; ML11208B778.	06/21/2014	ML14245A314
818	OFFICIAL EXHIBIT - APP-016-P-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 8; APP. 2.7-H 3 OF 4; ML11208B784.	10/03/2008	ML14245A325
819	OFFICIAL EXHIBIT - APP-016-Q-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 9; APP 2.7-H 4 OF 4; ML11208B827.	04/14/2009	ML14245A313
820	OFFICIAL EXHIBIT - APP-016-R-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 10; APP. 2.7-K; ML11208B832.	06/21/2014	ML14245A305
821	OFFICIAL EXHIBIT - APP-016-S-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 11; APP. 2.7-L 1 OF 4; ML112088833.	06/30/2011	ML14247A341
822	OFFICIAL EXHIBIT - APP-016-T-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 12; APP. 2.7-L 2 OF 4; ML11208B868.	06/30/2011	ML14245A323

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
823	OFFICIAL EXHIBIT - APP-016-U-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 13; APP. 2.7-L 3 OF 4; ML11208B864.	06/30/2011	ML14245A353
824	OFFICIAL EXHIBIT - APP-016-V-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 14; APP. 2.7-L 4 OF 4; ML11208B865.	06/21/2014	ML14245A304
825	OFFICIAL EXHIBIT - APP-016-W-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 15; APP. VOL. 4 COVER; ML11208B870.	06/21/2014	ML14245A307
826	OFFICIAL EXHIBIT - APP-016-Y-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 17; APP.2.9-B THROUGH 2.9-K; ML112150229.	06/21/2014	ML14245A316
827	OFFICIAL EXHIBIT - APP-016-Z-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 18; APP. 3.1-A 1 OF 2; ML11208B922.	07/31/2010	ML14246A324
828	OFFICIAL EXHIBIT - APP-017-00-BD01 - FIGURES TO ACCOMPANY DEMUTH INITIAL TESTIMONY.	04/25/2011	ML14240A431
829	OFFICIAL EXHIBIT - APP-018-00-BD01 - USGS WATER-SUPPLY PAPER 2220, BASIC GROUND-WATER HYDROLOGY, 1983.	12/31/2004	ML14240A435

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
830	OFFICIAL EXHIBIT - APP-019-00-BD01 - NATIONAL MINING ASSOCIATION'S (NMA) GENERIC ENVIRONMENTAL REPORT IN SUPPORT OF THE NUCLEAR REGULATORY COMMISSION'S GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN SITU URANIUM RECOVERY FACILITIES; ML080170159	11/30/2007	ML14240A429
831	OFFICIAL EXHIBIT - APP-020-00-BD01 - ISR ANIMATION (VIDEO OF ISR OPERATION).	06/20/2014	ML14247A386
832	NOTICE PURSUANT TO 10 CFR 2.309(J)	06/27/2013	ML13178A272
833	NRC STAFF HEARING FILE UPDATE - JULY, 2013	07/01/2013	ML13182A706
834	NRC STAFF'S STATUS REPORT - JULY, 2013	07/01/2013	ML13182A707
835	INTERVENOR UPDATE TO DISCLOSURES UNDER 10 CFR §2.336 - JULY, 2013 [PKG # ML13183A002]	07/01/2013	ML13183A005
836	FEDERAL CORRESPONDENCE - E-MAILS RE: NEED SD CONTACT FOR QUESTIONS ABOUT LAND APPLICATION OF INDUSTRIAL WASTE [PKG # ML13183A002]	06/28/2013	ML13183A003

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
837	MCKASKEY REPORT - HYDROGEOLOGIC FRAMEWORK FOR THE MADISON AND MINNELUSA AQUIFERS IN THE BLACK HILLS AREA [PKG # ML13183A002]	07/02/2013	ML13183A004
838	CORRECTED INTERVENORS JULY 1, 2013 FILE UPDATE	07/01/2013	ML13184A351
839	MEMORANDUM TO THE PARTIES RE COMMISSIONER MAGWOOD'S UPCOMING TOUR OF THE POWERTECH DEWEY BURDOCK SITE ON JULY 16, 2013.	07/12/2013	ML13193A351
840	MEMORANDUM AND ORDER (RULING ON PROPOSED CONTENTIONS RELATED TO THE DRAFT SUPPLEMENTAL ENVIRONME NTAL IMPACT STATEMENT)	07/22/2013	ML13203A244
841	ORDER (SCHEDULING TELEPHONE CONFERENCE CALL)	07/31/2013	ML13212A342
842	NRC STAFF HEARING FILE UPDATE AUGUST 2013	08/01/2013	ML13213A325
843	NRC STAFF STATUS REPORT FOR AUGUST 2013	08/01/2013	ML13213A340

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
844	OFFICIAL EXHIBIT - APP-021-G-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 7; PLATE 2.6-1; ML092870316.	05/19/1982	ML14245A345
845	OFFICIAL EXHIBIT - APP-021-GG-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 33; APP. 4.2-A THRU 7.3-A (PARTIAL); ML092870343.	06/21/2014	ML14246A323
846	OFFICIAL EXHIBIT - APP-021-H-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 8; PLATE 2.6-2; ML092870317.	06/21/2014	ML14245A336
847	OFFICIAL EXHIBIT - APP-021-HH-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 34; APP. 7.3-A (PARTIAL) THRU 7.3-B; ML092870344.	08/21/2008	ML14247A349
848	OFFICIAL EXHIBIT - APP-021-I-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 9; PLATE 2.6-3; ML092870318.	06/30/2009	ML14245A330
849	OFFICIAL EXHIBIT - APP-021-J-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 10; PLATE 2.6-4; ML092870305.	08/31/2009	ML14245A332
850	OFFICIAL EXHIBIT - APP-021-K-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 11; PLATE 2.6-5; ML092870306.	06/21/2014	ML14245A337

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851	OFFICIAL EXHIBIT - APP-021-L-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 12; PLATE 2.6-6; ML092870307.	07/31/2008	ML14245A339
852	OFFICIAL EXHIBIT - APP-021-M-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 13; PLATE 2.6-7; ML092870309.	06/21/2014	ML14245A344
853	OFFICIAL EXHIBIT - APP-021-N-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 14; PLATE 2.6-8; ML092870310.	06/21/2014	ML14245A341
854	OFFICIAL EXHIBIT - APP-021-O-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 15; PLATE 2.6-9; ML092870311.	07/31/2008	ML14245A338
855	OFFICIAL EXHIBIT - APP-021-P-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 16; PLATE 2.6-10; ML092870312.	08/31/2009	ML14245A354
856	OFFICIAL EXHIBIT - APP-021-Q-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 17; PLATE 2.6-11; ML092870320.	06/21/2014	ML14245A355
857	OFFICIAL EXHIBIT - APP-021-R-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 18; PLATE 2.6-12; ML092870321.	06/21/2014	ML14246A267

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858	OFFICIAL EXHIBIT - APP-021-S-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 19; PLATE 2.6-13; ML092870322.	06/21/2014	ML14246A260
859	OFFICIAL EXHIBIT - APP-021-T-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 20; PLATE 2.6-14; ML092870323.	08/31/2009	ML14246A259
860	OFFICIAL EXHIBIT - APP-021-U-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 21; PLATE 2.6-15; ML092870324.	06/21/2014	ML14246A272
861	OFFICIAL EXHIBIT - APP-021-V-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 22; PLATE 2.8-1; ML092870325.	06/21/2014	ML14246A268
862	OFFICIAL EXHIBIT - APP-021-W-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 23; PLATE 2.8-2; ML092870326.	06/21/2014	ML14246A258
863	OFFICIAL EXHIBIT - APP-021-X-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 24; PLATE 2.8-3; ML092870327.	06/21/2014	ML14246A270
864	OFFICIAL EXHIBIT - APP-021-Y-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 25; PLATE 3.1-1; ML092870328.	06/21/2014	ML14245A356

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865	OFFICIAL EXHIBIT - APP-021-Z-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 26; PLATE 3.1-2; ML092870329.	06/11/2008	ML14246A265
866	OFFICIAL EXHIBIT - APP-022-00-BD01 - GEOCHEMICAL DATA FROM GROUNDWATER AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA: U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 2012-1070.	12/31/2012	ML14240A436
867	OFFICIAL EXHIBIT - APP-023-00-BD01 - URANIUM IN-SITU RECOVERY AND THE PROPOSED DEWEY BURDOCK SITE, EDGEMONT, SOUTH DAKOTA, PUBLIC MEETING TALK GIVEN BY DR. RAYMOND JOHNSON, USGS, IN HOT SPRINGS, SD ON FEB. 7, 2013 AND CUSTER, SD ON MAY 22, 2013.	05/22/2013	ML14240A432
868	OFFICIAL EXHIBIT - APP-024-00-BD01 - PRE-LICENSING WELL CONSTRUCTION, LOST CREEK ISR URANIUM RECOVERY PROJECT; ML091520101.	07/24/2009	ML14240A433
869	OFFICIAL EXHIBIT - APP-025-00-BD01 - NUMERICAL MODELING OF HYDROGEOLOGIC CONDITIONS, DEWEY-BURDOCK PROJECT, FEBRUARY 2012; ML12062A096.	02/28/2012	ML14240A430

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870	OFFICIAL EXHIBIT - APP-026-00-BD01 - UPDATE ON USGS RESEARCH AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA, PRESENTATION TO EPA REGION 8 IN DENVER, CO ON FEB. 22, 2012, BASED ON USGS OFR 2012-1070.	02/22/2012	ML14240A437
871	OFFICIAL EXHIBIT - APP-027-A-00-BD01 - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012; ML12193A239.	06/30/2012	ML14247A335
872	OFFICIAL EXHIBIT - APP-027-B-00-BD01 - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012, APPENDIX A; ML12193A234.	06/20/2014	ML14240A438
873	OFFICIAL EXHIBIT - APP-027-C-00-BD01 - REPORT TO ACCOMPANY MADISON WATER RIGHT PERMIT APPLICATION, JUNE 2012, APPENDIX B; ML12193A235.	12/31/2012	ML14240A441
874	OFFICIAL EXHIBIT - APP-028-00-BD01 - REPORT TO THE CHIEF ENGINEER ON WATER PERMIT APPLICATION NO. 2685-2 [MADISON AQUIFER], ADAMS ACCESSION NO. ML13165A160, NOVEMBER 2, 2012.	11/02/2012	ML14240A439
875	OFFICIAL EXHIBIT - APP-029-00-BD01 - LETTER AGREEMENT BETWEEN POWERTECH AND FALL RIVER COUNTY COMMISSION.	01/12/2007	ML14240A442

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876	OFFICIAL EXHIBIT - APP-030-00-BD01 - NUREG/CR-6733, A BASELINE RISK-INFORMED, PERFORMANCE-BASED APPROACH FOR IN SITU LEACH URANIUM EXTRACTION LICENSEES - FINAL REPORT, JULY 2001; ML012840152.	09/30/2001	ML14246A271
877	OFFICIAL EXHIBIT - APP-031-00-BD01 - DECISION OF THE TCEQ EXECUTIVE DIRECTOR REGARDING URANIUM ENERGY CORPORATION'S PERMIT NO. UR03075.	11/06/2008	ML14240A448
878	OFFICIAL EXHIBIT - APP-032-00-BD01 - IN-SITU LEACH URANIUM MINING IN THE USA: PAST, PRESENT AND FUTURE, BY D.H. UNDERHILL, IAEA TECDOC-720, URANIUM IN SITU LEACHING, PROCEEDINGS OF A TECHNICAL COMMITTEE HELD IN VIENNA, 5-8 OCTOBER 1992, SEPTEMBER 1993.	10/08/1992	ML14240A454
879	OFFICIAL EXHIBIT - APP-033-00-BD01 - SAFETY EVALUATION REPORT FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1596; ML101310291.	09/30/2010	ML14240A451
880	OFFICIAL EXHIBIT - APP-034-00-BD01 - SAFETY EVALUATION REPORT FOR THE NICHOLS RANCH IN SITU RECOVERY PROJECT IN JOHNSON AND CAMPBELL COUNTIES, WYOMING, MATERIAL LICENSE NO. SUA-1597; ML102240206.	07/31/2011	ML14240A447
881	OFFICIAL EXHIBIT - APP-035-00-BD01 - SAFETY EVALUATION REPORT FOR THE LOST CREEK PROJECT IN SWEETWATER COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1598; ML112231724.	08/31/2011	ML14240A458

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882	OFFICIAL EXHIBIT - APP-036-00-BD01 - SAFETY EVALUATION REPORT FOR THE STRATA ENERGY, INC. ROSS ISR PROJECT, CROOK COUNTY, WYOMING, MATERIALS LICENSE NO. SUA-1601; ML14002A107.	06/20/2014	ML14246A356
883	OFFICIAL EXHIBIT - APP-037-00-BD01 - ERROL LAWRENCE INITIAL TESTIMONY.	06/20/2014	ML14240A452
884	OFFICIAL EXHIBIT - APP-038-00-BD01 - ERROL LAWRENCE CV.	06/20/2014	ML14240A443
885	OFFICIAL EXHIBIT - APP-039-00-BD01 - MATERIALS LICENSE SUA-1597 FOR THE NICHOLS RANCH ISR PROJECT, JULY 2011; ML111751649.	07/19/2011	ML14241A453
886	OFFICIAL EXHIBIT - APP-040-A-00-BD01 - DEWEY-BURDOCK PROJECT ENVIRONMENT REPORT (ER); RE-SUBMITTAL AUGUST 2009; PART 1; COVER THRU SEC. 3.4.2.1.1; ML09270345.	02/28/2009	ML14246A263
887	OFFICIAL EXHIBIT - APP-040-AA-00-BD01 - ER APP.3.5-A THRU 3.5-F; ML092870416.	06/20/2014	ML14247A382
888	OFFICIAL EXHIBIT - APP-040-B-00-BD01 - DEWEY-BURDOCK PROJECT ENVIRONMENTAL REPORT (ER); RE-SUBMITTED AUGUST 2009; PART 2; SEC. 3.4.2.1.2 THRU 3.12; ML092870346.	02/28/2009	ML14246A367

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889	OFFICIAL EXHIBIT - APP-040-BB-00-BD01 - ER APP. 3.5-F THRU 3.5-I; ML092870422.	06/21/2014	ML14246A314
890	OFFICIAL EXHIBIT - APP-040-C-00-BD01 - DEWEY-BURDOCK PROJECT ENVIRONMENTAL REPORT (ER); RE-SUBMITTED AUGUST 2009; PART 1; SEC. 4 THRU END; ML092870360.	06/21/2014	ML14246A278
891	OFFICIAL EXHIBIT - APP-040-CC-00-BD01 - ER APP. 3.5-J THRU 3.6-C; ML092870407.	06/21/2014	ML14247A346
892	OFFICIAL EXHIBIT - APP-040-D-00-BD01 - ER PLATE 3.1-1; ML092870380.	06/21/2014	ML14246A266
893	OFFICIAL EXHIBIT - APP-040-DD-00-BD01 - ER APP. 4.6-A; ML092870409.	06/21/2014	ML14246A313
894	OFFICIAL EXHIBIT - APP-040-E-00-BD01 - ER PLATE 3.3-1; ML0921870381.	06/21/2014	ML14246A269
895	OFFICIAL EXHIBIT - APP-040-EE-00-BD01 - ER APP. 4.14-C THRU 6.1-G; ML092870413.	10/01/2008	ML14247A330

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896	OFFICIAL EXHIBIT - APP-040-F-00-BD01 - ER PLATE 3.3-1; ML092870381.	07/31/2008	ML14246A261
897	OFFICIAL EXHIBIT - APP-040-G-00-BD01 - ER PLATE 3.3-3; ML092870383.	06/21/2014	ML14247A343
898	OFFICIAL EXHIBIT - APP-040-H-00-BD01 - ER PLATE 3.3-4; ML092870591.	11/14/2008	ML14246A285
899	OFFICIAL EXHIBIT - APP-040-I-00-BD01 - ER PLATE 3.3-5; ML092870386.	11/11/2008	ML14246A264
900	OFFICIAL EXHIBIT - APP-040-J-00-BD01 - ER PLATE 3.3-6; ML092870387.	07/31/2008	ML14246A262
901	OFFICIAL EXHIBIT - APP-040-K-00-BD01 - ER PLATE 3.3-7; ML092870388.	07/31/2008	ML14246A282
902	OFFICIAL EXHIBIT - APP-040-L-00-BD01 - ER PLATE 3.3-8; ML092870389.	07/31/2008	ML14246A273
903	OFFICIAL EXHIBIT - APP-040-M-00-BD01 - ER PLATE 3.3-9; ML092870390.	07/31/2008	ML14246A287

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904	OFFICIAL EXHIBIT - APP-040-N-00-BD01 - ER PLATE 3.3-10; ML092870592.	12/03/2008	ML14246A276
905	OFFICIAL EXHIBIT - APP-040-O-00-BD01 - ER PLATE 3.3-11; ML092870586.	06/21/2014	ML14246A288
906	OFFICIAL EXHIBIT - APP-040-P-00-BD01 - ER PLATE 3.3-12; ML092870588.	06/21/2014	ML14246A290
907	OFFICIAL EXHIBIT - APP-040-Q-00-BD01 - ER PLATE 3.3-13; ML092870589.	06/21/2014	ML14246A275
908	OFFICIAL EXHIBIT - APP-040-R-00-BD01 - ER PLATE 3.3-14; ML092870590.	06/21/2014	ML14246A286
909	OFFICIAL EXHIBIT - APP-040-S-00-BD01 - ER PLATE 3.3-15; ML092870394.	11/11/2008	ML14246A280
910	OFFICIAL EXHIBIT - APP-040-T-00-BD01 - ER PLATE 3.5-1; ML092870395.	11/11/2008	ML14246A284
911	OFFICIAL EXHIBIT - APP-040-U-00-BD01 - ER PLATE 3.5-2; ML092870397.	11/04/2008	ML14246A277

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912	OFFICIAL EXHIBIT - APP-040-V-00-BD01 - ER PLATE 6.1-1; ML092870593.	01/15/2009	ML14246A279
913	OFFICIAL EXHIBIT - APP-040-W-00-BD01 - ER REPLACEMENT PLATES; ML093370652.	06/21/2014	ML14246A283
914	OFFICIAL EXHIBIT - NRC-064-00-BD01 - LETTER FROM JOHN YELLOW BIRD STEELE, PRESIDENT OF THE OGLALA SIOUX TRIBE RE: REFUSAL TO ACCEPT DEWEY-BURDOCK IN SITU PROJECT PROPOSAL (NOV. 5, 2012) (ADAMS ACCESSION NO. ML13026A005).	11/05/2012	ML14245A268
915	OFFICIAL EXHIBIT - NRC-065-00-BD01 - LETTER FROM SISSETON WAHPETON OYAYE TRIBE RE: REFUSAL TO ACCEPT DEWEY-BURDOCK IN SITU RECOVERY PROJECT PROPOSAL (NOV. 6, 2012) (ADAMS ACCESSION NO. ML13036A104).	11/06/2012	ML14245A278
916	OFFICIAL EXHIBIT - NRC-066-00-BD01 - LETTER FROM STANDING ROCK SIOUX TRIBE RE: TRIBAL SURVEY USING PERSONS WITHOUT SIOUX TCP EXPERTISE TO IDENTIFY SIOUX TCP (NOV. 5, 2012) (ADAMS ACCESSION NO. ML13036A110).	11/05/2012	ML14245A266
917	OFFICIAL EXHIBIT - NRC-067-00-BD01 - EMAIL FROM STANDING ROCK SIOUX TRIBE PROVIDING COMMENTS ON FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO (FEB. 20, 2014) (ADAMS ACCESSION NO. ML14059A199).	02/20/2014	ML14245A269

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918	OFFICIAL EXHIBIT - NRC-068-00-BD01 - EMAIL RE: TRANSMITTAL OF A FOLLOW-UP EMAIL PERTAINING TO AN UPCOMING FIELD SURVEY FOR THE DEWEY-BURDOCK PROJECT (FEB. 08, 2013) (ADAMS ACCESSION NO. ML13039A336).	02/08/2013	ML14245A267
919	OFFICIAL EXHIBIT - NRC-069-00-BD01 - LETTER TO OGLALA SIOUX TRIBE RE: NOTIFICATION OF INTENTION TO SEPARATE THE NHPA SECTION 106 PROCESS FROM NEPA REVIEW FOR DEWEY-BURDOCK ISR PROJECT (NOV. 6, 2013) (ADAMS ACCESSION NO. ML13308B524.	11/06/2013	ML14245A255
920	OFFICIAL EXHIBIT - NRC-070-00-BD01 - LETTER TO J. FOWLER, ACHP, RE: NOTIFICATION OF INTENTION TO SEPARATE THE NHPA SECTION 106 PROCESS FROM NEPA REVIEW FOR DEWEY-BURDOCK IS PROJECT (NOV. 13, 2013) (ADAMS ACCESSION NO. ML13311B184).	11/13/2013	ML14245A254
921	OFFICIAL EXHIBIT - NRC-071-00-BD01 - LETTER FROM DEPARTMENT OF STATE RE: KEYSTONE XL PIPELINE PROJECT TRADITIONAL CULTURAL PROPERTY (TCP) STUDIES (AUG. 4, 2009).	08/14/2009	ML14245A262
922	OFFICIAL EXHIBIT - NRC-072-00-BD01 - A LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH USA INC.'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT LOCALITY WITHIN THE SOUTHERN BLACK HILLS, CUSTER AND FALL RIVERS, VOL. I, (PAGE 1.2 THROUGH PAGE 4.18). . .	03/31/2008	ML14245A265

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923	OFFICIAL EXHIBIT - APP-040-X-00-BD01 - ER APP. 3.3-A THRU 3.3-E; ML092870411.	06/21/2014	ML14246A294
924	OFFICIAL EXHIBIT - APP-040-Y-00-BD01 - ER APP. 3.3-F THRU 3.4-A; ML092870421.	06/21/2014	ML14246A292
925	OFFICIAL EXHIBIT - APP-040-Z-00-BD01 - ER APP. 3.4-B THRU 3.4-E; ML092870414.	06/21/2014	ML14246A291
926	OFFICIAL EXHIBIT - APP-041-00-BD01 - USING GROUNDWATER AND SOLID-PHASE GEOCHEMISTRY FOR REACTIVE TRANSPORT MODELING AT THE PROPOSED DEWEY BURDOCK URANIUM IN-SITU RECOVERY SITE, EDGEMONT, SOUTH DAKOTA, PRESENTATION GIVEN TO EPA ON APRIL 11, 2012.	06/20/2014	ML14240A456
927	OFFICIAL EXHIBIT - APP-042-A-00-BD01 - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, COVER LETTER; ML12244A519.	08/01/2012	ML14246A295
928	OFFICIAL EXHIBIT - APP-042-B-00-BD01 - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT THRU SEC. 4; ML12244A522.	07/31/2012	ML14247A383

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929	OFFICIAL EXHIBIT - APP-042-C-00-BD01 - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT SEC. 5 THRU 8; ML12244A520.	07/12/2012	ML14246A311
930	OFFICIAL EXHIBIT - APP-042-D-00-BD01 - DEWEY-BURDOCK PROJECT REVISED CLASS III UNDERGROUND INJECTION CONTROL PERMIT APPLICATION, REVISED JULY 2012, TEXT SEC. 9 THRU END; ML12244A521.	07/31/2012	ML14246A315
931	OFFICIAL EXHIBIT - APP-043-00-BD01 - REVISED RESPONSE TO TR RAI 5.7.8-3(B), JUNE 27, 2012, ML12179A534.	06/27/2012	ML14240A455
932	OFFICIAL EXHIBIT - APP-044-00-BD01 - RESULTS OF ACCEPTANCE REVIEW FOR TR RAI RESPONSES; ML110470245.	06/20/2014	ML14246A355
933	OFFICIAL EXHIBIT - APP-045-00-BD01 - RESPONSES TO TECHNICAL REVIEW COMMENTS FOR DEWEY-BURDOCK LARGE SCALE MINE PERMIT APPLICATION; ML13144A182.	04/01/2013	ML14246A316
934	OFFICIAL EXHIBIT - APP-046-00-BD01 - DOYL FRITZ INITIAL TESTIMONY.	06/20/2014	ML14240A445
935	OFFICIAL EXHIBIT - APP-047-00-BD01 - DOYL FRITZ CV.	06/20/2014	ML14240A446

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936	OFFICIAL EXHIBIT - APP-048-00-BD01 - REPORT TO THE CHIEF ENGINEER ON WATER PERMIT APPLICATION NO. 2686-2 [INYAN KARA AQUIFER], ADAMS ACCESSION NO. ML13165A168, NOVEMBER 2, 2012.	11/02/2012	ML14240A457
937	OFFICIAL EXHIBIT - APP-049-00-BD01 - WATER RIGHT PERMIT NO. 2626-2 APPLICATION AND PERMIT.	06/21/2014	ML14247A344
938	OFFICIAL EXHIBIT - APP-050-00-BD01 - ER RAI RESPONSES, TRANSMITTAL LETTER AND TEXT; ML102380516.	08/12/2010	ML14246A312
939	OFFICIAL EXHIBIT - APP-051-00-BD01 - GROUNDWATER DISCHARGE PLAN (GDP) PERMIT APPLICATION, AS UPDATED WITH REPLACEMENT PAGES THROUGH NOVEMBER 2012.	03/31/2012	ML14246A317
940	OFFICIAL EXHIBIT - APP-052-00-BD01 - DEWEY-BURDOCK BLM SITE DETERMINATIONS; JANUARY 10, 2014 LETTER FROM BLM TO SD SHPO; ML14014A303.	01/10/2014	ML14241A455
941	OFFICIAL EXHIBIT - APP-053-00-BD01 - GWYN MCKEE INITIAL TESTIMONY.	06/20/2014	ML14240A450
942	OFFICIAL EXHIBIT - APP-054-00-BD01 - GWYN MCKEE CV.	06/20/2014	ML14240A444

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943	OFFICIAL EXHIBIT - APP-063-00-BD01 - ANSWERING TESTIMONY OF DR, LYNNE SEBASTIAN.	07/15/2014	ML14247A394
944	OFFICIAL EXHIBIT - APP-064-00-BD01 - DR. ADRIEN HANNUS ANSWERING TESTIMONY.	07/13/2014	ML14247A388
945	OFFICIAL EXHIBIT - APP-065-00-BD01 - HAL DEMUTH ANSWERING TESTIMONY.	07/14/2014	ML14247A391
946	OFFICIAL EXHIBIT - APP-066-00-BD01 - ERROL LAWRENCE ANSWERING TESTIMONY.	07/15/2014	ML14247A393
947	OFFICIAL EXHIBIT - APP-067-00-BD01 - FIGURE TO ACCOMPANY ERROL LAWRENCE ANSWERING TESTIMONY.	07/15/2014	ML14247A392
948	OFFICIAL EXHIBIT - APP-068-00-BD01 - DOYL FRITZ ANSWERING TESTIMONY.	07/15/2014	ML14247A387
949	OFFICIAL EXHIBIT - APP-069-00-BD01 - FIGURES TO ACCOMPANY DOYL FRITZ ANSWERING TESTIMONY.	07/15/2014	ML14247A390
950	OFFICIAL EXHIBIT - APP-070-00-BD01 - GWYN MCKEE ANSWERING TESTIMONY.	07/15/2014	ML14247A404

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951	OFFICIAL EXHIBIT - APP-071-00-BD01 - 2013 WILDLIFE MONITORING REPORT FOR THE DEWEY-BURDOCK PROJECT.	07/02/2014	ML14247A389
952	OFFICIAL EXHIBIT - INT-001-00-BD01 - TESTIMONY OF DR. LOUIS REDMOND REGARDING LAKOTA CULTURAL RESOURCES.	11/29/2014	ML14247A354
953	OFFICIAL EXHIBIT - INT-002-00-BD01 - 10/31/09 REPORT OF DR. RICHARD ABITZ ON POWERTECH BASELINE REPORT.	10/31/2009	ML14247A355
954	OFFICIAL EXHIBIT - INT-003 -00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF DR. LOUIS REDMOND.	06/20/2014	ML14247A381
955	OFFICIAL EXHIBIT - INT-004-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF DR. HANNAN LAGARRY	03/04/2010	ML14247A358
956	OFFICIAL EXHIBIT - INT-006-00-BD01 - DECLARATION OF WILMER MESTETH REGARDING LAKOTA CULTURAL RESOURCES.	06/20/2014	ML14247A356
957	OFFICIAL EXHIBIT - INT-007-00-BD01 - TESTIMONY OF SUSAN HENDERSON REGARDING WATER RESOURCES ISSUES AND CONCERNS OF DOWNFLOW RANCHER.	06/20/2014	ML14247A357

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958	OFFICIAL EXHIBIT - INT-010-00-BD01 - TESTIMONY OF PEGGY DETMERS A WILDLIFE BIOLOGIST REGARDING THE D-B SITE AND ENDANGERED SPECIES.	06/20/2014	ML14247A365
959	OFFICIAL EXHIBIT - INT-010A-00-BD01 - STATEMENT OF QUALIFICATIONS OF PEGGY DETMERS.	06/20/2014	ML14247A366
960	OFFICIAL EXHIBIT - INT-010B-00-BD01 - MAP - BEAVER CREEK WATERSHED.	06/20/2014	ML14247A362
961	OFFICIAL EXHIBIT - INT-010C-00-BD01 - MAP - CENTRAL FLYWAY.	06/20/2014	ML14247A363
962	OFFICIAL EXHIBIT - INT-010D-00-BD01 - MAP - WHOOPING CRANE ROUTE.	06/20/2014	ML14247A364
963	OFFICIAL EXHIBIT - INT-010E-00-BD01 - MAP - D-B PROJECT SITE.	05/29/2012	ML14247A370
964	OFFICIAL EXHIBIT - INT-010F-00-BD01 - GOOGLE PHOTO - DEWEY PROJECT - CLOSE.	06/20/2014	ML14247A371
965	OFFICIAL EXHIBIT - INT-010G-00-BD01 - GOOGLE PHOTO - DEWEY PROJECT - MEDIUM HEIGHT.	06/20/2014	ML14247A367

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
966	OFFICIAL EXHIBIT - INT-010H-00-BD01 - GOOGLE PHOTO - DEWEY PROJECT - WIDE.	06/20/2014	ML14247A368
967	OFFICIAL EXHIBIT - INT-010I-00-BD01 - MAP - 5 STATE AREA - D-B PROJECT.	06/20/2014	ML14247A369
968	OFFICIAL EXHIBIT - INT-010J-00-BD01 - GPS GOOGLE PHOTO - D-B PROJECT - CLOSE-UP.	09/08/2012	ML14247A375
969	OFFICIAL EXHIBIT - INT-010K-00-BD01 - GPS GOOGLE PHOTO - D-B PROJECT - DRAINAGE.	09/08/2012	ML14247A376
970	OFFICIAL EXHIBIT - INT-010L-00-BD01 - GPS GOOGLE PHOTO - D-B PROJECT - WIDESHOT.	09/08/2012	ML14247A372
971	OFFICIAL EXHIBIT - INT-010M-00-BD01 - MAP - D-B AREA.	06/20/2014	ML14247A373
972	OFFICIAL EXHIBIT - INT-010N-00-BD01 - GPS GOOGLE PHOTO - D-B PROJECT - TRIANGLE.	10/15/2013	ML14247A379
973	OFFICIAL EXHIBIT - INT-010O-00-BD01 - DIAGRAM - WHOOPING CRANE BIOACCUMULATON.	06/20/2014	ML14247A377

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
974	ORDER (GRANTING REQUEST TO WITHDRAW AND MOTION TO DISMISS CONTENTIONS 14A AND 14B).	07/15/2014	ML14196A353
975	APP-070 - GWYN MCKEE ANSWERTING TESTIMONY	07/15/2014	ML14197A211
976	APP-068 - DOYL FRITZ ANSWERING TESTIMONY	07/15/2014	ML14196A562
977	APP-064 - DR. ADRIEN HANNUS ANSWERING TESTIMONY.	07/13/2014	ML14196A564
978	APP-071 - 2013 WILDLIFE MONITORING REPORT FOR THE DEWEY-BURDOCK PROJECT	07/02/2014	ML14196A565
979	APP-069 - FIGURES TO ACCOMPANY DOYL FRITZ ANSWERING TESTIMONY.	07/15/2014	ML14196A566
980	APP-065 - HAL DEMUTH ANSWERING TESTIMONY.	07/14/2014	ML14196A567
981	APP-067 - FIGURE TO ACCOMPANY ERROL LAWRENCE ANSWERING TESTIMONY.	07/15/2014	ML14196A568

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982	APP-066 - ERROL LAWRENCE ANSWERING TESTIMONY.	07/15/2014	ML14196A569
983	POWERTECH (USA) INC., HEARING EXHIBITS LIST (FULL).	07/15/2014	ML14196A570
984	APP-063 - DR. LYNNE SEBASTIAN ANSWERING TESTIMONY	07/15/2014	ML14196A571
985	POWERTECH (USA), INC. REBUTTAL OF CONSOLIDATED INTERVENORS AND OGLALA SIOUX TRIBE INITIAL STATEMENTS OF POSITION.	07/15/2014	ML14196A563
986	CERTIFICATE OF SERVICE FROM PATRICIA JEHLE	07/15/2014	ML14196A573
987	NRC-152 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF HOPE E. LUHMAN	07/15/2014	ML14196A574
988	NOTICE OF EVIDENTIARY HEARING	07/16/2014	ML14197A315
989	ORDER (REJECTING FILINGS, DIRECTING COMPLIANCE WITH CASE MANAGEMENT ORDER AND PROVIDING OPPORTUNITY FOR RESUBMISSION OF REJECTED MATERIALS)	07/16/2014	ML14197A578

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
990	INT-019 - DR. REDMOND REBUTTAL LETTER	07/13/2014	ML14197A375
991	INT-020 - REBUTTAL WRITTEN TESTIMONY OF DR. HANNAN LAGARRY	07/15/2014	ML14197A376
992	INT-020A - EXPERT OPINION REGARDING THE PROPOSED DEWEY-BURDOCK PROJECT ISL MINE NEAR EDGEMONT, SOUTH DAKOTA	07/15/2014	ML14197A377
993	REBUTTAL TO OPENING POSITIONS OF APPLICANT AND NRC STAFF	07/15/2014	ML14197A559
994	POWERTECH (USA), INC. NOTICE OF ERRATA FOR REBUTTAL STATEMENT OF POSITION	07/17/2014	ML14198A650
995	REBUTTAL TO OPENING POSITIONS OF APPLICANT AND NRC STAFF	07/18/2014	ML14202A306
996	CONSOLIDATED INTERVENORS' AMENDED HEARING EXHIBITS	07/18/2014	ML14202A303
997	INT-021A - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA	07/18/2014	ML14199A775

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998	INT-021B - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA	07/18/2014	ML14199A776
999	INT-021C - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA	07/18/2014	ML14199A777
1000	INT-022A - VIOLATION HISTORY - SMITH HIGHLAND RANCH	07/18/2014	ML14202A113
1001	INT-022B - VIOLATION HISTORY SMITH HIGHLAND RANCH	07/18/2014	ML14200A001
1002	ORDER (QUESTION FOLLOWING PREHEARING HEARING CONFERENCE)	08/06/2014	ML14218A743
1003	PROCEEDINGS TRANSCRIPT - AUGUST 5, 2014 TELECONFERENCE	08/05/2014	ML14219A165
1004	ORDER (DIRECTING PARTIES TO FILE LEGAL MEMORANDA ON NEWLY ACQUIRED POWERTECH DATA)	08/08/2014	ML14220A273
1005	DECLARATION OF DONALD KELLEY	08/11/2014	ML14224A077

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1006	DECLARATION OF LINSEY MCLAIN	08/11/2014	ML14224A080
1007	REQUEST BY POWERTECH COUNSEL FOR CLARIFICATION OF ORDER DATED AUGUST 6, 2014	08/07/2014	ML14225A107
1008	CONSOLIDATED INTERVENORS' MEMORANDUM REGARDING POWERTECH'S NEWLY PURCHASED TVA DRILLING LOGS AND DATA FOR THE DEWEY-BURDOCK SITES	08/12/2014	ML14225A134
1009	POWERTECH (USA), INC.'S RESPONSE TO LICENSING BOARD ORDER REGARDING DATA DISCLOSURE (PKG. # ML14224A646)	08/12/2014	ML14224A648
1010	AFFIDAVIT OF RICHARD CLEMENT REGARDING DATA ACQUIRED AND YET TO BE ACQUIRED FROM ENERGY FUELS RESOURCES (USA), INC. (PKG. # ML14224A646)	08/12/2014	ML14224A647
1011	NRC STAFF'S RESPONSE TO BOARD'S AUGUST 8, 2014 ORDER	08/12/2014	ML14224A672
1012	OST-20 - POWERTECH EMAIL	08/07/2014	ML14224A675

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1013	OGLALA SIOUX TRIBE'S RESPONSE TO THE BOARD'S AUGUST 8, 2014 ORDER	08/12/2014	ML14224A676
1014	LIMITED APPEARANCE STATEMENT FROM JAMES PETERSEN REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	02/08/2014	ML14042A308
1015	LIMITED APPEARANCE STATEMENT FROM KEVIN WEILAND REGARDING POWERTCH (USA), INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY	08/19/2014	ML14231B271
1016	LIMITED APPEARANCE HEARING FOR MORNING SESSION HELD ON AUGUST 18, 2014.	08/22/2014	ML14234A068
1017	LIMITED APPEARANCE HEARING FOR AFTERNOON SESSION HELD ON AUGUST 18, 2014.	08/22/2014	ML14234A067
1018	AUGUST 19, 2014 PROCEEDINGS TRANSCRIPT (PAGES 692-920)	08/22/2014	ML14234A449
1019	AUGUST 20, 2014 PROCEEDINGS TRANSCRIPT (PAGES 921-1170)	08/20/2014	ML14237A336

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1020	AUGUST 21, 2014 PROCEEDINGS TRANSCRIPT (PAGES 1171 - 1328)	08/21/2014	ML14238A184
1021	NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S AUGUST 16, 2014 MOTION.	08/26/2014	ML14238A504
1022	POWERTECH (USA), INC. RESPONSE TO OGLALA SIOUX TRIBE'S MOTION FOR MANDATORY DISCLOSURE (PKG. # ML14239A134)	08/26/2014	ML14239A135
1023	AFFIDAVIT OF JOHN MAYS, CHIEF OPERATING OFFICER, POWERTECH (USA), INC. (PKG. # ML14239A134).	08/26/2014	ML14239A136
1024	POWERTECH (USA), INC. MOTION FOR RECONSIDERATION OF THE LICENSING BOARD'S AUGUST 20, 2014 RULING ON RELEVANCY FOR MANDATORY DISCLOSURES	09/02/2014	ML14245A650
1025	NRC STAFF'S PROPOSED TRANSCRIPT CORRECTIONS (PKG. # ML14247A636).	09/04/2014	ML14247A637
1026	NRC STAFF'S ERRATA LIST FOR HEARING TRANSCRIPT (PKG. # ML14247A636)	09/04/2014	ML14247A638

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1027	POST HEARING ORDER	09/08/2014	ML14251A377
1028	JOINT MOTION TO AMEND PROTECTIVE ORDER TO INCLUDE DOCUMENTS TO BE DISCLOSED UNDER SEPTEMBER 10, 2014 LICENSING BOARD ORDER	09/11/2014	ML14254A503
1029	ORDER (GRANTING JOINT MOTION TO AMEND PROTECTIVE ORDER)	09/12/2014	ML14255A147
1030	OFFICIAL EXHIBIT - APP-001-00-BD01 - DR. LYNNE SEBASTIAN INITIAL TESTIMONY.	06/20/2014	ML14246A346
1031	OFFICIAL EXHIBIT - APP-002-00-BD01 - DR. LYNNE SEBASTIAN CV.	06/20/2014	ML14240A419
1032	OFFICIAL EXHIBIT - APP-003-00-BD01 - DR. ADRIEN HANNUS INITIAL TESTIMONY.	06/20/2014	ML14240A423
1033	OFFICIAL EXHIBIT - APP-004-00-BD01 - DR. ADRIEN HANNUS CV.	06/20/2014	ML14240A424
1034	OFFICIAL EXHIBIT - APP-005-00-BD01 - REPRESENTATIVE SAMPLE OF ALAC PROJECTS.	06/20/2014	ML14240A425

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1035	OFFICIAL EXHIBIT - APP-006-00-BD01 - ACHP SECTION 106 REGULATIONS: TEXT OF ACHP'S REGULATIONS, "PROTECTION OF HISTORIC PROPERTIES: (36 CFR PART 800) (INCORPORATES AMENDMENTS EFFECTIVE AUG. 5, 2004)".	06/20/2014	ML14246A347
1036	OFFICIAL EXHIBIT - APP-007-00-BD01 - NATIONAL PARK SERVICE, SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR ARCHEOLOGY AND HISTORIC PRESERVATION, 1983	06/14/2014	ML14240A421
1037	OFFICIAL EXHIBIT - APP-008-00-BD01 - SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE, GUIDELINES FOR CULTURAL RESOURCE SURVEYS AND SURVEY REPORTS IN SOUTH DAKOTA (FOR REVIEW AND COMPLIANCE), 2005.	09/30/2005	ML14240A417
1038	OFFICIAL EXHIBIT - APP-009-00-BD01 - LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH (USA) INC.'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT (PUBLIC VERSION), VOL. 3 PART 6; ML100670366.	03/31/2008	ML14240A418
1039	OFFICIAL EXHIBIT - APP-010-00-BD01 - MICHAEL FOSHA INITIAL TESTIMONY.	06/20/2014	ML14240A427
1040	OFFICIAL EXHIBIT - APP-021-A-00-BD01 - DEWEY-BURDOCK PROJECT TECHNICAL REPORT (TR); RE-SUBMITTED AUGUST 2009; PART 1; TEXT THRU SEC. 2.7.1; ML092870298	02/28/2009	ML14247A342

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1041	OFFICIAL EXHIBIT - APP-021-AA-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 27; APP. 2.2-A THRU 2.6-B; ML092870350.	10/01/2008	ML14247A332
1042	OFFICIAL EXHIBIT - APP-021-B-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 2; TEXT SEC. 2.7.2 THRU 2.9; ML092870295.	06/21/2014	ML14245A326
1043	OFFICIAL EXHIBIT - APP-021-BB-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 28; APP. 2.6-C THRU 2.7-B(PARTIAL); ML092870351	06/21/2014	ML14245A328
1044	OFFICIAL EXHIBIT - APP-021-C-00-BD01 - DEWEY BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009, PART 3; TEXT SEC 3 THRU END; ML092870299.	06/21/2014	ML14245A334
1045	OFFICIAL EXHIBIT - APP-021-CC-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 29, APP. 2.7-B (PARTIAL) THRU 2.7-F; ML092870370.	06/21/2014	ML14245A335
1046	OFFICIAL EXHIBIT - APP-021-D-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 4; PLATE 1.5-1; ML092870313.	06/21/2014	ML14245A331
1047	OFFICIAL EXHIBIT - APP-021-DD-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 30; APP. 2.7-G THRU 2.8-F (PARTIAL); ML092870354.	06/21/2014	ML14246A349

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1048	OFFICIAL EXHIBIT - APP-021-E-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 5; PLATE 1.5-2; ML092870314.	06/21/2014	ML14245A333
1049	OFFICIAL EXHIBIT - APP-021-EE-00-BD01 - DEWEY-BURDOCK TR; RE-SUBMITTED AUGUST 2009; PART 31; APP. 2-8.F (PARTIAL); ML092870357.	06/21/2014	ML14245A329
1050	OFFICIAL EXHIBIT - APP-021-F-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTAL AUGUST 2009; PART 6; PLATE 2.5-1; ML092870315.	08/31/2009	ML14245A343
1051	OFFICIAL EXHIBIT - APP-021-FF-00-BD01 - DEWEY-BURDOCK PROJECT TR; RE-SUBMITTED AUGUST 2009; PART 32; APP. 2.8-G THRU 2.9-A; ML092870358.	06/21/2014	ML14246A322
1052	OFFICIAL EXHIBIT - INT-010P-00-BD01 - BEAVER CREEK FINAL FECAL COLIFORM.	01/31/2010	ML14247A378
1053	OFFICIAL EXHIBIT - INT-010Q-00-BD01 - US DEPT OF INTERIOR, FISH & WILDLIFE SERVICE	06/17/2014	ML14247A420
1054	OFFICIAL EXHIBIT - INT-011-00-BD01 - TESTIMONY OF MARVIN KAMMERA, A RANCHER, ON POTENTIAL IMPACTS ON DOWN FLOW RANCHERS AS TO INYAN KARA WATER QUANTITY AND QUALITY.	06/20/2014	ML14247A359

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1055	OFFICIAL EXHIBIT - INT-012-00-BD01 - TESTIMONY OF DAYTON HYDE, OWNER/OPERATOR OF BLACK HILLS WILD HORSE SANCTUARY, ON POTENTIAL IMPACTS AND CONCERNS ABOUT PROPOSED ISL MINE ON DOWNFLOW SURFACE AND UNDERGROUND WATER RESOURCES.	02/26/2010	ML14247A353
1056	OFFICIAL EXHIBIT - INT-013-00-BD01 - TESTIMONY OF DR. HANNON LAGARRY A GEOLOGIC STRATIGRAPHER REGARDING FRACTURES, FAULTS, AND OTHER GEOLOGIC FEATURES NOT ADEQUATELY CONSIDERED BY POWERTECH OR NRC STAFF.	06/20/201	ML14247A351
1057	OFFICIAL EXHIBIT - INT-014-00-BD01 - TESTIMONY OF LINSEY MCLANE, A BIO-CHEMIST REGARDING BIOACCUMULATION OF HEAVY METALS IN PLANT AND ANIMAL SPECIES.	06/20/2014	ML14247A352
1058	OFFICIAL EXHIBIT - INT-014B-00-BD01 - DECLARATION OF LINSEY MCLAIN TESTIMONY.	04/11/2014	ML14247A416
1059	OFFICIAL EXHIBIT - INT-016-00-BD01 - PETITION TO INTERVENE, WITH EXHIBITS.	03/08/2010	ML14247A360
1060	OFFICIAL EXHIBIT - INT-017 -00-BD01 - STATEMENT OF CONTENTIONS ON DSEIS, WITH EXHIBITS.	01/25/2013	ML14247A361

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1061	OFFICIAL EXHIBIT - INT-018 -00-BD01 - INTERVENOR STATEMENT OF CONTENTIONS ON FSEIS, WITH EXHIBITS.	03/17/2014	ML14247A380
1062	OFFICIAL EXHIBIT - INT-019-00-BD01 - DR. REDMOND REBUTTAL LETTER.	07/13/2014	ML14247A405
1063	OFFICIAL EXHIBIT - INT-020-00-BD01 - REBUTTAL WRITTEN TESTIMONY OF DR. HANNAN LAGARRY.	07/15/2014	ML14247A406
1064	OFFICIAL EXHIBIT - INT-020A-00-BD01 - EXPERT OPINION REGARDING THE PROPOSED DEWEY-BURDOCK PROJECT ISL MINE NEAR EDGEMONT, SOUTH DAKOTA.	07/15/2014	ML14247A407
1065	OFFICIAL EXHIBIT - INT-021A-00-BD01 - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA.	07/18/2014	ML14247A408
1066	OFFICIAL EXHIBIT - INT-021B-00-BD01 - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA.	10/26/2012	ML14247A409
1067	OFFICIAL EXHIBIT - INT-021C-00-BD01 - VIOLATION HISTORY - CROW BUTTE ISL MINE IN CRAWFORD, NEBRASKA.	07/18/2014	ML14247A410
1068	OFFICIAL EXHIBIT - INT-022A-00-BD01 - VIOLATION HISTORY - SMITH HIGHLAND RANCH.	07/22/2012	ML14247A414

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1069	OFFICIAL EXHIBIT - INT-022B -00-BD01 - VIOLATION HISTORY - SMITH HIGHLAND RANCH.	07/19/2014	ML14247A412
1070	OFFICIAL EXHIBIT - INT-022C-00-BD01 - VIOLATION HISTORY - SMITH HIGHLAND RANCH.	05/25/2012	ML14247A411
1071	OFFICIAL EXHIBIT - NRC-001-00-BD01-INITIAL TESTIMONY AND AFFIDAVITS FROM HAIMANOT YILMA, KELLEE L. JAMERSON, THOMAS LANCASTER, JAMES PRIKRYL AND AMY HESTER.	06/20/2014	ML14246A400
1072	OFFICIAL EXHIBIT - NRC-002-R-00-BD01 - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF PO WEN (KEVIN) HSUEH.	08/13/2014	ML14247A418
1073	OFFICIAL EXHIBIT - NRC-003-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF HAIMANOT YILMA	06/20/2014	ML14246A404
1074	OFFICIAL EXHIBIT - NRC-004-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF KELLEE L. JAMERSON	06/20/2014	ML14246A403
1075	OFFICIAL EXHIBIT - NRC-005-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF THOMAS LANCASTER	06/20/2014	ML14241A457

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1076	OFFICIAL EXHIBIT - NRC-006-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF JAMES PRIKRYL	06/20/2014	ML14246A401
1077	OFFICIAL EXHIBIT - NRC-007-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF AMY HESTER	06/20/2014	ML14246A402
1078	OFFICIAL EXHIBIT - NRC-008-A-1-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 1, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT	01/31/2014	ML14246A350
1079	OFFICIAL EXHIBIT - NRC-008-A-2-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 1, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL. . . .	06/21/2014	ML14246A326
1080	OFFICIAL EXHIBIT - NRC-008-B-1-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 2, FINAL REPORT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL. . . .	01/31/2014	ML14246A327

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1081	OFFICIAL EXHIBIT - NRC-008-B-2-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 2., FINAL REPORT, EIS FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH. . . .	01/31/2014	ML14247A334
1082	OFFICIAL EXHIBIT - NRC-009-A-1-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 1, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE	06/20/2014	ML14247A350
1083	OFFICIAL EXHIBIT - NRC-009-A-2-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 1, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE	11/30/2912	ML14246A329
1084	OFFICIAL EXHIBIT - NRC-009-B-1-00-BD01 - NUREG-1910, S4, V2, DFC, EIS FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPL TO THE GEIS FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTER 5 TO 11 AND APPENDICES). . . .	11/30/2012	ML14246A330
1085	OFFICIAL EXHIBIT - NRC-009-B-2-00-BD01 - NUREG-1910, SUPPLEMENT 4, VOL. 2, DRAFT REPORT FOR COMMENT, ENVIRONMENTAL IMPACT STATEMENT FOR THE DEWEY-BURDOCK PROJECT IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA: SUPPLEMENT TO THE	11/30/2012	ML14246A331

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1086	OFFICIAL EXHIBIT - NRC-020-00-BD01 - NRC LETTER TRANSMITTING THE APPLICANT'S STATEMENT OF WORK TO ALL CONSULTING PARTIES. (MAY 7,2012). (ADAMS ACCESSION NO. ML121250102).	05/07/2012	ML14246A411
1087	OFFICIAL EXHIBIT - NRC-021-00-BD01 - NRC SENT INITIAL SECTION 106 INVITATION LETTERS TO 17 TRIBES REQUESTING THEIR INPUT ON THE PROPOSED ACTION. ADAMS ACCESSION NO. ML100331999.	03/19/2010	ML14241A542
1088	OFFICIAL EXHIBIT - NRC-022-00-BD01 - LETTER TO OGLALA SIOUX TRIBE RE: REQUEST FOR UPDATED TRIBAL COUNCIL MEMBERS CONSULTATION (SEP. 8, 2010) ADAMS ACCESSION NO. ML102450647).	09/08/2010	ML14246A407
1089	OFFICIAL EXHIBIT - NRC-023-00-BD01 - POWERTECH DEWEY-BURDOCK DRAFT SCOPE OF WORK AND FIGURES - IDENTIFICATION OF PROPERTIES OF RELIGIOUS AND CULTURAL SIGNIFICANCE (MAR.07,2012) (ADAMS ACCESSION NO. ML120870197).	03/07/2012	ML14246A413
1090	OFFICIAL EXHIBIT - NRC-024-00-BD01 - NRC STAFF LETTER POSTPONING FALL 2012 TRIBAL SURVEY. (12/14/2012). ADAMS ACCESSION NO. ML12335A175.	12/14/2012	ML14246A409
1091	OFFICIAL EXHIBIT - NRC-025-A-00-BD01 - HDR, ENGINEERING INC., "ASSESSMENT OF THE VISUAL EFFECTS OF THE POWDER RIVER BASIN PROJECT, NEW BUILD SEGMENT, ON PREVIOUSLY IDENTIFIED HISTORIC PROPERTIES IN SOUTH DAKOTA AND WYOMING". . . .	10/20/2009	ML14246A319

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1092	OFFICIAL EXHIBIT - NRC-025-B-00-BD01 - HDR, ENGINEERING INC. "ASSESSMENT OF THE VISUAL EFFECTS OF THE POWDER RIVER BASIN PROJECT, NEW BUILD SEGMENT, ON PREVIOUSLY IDENTIFIED HISTORIC PROPERTIES IN SOUTH DAKOTA AND WYOMING.". . . .	10/31/2009	ML14246A321
1093	OFFICIAL EXHIBIT - NRC-026-00-BD01 - WY SHPO (WYOMING STATE HISTORIC PRESERVATION OFFICE). "DEWEY-BURDOCK LINE OF SIGHT ANALYSIS." EMAIL (SEPTEMBER 4) FROM R. CURRIT, SENIOR ARCHAEOLOGIST, WYOMING STATE HISTORIC PRESERVATION OFFICE TO H. YILMA,NRC. . . .	09/04/2014	ML14246A423
1094	OFFICIAL EXHIBIT - NRC-027-00-BD01 - ACHP, NATIONAL REGISTER EVALUATION CRITERIA, ADVISORY COUNCIL ON HISTORIC PRESERVATION. (MAR. 11, 2008) (2012 ADAMS ACCESSION NO. ML12262A055).	08/28/2012	ML14241A474
1095	OFFICIAL EXHIBIT - NRC-028-00-BD01 - EMAIL FROM WASTE WIN YOUNG TO NRC STAFF RE SRST COMMENTS FINAL DRAFT PA DEWEY-BURDOCK SRST THPO COMMENTS (FEB. 20, 2014) (ADAMS ACCESSION NO. ML14105A367).	06/21/2014	ML14241A462
1096	OFFICIAL EXHIBIT - NRC-029-00-BD01 - LETTER TO CHEYENNE RIVER SIOUX TRIBE RE: RESPONSE RECEIVED REGARDING TRIBAL SURVEY FOR DEWEY-BURDOCK (DEC. 14, 2012) (ADAMS ACCESSION NO. ML12335A175).	12/14/2012	ML14241A471

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1097	OFFICIAL EXHIBIT - NRC-030-00-BD01 - STANDING ROCK SIOUX TRIBE COMMENTS - FINAL DRAFT PA DEWEY-BURDOCK SRST-THPO COMMENTS (FEB. 05, 2014) (ADAMS ACCESSION NO. ML14055A513).	02/05/2014	ML14241A470
1098	OFFICIAL EXHIBIT - NRC-031-00-BD01 - 04/07/2014 LETTER FROM THE ADVISORY COUNCIL ON HISTORIC PRESERVATION TO THE STANDING ROCK SIOUX TRIBE CONCERNING THE DEWEY- BURDOCK ISR PROJECT, SD. ADAMS ACCESSION NO. ML14115A448.	04/07/2014	ML14241A473
1099	OFFICIAL EXHIBIT - NRC-033-00-BD01 - SUMMARY OF AUGUST 30,2012 PUBLIC MEETING WITH POWERTECH INC, TO DISCUSS POWERTECH'S PROPOSED ENVIRONMENTAL MONITORING PROGRAM RELATED TO THE PROPOSED DEWEY-BURDOCK PROJECT. ADAMS ACCESSION NO. ML12255A258.	09/13/2012	ML14246A422
1100	OFFICIAL EXHIBIT - NRC-034-00-BD01 - LETTER TO PONCA TRIBE OF NEBRASKA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 4, 2011) (ADAMS ACCESSION NO. ML110550372).	03/04/2011	ML14241A534
1101	OFFICIAL EXHIBIT - NRC-035-00-BD01 - LETTER TO SANTEE SIOUX TRIBE OF NEBRASKA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 4, 2011) (ADAMS ACCESSION NO. ML110550172).	03/04/2011	ML14241A472

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1102	OFFICIAL EXHIBIT - NRC-036-00-BD01 - LETTER TO CROW TRIBE OF MONTANA RE: INVITATION FOR FORMAL CONSULTATION UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (MAR. 04,2011) (ADAMS ACCESSION NO. ML110550535).	03/04/2011	ML14246A424
1103	OFFICIAL EXHIBIT - NRC-037-00-BD01 - YANKTON SIOUX TRIBE REQUESTS FACE-TO-FACE MEETING TO DISCUSS PAST AND CURRENT PROJECT AS WELL AS REQUEST FOR TCP SURVEY. SISSETON WAHPETON AND FORT PECK TRIBES ALSO ASKED FOR FACE-TO-FACE MEETING VIA PHONE. . . .	12/03/2010	ML14246A425
1104	OFFICIAL EXHIBIT - NRC-038-A-00-BD01 - INVITATION FOR INFORMAL INFORMATION-GATHERING MEETING PERTAINING TO THE DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LICENSE RENEWAL, IN-SITU URANIUM RECOVERY PROJECTS (MAY 12, 2011).	05/12/2011	ML14241A464
1105	OFFICIAL EXHIBIT - NRC-010-A-1-00-BD01 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4) (MAY 2009) (ADAMS ACCESSION NO. . . .	05/31/2009	ML14246A328
1106	OFFICIAL EXHIBIT - NRC-010-A-2-00-BD01 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4)(MAY 2009) (ADAMS ACCESSION NO. ML091480244 PAGE 153-512	06/21/2014	ML14247A345

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1107	OFFICIAL EXHIBIT - NRC-010-A-3-00-BD01 - NUREG-1910, VOL. 1, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 1 THROUGH 4) (MAY 2009) (ADAMS ACCESSION NO. ML091480244) PAGES 513-704.	08/31/2003	ML14246A333
1108	OFFICIAL EXHIBIT - NRC-010-B-1-00-BD01 - NUREG-1910, VOL. 2, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 5 THROUGH 12 AND APPENDICES) (MAY 2009). PAGES 1-272.	05/31/2009	ML14246A332
1109	OFFICIAL EXHIBIT - NRC-010-B-2-00-BD01 - NUREG-1910, VOL. 2, FINAL REPORT, GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES (CHAPTERS 5 THROUGH 12 AND APPENDICES) (MAY 2009). PAGES 273-612.	06/21/2014	ML14246A351
1110	OFFICIAL EXHIBIT - NRC-011-00-BD01 - DEWEY-BURDOCK RECORD OF DECISION (APR. 8, 2014) (ADAMS ACCESSION NO. ML14066A466).	04/08/2014	ML14246A414
1111	OFFICIAL EXHIBIT - NRC-012-00-BD01 - MATERIALS LICENSE SUA-1600, POWERTECH (USA), INC. (APR. 8, 2014) (ADAMS ACCESSION NO. ML14043A392).	04/08/2014	ML14246A408
1112	OFFICIAL EXHIBIT - NRC-013-00-BD01 - NUREG-1569, STANDARD REVIEW PLAN FOR IN-SITU LEACH URANIUM EXTRACTION LICENSE APPLICATIONS (JUNE 4, 2003) (ADAMS ACCESSION NO. ML031550272).	06/30/2003	ML14246A320

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1113	OFFICIAL EXHIBIT - NRC-014-00-BD01 - NUREG-1748, FINAL REPORT, ENVIRONMENTAL REVIEW GUIDANCE FOR LICENSING ACTIONS ASSOCIATED WITH NMSS PROGRAMS (AUG. 2003) (ADAMS ACCESSION NO. ML032450279).	06/21/2014	ML14247A329
1114	OFFICIAL EXHIBIT - NRC-015-00-BD01 - DEWEY-BURDOCK ISR PROJECT SUMMARY OF TRIBAL OUTREACH TIMELINE (APR. 8, 2014) (ADAMS ACCESSION NO. ML14099A010).	04/08/2014	ML14246A410
1115	OFFICIAL EXHIBIT - NRC-016-00-BD01 - SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT. (ADAMS ACCESSION NO. ML14077A002)	02/05/2014	ML14246A415
1116	OFFICIAL EXHIBIT - NRC-017-00-BD01 - DEWEY-BURDOCK ISR PROJECT DOCUMENTS PERTAINING TO SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (JUNE 10, 2014)	06/20/2014	ML14246A418
1117	OFFICIAL EXHIBIT - NRC-018-A-00-BD01 - FINAL PA FOR THE DEWEY-BURDOCK PROJECT. (ADAMS ACCESSION NOS. ML14066A347).	03/19/2014	ML14246A421
1118	OFFICIAL EXHIBIT - NRC-018-B-00-BD01 - FINAL APPENDIX FOR THE DEWEY-BURDOCK PROJECT PA. (ADAMS ACCESSION NO. ML14066A350).	06/20/2014	ML14246A406

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1119	OFFICIAL EXHIBIT - NRC-018-C-00-BD01 - NRC PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML14098A464).	06/20/2014	ML14246A359
1120	OFFICIAL EXHIBIT - NRC-018-D-00-BD01 - LETTER FROM ACHP FINALIZING SECTION 106. (ADAMS ACCESSION NO. ML14099A025).	04/07/2014	ML14246A405
1121	OFFICIAL EXHIBIT - NRC-018-E-00-BD01 - ACHP PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML4098A1550).	04/07/2014	ML14246A417
1122	OFFICIAL EXHIBIT - NRC-018-F-00-BD01 - BLM SIGNATURE ON PA; (MAR. 25, 2014) (ADAMS ACCESSION NO. ML14098A102).	05/25/2014	ML14246A419
1123	OFFICIAL EXHIBIT - NRC-018-G-00-BD01 - SOUTH DAKOTA SHPO PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML14098A107).	04/24/2014	ML14241A461
1124	OFFICIAL EXHIBIT - NRC-018-H-00-BD01 - POWERTECH PA SIGNATURE PAGE. (ADAMS ACCESSION NO. ML14098A110).	03/24/2014	ML14246A420
1125	OFFICIAL EXHIBIT - NRC-019-00-BD01 - SUMMARY REPORT REGARDING THE TRIBAL CULTURAL SURVEYS COMPLETED FOR THE DEWEY-BURDOCK URANIUM IN SITU RECOVERY PROJECT. (DEC. 16, 2013) (ADAMS ACCESSION NO. ML13343A142).	06/20/2014	ML14246A412

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1126	OFFICIAL EXHIBIT - NRC-038-B-00-BD01 - INFORMAL INFORMATION GATHERING MEETING - PINE RIDGE, SD INVITATION TO SECTION 106 CONSULTATION REGARDING DEWEY-BURDOCK PROJECT (ADAMS ACCESSION NO. ML111870622) (PACKAGE).	07/08/2011	ML14245A283
1127	OFFICIAL EXHIBIT - NRC-038-C-00-BD01 - MEMO TO KEVIN HSUEH RE: TRANSCRIPT FOR THE JUNE 8, 2011 INFORMAL INFORMATION - GATHERING MEETING HELD IN PINE RIDGE, SD (JULY 8, 2011) (ADAMS ACCESSION NO. ML111870623).	07/08/2011	ML14245A247
1128	OFFICIAL EXHIBIT - NRC-038-D-00-BD01 - ATTENDEE LIST - INFORMAL INFORMATION GATHERING MEETING HELD IN PINE RIDGE, SD (JULY 8, 2011) (ADAMS ACCESSION NO. ML111870624).	06/20/2014	ML14245A242
1129	OFFICIAL EXHIBIT - NRC-038-E-00-BD01 - TRANSCRIPT RE: INFORMAL INFORMATION-GATHERING MEETING PERTAINING TO CROW BUTTE INC. AND POWERTECH INC. PROPOSED ISR FACILITIES (JUNE 8, 2011) (ADAMS ACCESSION NO.	06/08/2011	ML14245A238
1130	OFFICIAL EXHIBIT - NRC-038-F-00-BD01 - PRESENTATION SLIDES FOR THE SECTION 106 CONSULTATION MEETING PERTAINING TO THE PROPOSED DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LR IN-SITU URANIUM RECOVERY PROJECTS (JUNE 8, 2011).	06/08/2011	ML14241A533

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1131	OFFICIAL EXHIBIT - NRC-039-00-BD01 - MEETING AGENDA FOR INFORMAL INFORMATION GATHERING PERTAINING TO DEWEY-BURDOCK, CROW BUTTE. ACCOMPANYING NRC LETTER WITH MAP OF THE PROPOSED PROJECT BOUNDARY AND DIGITAL COPIES OF THE CLASS III	06/07/2011	ML14246A427
1132	OFFICIAL EXHIBIT - NRC-040-00-BD01 - LETTER TO RICHARD BLUBAUGH, POWERTECH, RE: NRC INFORMATION REQUEST RELATING TO SECTION 106 AND NEPA REVIEWS FOR THE PROPOSED DEWEY-BURDOCK PROJECT (AUG. 12, 2011) (ADAMS ACCESSION NO. ML112170237).	08/12/2011	ML14241A532
1133	OFFICIAL EXHIBIT - NRC-041-00-BD01 - 8/31/2011 NRC LETTER FROM POWERTECH LETTER AND PROPOSAL IN RESPONSE TO THE AUG 12, 2011 REQUEST FOR NHPA SECTION 106 INFO. THIS LETTER ENCLOSED A PROPOSAL WHICH OUTLINED A PHASED APPROACH TO	08/31/2011	ML14246A362
1134	OFFICIAL EXHIBIT - NRC-042-00-BD01 - NRC PROVIDED COPIES OF THE 6/8/2011 MEETING TRANSCRIPTS TO ALL THE TRIBES. LETTER TO JAMES LAYSBAD OF OGLALA SIOUX TRIBE ENCLOSING THE TRANSCRIPT OF THE INFORMATION-GATHERING MEETING AND UNREDACTED SURVEY. . . .	10/20/2011	ML14245A237
1135	OFFICIAL EXHIBIT - NRC-044-00-BD01 - 1/19/2012 NRC INVITATION LETTERS TO ALL THPOS FOR A PLANNED FEB 2012 MEETING TO DISCUSS HOW BEST TO CONDUCT THE TCP SURVEY. (ADAMS ACCESSION NO. ML12031A280).	01/19/2012	ML14245A244

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1136	OFFICIAL EXHIBIT - NRC-045-00-BD01 - 2/01/2012 (FEBRUARY 14-15, 2012 MEETING AGENDA). (ADAMS ACCESSION NO. ML120320436).	02/14/2012	ML14245A239
1137	OFFICIAL EXHIBIT - NRC-046-00-BD01 - 3/28/2012 - NRC TRANSMITTED TRANSCRIPTS OF THE NRC FACE-TO-FACE MEETING IN RAPID CITY, SD TO DISCUSS HOW BEST TO CONDUCT THE TCP SURVEY. (ADAMS ACCESSION NOS. ML120670319).	03/26/2012	ML14245A245
1138	OFFICIAL EXHIBIT - NRC-047-00-BD01 - MEETING THE "REASONABLE AND GOOD FAITH" IDENTIFICATION STANDARD IN SECTION 106 REVIEW (ACHP), AVAILABLAE AT HTTP://WWW.ACHP.GOV/DOCS/REASONABLE_GOOD_FAITH_IDENTIFICATION.PDF.	06/20/2014	ML14241A530
1139	OFFICIAL EXHIBIT - NRC-048-00-BD01 - NEPA AND NHPA, A HANDBOOK FOR INTEGRATING NEPA AND SECTION 106 (CEQ AND ACHP), AVAILABLE AT HTTP://WWW.ACHP.GOV/DOCS/NEPA NHPA SECTION 106 HANDBOOK MAR2013.PDF.	03/31/2013	ML14241A531
1140	OFFICIAL EXHIBIT - NRC-049-00-BD01 - LETTER TO CROW CREEK SIOUX TRIBE RE: TRANSMITTAL OF APPLICANT'S DRAFT STATEMENT OF WORK (MAY 7, 2012) (ADAMS ACCESSION NO. ML 121250102).	05/07/2012	ML14245A240
1141	OFFICIAL EXHIBIT - NRC-050-00-BD01 - LETTER TO OGLALA SIOUX TRIBE RE: TRANSMITTAL OF TRANSCRIPT FROM TELECONFERENCE CONDUCTED ON APRIL 24, 2012 (JUNE 26, 2012) (ADAMS ACCESSION NO. ML12177A109).	06/26/2012	ML14245A241

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1142	OFFICIAL EXHIBIT - NRC-051-00-BD01 - NRC EMAIL RE: AUGUST 9, 2012 TELECONFERENCE INVITATION AND REVISED STATEMENT OF WORK TRANSMITTAL (AUG. 07, 2012) (ADAMS ACCESSION NO. ML12261A375).	08/07/2012	ML14245A258
1143	OFFICIAL EXHIBIT - NRC-052-00-BD01 - NRC REQUEST RE: SCOPE OF WORK WITH COVERAGE RATE, START DATE, DURATION, AND COST (AUG 30, 2012) (ADAMS ACCESSION NO. ML12261A470).	08/30/2012	ML14245A272
1144	OFFICIAL EXHIBIT - NRC-053-00-BD01 - LETTER TO TRIBAL HISTORIC PRESERVATION OFFICER RE: TRANSMITTAL OF TRIBES' PROPOSAL AND COST ESTIMATE OF THE DEWEY-BURDOCK ISR PROJECT (OCT. 12, 2012) (ADAMS ACCESSION NO. ML12286A310).	10/12/2012	ML14245A279
1145	OFFICIAL EXHIBIT - NRC-054-00-BD01 - LETTER TO JAMES LAYSBAD, OGLALA SIOUX TRIBE, RE: INFORMATION RELATED TO TRADITIONAL CULTURAL PROPERTIES; DEWEY-BURDOCK, CROW BUTTE NORTH TREND, AND CROW BUTTE LR ISP PROJECTS (OCT. 28, 2011)	10/28/2011	ML14247A347
1146	OFFICIAL EXHIBIT - NRC-055-00-BD01 - LETTER TO TRIBAL HISTORIC PRESERVATION OFFICERS RE: REQUEST FOR A PROPOSAL WITH COST ESTIMATE FOR DEWEY BURDOCK PROJECT (SEP. 18, 2012) (ADAMS ACCESSION NO. ML12264A594).	09/18/2012	ML14245A253

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1147	OFFICIAL EXHIBIT - NRC-056-00-BD01 - H. YILMA EMAIL RE: DRAFT PA FOR DEWEY-BURDOCK PROJECT (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A420).	11/22/2013	ML14245A270
1148	OFFICIAL EXHIBIT - NRC-057-00-BD01 - DEWEY-BURDOCK PROJECT DRAFT PROGRAMMATIC AGREEMENT (NOV. 22, 2013) (ADAMS ACCESSION NO. ML ML13329A466).	11/22/2013	ML14245A271
1149	OFFICIAL EXHIBIT - NRC-058-00-BD01 - DRAFT APPENDIX A FOR DEWEY-BURDOCK PROJECT PA (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A468).	11/22/2013	ML14245A257
1150	OFFICIAL EXHIBIT - NRC-059-00-BD01 - TABLE 1.0 - NRC NRHP DETERMINATIONS FOR DEWEY-BURDOCK DRAFT PA (NOV. 22, 2013) (ADAMS ACCESSION NO. ML13329A470).	11/22/2013	ML14245A275
1151	OFFICIAL EXHIBIT - NRC-060-00-BD01 - STB FINANCE DOCKET NO. 33407, DAKOTA, MINNESOTA & EASTERN RAILROAD CORPORATION CONSTRUCTION INTO THE POWDER RIVER BASIN: REQUEST FOR REVIEW AND COMMENT ON 21 ARCHAEOLOGICAL SITES, SURFACE TRANSPORTATION	02/08/2013	ML14245A252
1152	OFFICIAL EXHIBIT - NRC-061-00-BD01 - LETTER TO OGLALA SIOUX TRIBE RE: TRANSMITTAL OF TCP SURVEY REPORT FOR DEWEY-BURDOCK PROJECT (DEC. 23, 2013) (ADAMS ACCESSION NO. ML13357A234).	12/23/2013	ML14245A274

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1153	OFFICIAL EXHIBIT - NRC-062-00-BD01 - NRC OVERALL DETERMINATIONS OF ELIGIBILITY AND ASSESSMENTS OF EFFECTS (DEC. 16, 2013) (ADAMS ACCESSION NO. ML13343A155).	06/21/2014	ML14245A260
1154	OFFICIAL EXHIBIT - NRC-063-00-BD01 - DRAFT NRC NRHP DETERMINATIONS - TABLE 1.0 FOR DRAFT PA (DEC. 13, 2013) (ADAMS ACCESSION NO. ML13354B948).	06/20/2014	ML14245A263
1155	OFFICIAL EXHIBIT - NRC-073-00-BD01 - A LEVEL III CULTURAL RESOURCES EVALUATION OF POWERTECH USA INC.'S PROPOSED DEWEY-BURDOCK URANIUM PROJECT LOCALITY WITHIN THE SOUTHERN BLACK HILLS, CUSTER AND FALL RIVER COUNTIES (PAGES 5.53 THROUGH 5.106). . . .	03/31/2008	ML14245A273
1156	OFFICIAL EXHIBIT - NRC-074-00-BD01 - NRC (1980). REGULATORY GUIDE 4.14, RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING AT URANIUM MILLS. ADAMS ACCESSION NO. ML003739941.	04/25/1980	ML14245A293
1157	OFFICIAL EXHIBIT - NRC-075-00-BD01 - NRC, 2009. STAFF ASSESSMENT OF GROUND WATER IMPACTS FROM PREVIOUSLY LICENSED IN-SITU URANIUM RECOVERY FACILITIES, MEMORANDUM FROM C. MILLER TO CHAIRMAN JACZKO , ET AL. WASHINGTON DC: USNRC, JULY 10, 2009D .	06/20/2014	ML14245A294
1158	OFFICIAL EXHIBIT - NRC-076-00-BD01 - NUREG/CR-6705, HISTORICAL CASE ANALYSIS OF URANIUM PLUME ATTENUATION.. (FEB. 28, 2001) (ADAMS ACCESSION NO. ML010460162).	02/28/2001	ML14245A288

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1159	OFFICIAL EXHIBIT - NRC-077-00-BD01 - 05/28/2010 NRC STAFF REQUEST FOR ADDITIONAL INFORMATION FOR PROPOSED DEWEY-BURDOCK IN SITU RECOVERY FACILITY (ADAMS ACCESSION NO. ML101460286).	05/28/2010	ML14245A290
1160	OFFICIAL EXHIBIT - NRC-078-00-BD01 - 09/13/2012 NRC STAFF RAI: SUMMARY OF AUGUST 30, 2012 PUBLIC MEETING WITH POWERTECH INC, TO DISCUSS POWERTECH'S PROPOSED ENVIRONMENTAL MONITORING PROGRAM RELATED TO THE PROPOSED DEWEY-BURDOCK PROJECT.	09/13/2012	ML14245A285
1161	OFFICIAL EXHIBIT - NRC-079-00-BD01 - 09/09/2013 NRC STAFF RAI: EMAIL CONCERNING REVIEW OF POWERTECH'S ADDITIONAL STATISTICAL ANALYSIS OF RADIUM-226 SOIL SAMPLING DATA AND GAMMA MEASUREMENTS AND REQUEST FOR INFORMATION.	09/09/2013	ML14247A337
1162	OFFICIAL EXHIBIT - NRC-080-00-BD01 - NRC STAFF RAI: NRC STAFF REVIEW OF REVISED STATISTICAL ANALYSIS OF THE RADIUM 226 (SOIL) AND GAMMA RADIATION CORRELATION FOR SCREENING SURVEYS AT THE PROPOSED DEWEY-BURDOCK PROJECT REQUESTING ADDITIONAL. . . .	12/09/2013	ML14245A291
1163	OFFICIAL EXHIBIT - NRC-081-00-BD01 - GOTT, G.B., D.E. WOLCOTT, AND C.G. BOWLES. STRATIGRAPHY OF THE INYAN KARA GROUP AND LOCALIZATION OF URANIUM DEPOSITS, SOUTHERN BLACK HILLS, SOUTH DAKOTA AND WYOMING. U.S. GEOLOGICAL SURVEY WATER RESOURCES . . .	12/31/1974	ML14245A287

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1164	COMMENTS SUBMITTED BY DR. PERRY RAHN, PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A086
1165	COMMENTS BY ROD KNUDSON AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG. 18, 2014.	08/18/2014	ML14259A085
1166	COMMENTS GIVEN BY SYLVIA LAMBERT DURING THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A084
1167	LIMITED APPEARANCE STATEMENT OF CINDY BRUNSON.	08/18/2014	ML14259A083
1168	COMMENTS BY MARY ELLEN GOULET PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING AUGUST 18, 2014.	08/18/2014	ML14259A082
1169	ARGENTINE TOWNSHIP, SOUTH DAKOTA COMMENTS PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/29/2013	ML14259A081
1170	LIMITED APPEARANCE STATEMENT OF DON KELLEY ON EXPOSURE: THIS IS THE THEORY OF "HERMESIS", PRESENTED AT THE POWERTECH LIMITED HEARING, AUG 18, 2014.	08/18/2014	ML14259A080

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1171	PRESENTATION GIVEN BY JERRI BAKER AT THE POWERTECH LIMITED APPEARANCE HEARING, AUGUST 18, 2014.	08/18/2014	ML14259A079
1172	PETITION SUBMITTED AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A078
1173	COMMENTS BY BEN SHARP PRESENTED AT THE LIMITED APPEARANCE HEARING, AUGUST 18, 2014.	08/18/2014	ML14259A077
1174	COMMENTS BY KATHLEEN JARUIS - PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING, MONDAY, AUG. 18, 2014.	08/18/2014	ML14259A076
1175	STATEMENT SUBMITTED BY NANCY GREGORY AT THE POWERTECH LIMITED APPEARANCE HEARING, MONDAY, AUG. 18, 2014.	08/18/2014	ML14259A075
1176	OFFICIAL EXHIBIT - NRC-082-00-BD01 - DRISCOLL, D.G., J.M. CARTER, J.E. WILLIAMSON, AND L.D. PUTNAM. HYDROLOGY OF THE BLACK HILLS AREA, SOUTH DAKOTA. U.S. GEOLOGICAL SURVEY WATER RESOURCES INVESTIGATION REPORT 02-4094. 2002.	06/20/2014	ML14245A289
1177	OFFICIAL EXHIBIT - NRC-083-00-BD01 - BRADDOCK,W.A. GEOLOGY OF THE JEWEL CAVE SW QUADRANGLE CUSTER COUNTY, SOUTH DAKOTA. U.S. GEOLOGICAL SURVEY BULLETIN 1063-G. (08 APRIL 2013)	06/20/2014	ML14245A367

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1178	OFFICIAL EXHIBIT - NRC-084-A-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE. . . .	05/31/1980	ML14246A343
1179	OFFICIAL EXHIBIT - NRC-084-B-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVEY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE. . . .	06/21/2014	ML14246A342
1180	OFFICIAL EXHIBIT - NRC-084-C-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVEY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM. . . .	06/21/2014	ML14246A354
1181	OFFICIAL EXHIBIT - NRC-084-D-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE	06/21/2014	ML14246A341

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1182	OFFICIAL EXHIBIT - NRC-084-E-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM RESOURCE. . . .	06/21/2014	ML14246A344
1183	OFFICIAL EXHIBIT - NRC-084-F-00-BD01 - BUTZ, T.R., N.E. DEAN, C.S. BARD, R.N. HELGERSON, J.G. GRIMES, AND P.M. PRITZ. HYDROGEOCHEMICAL AND STREAM SEDIMENT DETAILED GEOCHEMICAL SURVERY FOR EDGEMONT, SOUTH DAKOTA, WYOMING. NATIONAL URANIUM	06/21/2014	ML14246A348
1184	OFFICIAL EXHIBIT - NRC-085-00-BD01 - DARTON, N.H. GEOLOGY AND WATER RESOURCES OF THE NORTHERN PORTION OF THE BLACK HILLS AND ADJOINING REGIONS OF SOUTH DAKOTA AND WYOMING. U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 65. 1909	06/21/2014	ML14246A300
1185	OFFICIAL EXHIBIT - NRC-086-00-BD01 - EPSTEIN, J.B. "HYDROLOGY, HAZARDS, AND GEOMORPHIC DEVELOPMENT OF GYPSUM KARST IN THE NORTHERN BLACK HILLS, SOUTH DAKOTA AND WYOMING. "U.S. GEOLOGICAL SURVEY WATER-RESOURCE INVESTIGATION REPORT 01-4011. . . .	12/31/2001	ML14247A326

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1186	OFFICIAL EXHIBIT - NRC-087-00-BD01 - NUREG-1910, FINAL REPORT, SUPPLEMENT 1, EIS FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES. . . .	08/31/2010	ML14246A310
1187	OFFICIAL EXHIBIT - NRC-088-00-BD01 - NUREG-1910, FINAL REPORT, SUPPLEMENT 1, EIS FOR THE MOORE RANCH ISR PROJECT IN CAMPBELL COUNTY, WYOMING, SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES	01/31/2011	ML14246A309
1188	OFFICIAL EXHIBIT - NRC-089-00-BD01 - NUREG-1910, FINAL REPORT, SUPPLEMENT 3, EIS FOR THE LOST CREEK ISR PROJECT IN SWEETWATER COUNTY, WYOMING. SUPPLEMENT TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES. . . .	06/30/2011	ML14245A286
1189	OFFICIAL EXHIBIT - NRC-090-00-BD01 - SDDENR. "REPORT TO THE CHIEF ENGINEER ON WATER PERMIT APPLICATION NO. 2686-2, POWERTECH (USA) INC., NOVEMBER 2, 2012." NOVEMBER 2012A. ADAMS ACCESSION NO.	11/02/2012	ML14245A321

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1190	OFFICIAL EXHIBIT - NRC-091-00-BD01 - NRC. "STAFF ASSESSMENT OF GROUNDWATER IMPACTS FROM PREVIOUSLY LICENSED IN-SITU URANIUM RECOVERY FACILITIES." MEMORANDUM TO CHAIRMAN JACZKO, COMMISSIONER KLEIN, AND COMMISSIONER SVINICKI, NRC FROM C. MILLER	07/10/2009	ML14245A320
1191	OFFICIAL EXHIBIT - NRC-093-00-BD01 - EPA COMMENTS ON FSEIS; (ADAMS ACCESSION NO. ML14070A230).	03/10/2014	ML14246A307
1192	OFFICIAL EXHIBIT - NRC-094-00-BD01 - NRC REGULATORY GUIDE 3.11, REV. 3, DESIGN, CONSTRUCTION, AND INSPECTION OF EMBANKMENT RETENTION SYSTEMS AT URANIUM RECOVERY FACILITIES, NOVEMBER 2008, (ADAMS ACCESSION NO. ML082380144).	11/30/2008	ML14245A319
1193	OFFICIAL EXHIBIT - NRC-095-00-BD01 - LETTER TO P. STROBEL RE: EPAS RESPONSE COMMENT TO FSEIS (MAR. 25, 2014) (ADAMS ACCESSION NO. ML14078A044).	06/21/2014	ML14245A318
1194	OFFICIAL EXHIBIT - NRC-096-00-BD01 - COMMENT (14) OF ROBERT F. STEWART ON BEHALF OF THE DEPT. OF THE INTERIOR, OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE ON DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DSEIS), DEWEY-BURDOCK PROJECT	01/04/2013	ML14245A322
1195	OFFICIAL EXHIBIT - NRC-132-00-BD01 - IMPROVING THE PROCESS FOR PREPARING EFFICIENT AND TIMELY ENVIRONMENTAL REVIEWS UNDER NEPA.	03/06/2012	ML14245A348

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1196	OFFICIAL EXHIBIT - NRC-134-00-BD01 - SAFETY EVALUATION REPORT FOR THE DEWEY-BURDOCK PROJECT FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA. MATERIALS LICENSE NO. SUA-1600 (APRIL 2014) ADAMS ACCESSION NO. ML14043A347.	04/30/2014	ML14245A347
1197	OFFICIAL EXHIBIT - NRC-135-00-BD01 - SAFETY EVALUATION REPORT FOR THE DEWEY-BURDOCK PROJECT FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA, MATERIALS LICENSE NO. SUA-1600, DOCKET NO. 40-9075 (MARCH 2013), ADAMS ACCESSION NO. ML13052A182.	04/30/2014	ML14245A352
1198	OFFICIAL EXHIBIT - NRC-136-A-00-BD01 - PALMER, L. AND J.M. KRUSE. "EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH USA INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS." BLACK HILLS ARCHAEOLOGICAL REGION. VOLS. I AND II. ARCHAEOLOGICAL CONTRACT	06/21/2014	ML14245A346
1199	OFFICIAL EXHIBIT - NRC-136-B-00-BD01 - PALMER, L. AND J.M. KRUSE EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS BLACK HILLS ARCHAEOLOGICAL REGION VOLUMES I AND II	04/13/2012	ML14245A368
1200	OFFICIAL EXHIBIT - NRC-136-C-00-BD01 - PALMER, L. AND J.M. KRUSE. "EVALUATIVE TESTING OF 20 SITES IN THE POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT IMPACT AREAS." BLACK HILLS ARCHAEOLOGICAL REGION. VOLUMES I AND II. ARCHAEOLOGICAL	04/13/2012	ML14245A369

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1201	OFFICIAL EXHIBIT - NRC-137-00-BD01 - DEPT. OF ENVIRONMENT AND NATURAL RESOURCES, RECOMMENDATION, POWERTECH USA INC, LARGE SCALE MINE PERMIT APPLICATION AT 6 (APRIL 15, 2013), AVAILABLE AT HTTP://DENR.SD.GOV/DES/MM/DOCUMENTS/POWERTECH1/DENRREC4-15-13.PDF.	04/15/2013	ML14245A350
1202	OFFICIAL EXHIBIT - NRC-138-00-BD01 - JACK R. KEENE. GROUND-WATER RESOURCES OF THE WESTERN HALF OF FALL RIVER COUNTY, SOUTH DAKOTA. SOUTH DAKOTA DEPT. OF NATURAL RESOURCE DEVELOPMENT, GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS, NO. 109, 90 PG. . . .	12/31/1973	ML14246A304
1203	OFFICIAL EXHIBIT - NRC-139-00-BD01 - U.S. GEOLOGICAL SURVEY, 2006, QUATERNARY FAULT AND FOLD DATABASE FOR THE UNITED STATES, ACCESSED JUNE 20, 2014, FROM USGS WEB SITE: HTTP//EARTHQUAKES.USGS.GOV/REGIONAL/QFAULTS/.	06/20/2014	ML14246A296
1204	OFFICIAL EXHIBIT - NRC-141-A-00-BD01 - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) PAGES 1-42	06/20/2014	ML14246A335
1205	OFFICIAL EXHIBIT - NRC-141-B-00-BD01 - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) (ADAMS ACCESSION	08/31/2009	ML14246A334

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1206	OFFICIAL EXHIBIT - NRC-141-C-00-BD01 - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) PAGES 124-132	06/21/2014	ML14246A336
1207	OFFICIAL EXHIBIT - NRC-141-D-00-BD01 - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) PAGES 133-143	06/21/2014	ML14246A338
1208	OFFICIAL EXHIBIT - NRC-141-E-00-BD01 - DEWEY-BURDOCK PROJECT SUPPLEMENT TO APPLICATION FOR NRC URANIUM RECOVERY LICENSE DATED FEBRUARY 2009, PREPARED BY POWERTECH (USA) INC. GREENWOOD VILLAGE, COLORADO, CO. (AUG 31, 2009) .	06/21/2014	ML14246A352
1209	OFFICIAL EXHIBIT - NRC-142-00-BD01 - SUBMITTAL OF COMMENTS ON DRAFT PROGRAMMATIC AGREEMENT FOR THE PROPOSED DEWEY-BURDOCK ISR URANIUM MINING PROJECT. (MAR. 17, 2014) (ADAMS ACCESSION NO. ML14077A002. PAGES 5-1	02/05/2014	ML14246A306
1210	OFFICIAL EXHIBIT - NRC-143-00-BD01 - LETTER TO OGLALA SIOUX TRIBE RE: INVITATION FOR GOVERNMENT-TO-GOVERNMENT MEETING CONCERNING LICENSING ACTIONS FOR PROPOSED URANIUM RECOVERY PROJECTS. (MAR. 12, 2013) (ADAMS ACCESSION NO. ML13071A653).	03/12/2013	ML14246A302

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1211	OFFICIAL EXHIBIT - NRC-144-00-BD01 - SRI (SRI FOUNDATION). "OVERVIEW OF PLACES OF TRADITIONAL AND CULTURAL SIGNIFICANCE, CAMECO/POWERTECH PROJECT AREAS." RIO RANCHO, NEW MEXICO: SRI FOUNDATION. (JUNE 8, 2012) (ADAMS ACCESSION NO. ML12262A113).	06/08/2014	ML14246A298
1212	OFFICIAL EXHIBIT - NRC-145-A-00-BD01 - GUIDELINES FOR EVALUATION AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES. NATIONAL REGISTER BULLETIN, U.S. DEPARTMENT OF THE INTERIOR. NATIONAL PARK SERVICE. (ADAMS ACCESSION NO. ML12240A371). PAGES 1-14	12/31/1998	ML14246A339
1213	OFFICIAL EXHIBIT - NRC-145-B-00-BD01 - GUIDELINES FOR EVALUATION AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES. NATIONAL REGISTER BULLETIN, U.S. DEPARTMENT OF THE INTERIOR. NATIONAL PARK SERVICE. (ADAMS ACCESSION NO. ML12240A371). PAGES 15-18	06/21/2014	ML14246A353
1214	OFFICIAL EXHIBIT - NRC-146-00-BD01 - POWERTECH DEWEY-BURDOCK LA - RE: FIELD SURVEY IN THE SPRING OF 2013. (MAR. 13, 2013) (ADAMS ACCESSION NO. ML13078A388).	06/21/2014	ML14246A308
1215	OFFICIAL EXHIBIT - NRC-147-00-BD01 - POWERTECH DEWEY-BURDOCK LA - RE: FIELD SURVEY FOR DEWEY-BURDOCK. (MAR. 13, 2013) (ADAMS ACCESSION NO. ML13078A384).	03/13/2014	ML14246A299

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1216	OFFICIAL EXHIBIT - NRC-148-00-BD01 - LETTER FROM OGLALA SIOUX TRIBE IN RESPONSE TO FEBRUARY 8, 2013 LETTER TO TRIBAL HISTORIC PRESERVATION OFFICER MARCH 23, 2013 (ADAMS ACCESSION NO. ML13141A362).	03/22/2013	ML14246A368
1217	OFFICIAL EXHIBIT - NRC-149-00-BD01 - POWERTECH DEWEY-BURDOCK LA - REQUEST FOR AVAILABILITY TO DISCUSS DEVELOPMENT OF A PA FOR THE DEWEY BURDOCK PROJECT. (AUG. 30, 2013) (ADAMS ACCESSION NO. ML13267A221).	08/30/2013	ML14246A303
1218	OFFICIAL EXHIBIT - NRC-150-00-BD01 - POWERTECH DEWEY-BURDOCK LA - REMINDER: TELECONFERENCE TO DISCUSS THE DEVELOPMENT OF THE PA FOR THE DEWEY BURDOCK PROJECT IS SCHEDULED FOR FRIDAY. (NOV. 15, 2013. (ADAMS ACCESSION NO. ML13322B658).	11/14/2013	ML14246A301
1219	OFFICIAL EXHIBIT - NRC-151-00-BD01 - NRC STAFF REBUTTAL TESTIMONY.	07/15/2014	ML14247A397
1220	OFFICIAL EXHIBIT - NRC-152-00-BD01 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF HOPE E. LUHMAN.	07/15/2014	ML14247A395
1221	OFFICIAL EXHIBIT - NRC-153-00-BD01 - EXCERPT FROM PARKER, P. AND T. KING. GUIDELINES FOR EVALUATING AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES, NATIONAL REGISTER OF HISTORIC PLACES BULLETIN 38. (1990) (ADAMS ACCESSION NO. ML12240A371).	07/15/2014	ML14247A400

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1222	OFFICIAL EXHIBIT - NRC-154-00-BD01 - EXCERPT FROM BATES, R. AND J. JACKSON. DICTIONARY OF GEOLOGICAL TERMS 3RD EDITION. (1984).	07/15/2014	ML14247A398
1223	OFFICIAL EXHIBIT - NRC-155-00-BD01 - LETTER FROM SOUTH DAKOTA HISTORICAL SOCIETY RE: DEWEY-BURDOCK PROJECT, (JAN. 2014).	07/15/2014	ML14247A399
1224	OFFICIAL EXHIBIT - NRC-156-00-BD01 - JOHNSON, R. H. "REACTIVE TRANSPORT MODELING FOR THE PROPOSED DEWEY-BURDOCK URANIUM IN-SITU RECOVERY MINE, EDGEMONT, SOUTH DAKOTA, USA." INTERNATIONAL MINE WATER ASSOCIATION, MINE WATER-MANAGING THE CHALLENGES. 2011.	07/15/2014	ML14247A396
1225	OFFICIAL EXHIBIT - OST-001-00-BD01 - OPENING WRITTEN TESTIMONY OF DR. ROBERT E. MORAN.	06/20/2014	ML14241A450
1226	OFFICIAL EXHIBIT - OST-002-00-BD01 - U.S. EPA, 2007, TENORM URANIUM OCCUPATIONAL AND PUBLIC RISKS ASSOCIATED WITH IN- SITU LEACHING; APPEND. III, PG 1-11.	06/30/2014	ML14240A463
1227	OFFICIAL EXHIBIT - OST-003-00-BD01 - US EPA 2008, TECHNICAL REPORT ON TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE MATERIALS FROM URANIUM MINING, VOL.1: MINING AND RECLAMATION BACKGROUND: PREVIOUSLY PUBLISHED VOL. 1 OF EPA 402-R-05-007. . . .	06/07/2007	ML14240A466

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1228	OFFICIAL EXHIBIT - OST-004-00-BD01 - U.S. EPA, 2011 (JUNE), CONSIDERATIONS RELATED TO POST-CLOSURE MONITORING OF URANIUM IN-SITU LEACH/IN-SITU RECOVERYSITES, DRAFT TECHNICAL REPORT [INCLUDES ATTACHMENT A: DEVELOPMENT OF THE GROUNDWATER	06/30/2011	ML14246A216
1229	OFFICIAL EXHIBIT - OST-005-00-BD01 - POWERPOINT PRESENTATION PREPARED BY DR. ROBERT E. MORAN.	03/20/2014	ML14240A469
1230	OFFICIAL EXHIBIT - OST-006-00-BD01 - BOGGS, JENKINS, ?ANALYSIS OF AQUIFER TESTS CONDUCTED AT THE PROPOSED BURDOCK URANIUM MINE SITE, BURDOCK, SOUTH DAKOTA,? TENNESSEE VALLEY AUTHORITY, REPORT NO. WR28-1-520-109, MAY 1980.	09/30/2012	ML14240A460
1231	OFFICIAL EXHIBIT - OST-007-00-BD01 - BOGGS, HYDROGEOLOGIC INVESTIGATIONS AT PROPOSED URANIUM MINE NEAR DEWEY, SOUTH DAKOTA (1983).	09/30/2012	ML14240A468
1232	OFFICIAL EXHIBIT - OST-008-00-BD01 - KEENE, GROUND-WATER RESOURCES OF THE WESTERN HALF OF FALL RIVER COUNTY, S.D., DEPT. OF NATURAL RESOURCE DEVELOPMENT GEOLOGICAL SURVEY, UNIV. S.D., REPORT OF INVESTIGATIONS NO. 109 (1973).	12/31/1973	ML14240A464
1233	OFFICIAL EXHIBIT - OST-009-00-BD01 - TVA, DRAFT ENVIRONMENTAL STATEMENT, EDGEMONT URANIUM MINE.	06/20/2014	ML14241A447

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1234	OFFICIAL EXHIBIT - OST-010-00-BD01 - OST PETITION TO INTERVENE, WITH EXHIBITS.	04/06/2010	ML14240A461
1235	OFFICIAL EXHIBIT - OST-011-00-BD01 - OST STATEMENT OF CONTENTIONS ON DSEIS, WITH EXHIBITS.	01/25/2014	ML14241A452
1236	OFFICIAL EXHIBIT - OST-012-00-BD01 - OST STATEMENT OF CONTENTIONS ON FSEIS, WITH EXHIBITS.	03/17/2014	ML14241A448
1237	OFFICIAL EXHIBIT - OST-013-00-BD01 - OST STATEMENT OF UNDISPUTED FACTS SUBMITTED WITH OST MOTION FOR SUMMARY DISPOSITION.	04/11/2014	ML14240A459
1238	OFFICIAL EXHIBIT - OST-014-00-BD01 - DECLARATION OF MICHAEL CATCHESENEMY.	04/14/2014	ML14241A446
1239	OFFICIAL EXHIBIT - OST-015-00-BD01 - DECLARATION OF WILMER MESTETH.	04/01/2010	ML14247A336
1240	OFFICIAL EXHIBIT - OST-016-00-BD01 - FEBRUARY 20, 2013 LETTER FROM STANDING ROCK SIOUX TO NRC STAFF.	02/20/2013	ML14247A401
1241	OFFICIAL EXHIBIT - OST-017-00-BD01 - MARCH 22, 2013 LETTER FROM OGLALA SIOUX TRIBE TO NRC STAFF.	07/16/2014	ML14247A402

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1242	OFFICIAL EXHIBIT - OST-018-00-BD01 - REBUTTAL TESTIMONY OF DR. ROBERT E. MORAN.	07/15/2014	ML14247A403
1243	OFFICIAL EXHIBIT - OST-019-00-BD01 - POWERTECH PRESS RELEASE.	07/22/2014	ML14247A415
1244	OFFICIAL EXHIBIT - OST-020-00-BD01 - E-MAIL FROM CHRIS PUGSLEY, POWERTECH, RE NRC PROCEEDING.	08/12/2014	ML14247A417
1245	OFFICIAL EXHIBIT - OST-021-00-BD01 - POWERTECH QUARTERLY MANAGEMENT DISCUSSION AND ANALYSIS.	08/11/2014	ML14247A419
1246	OGLALA SIOUX TRIBE'S HEARING TRANSCRIPT CORRECTIONS	09/19/2014	ML14262A307
1247	POWERTECH (USA), INC. PROPOSED TRANSCRIPT CORRECTIONS	09/19/2014	ML14262A426
1248	SUBMISSIONS PRESENTED BY NANCY HILDING AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A274
1249	SUBMISSIONS PRESENTED BY NANCY HILDING AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/1201	ML14259A273

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1250	SUBMISSION PRESENTED BY NANCY HIDING AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A272
1251	LIMITED APPEARANCE STATEMENT OF MULTIPLE AUTHORS ON WIND CAVE TRIP REPORTS - 2007, PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A091
1252	COMMENTS SUBMITTED BY EDWARD HARVEY AT THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A090
1253	COMMENTS GIVEN BY KEVIN WEILAND, MD, POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A089
1254	FEDERAL REGISTER SUBMISSION BY NANCY HILDING DURING THE POWERTECH LIMITED APPEARANCE HEARING, AUG 18, 2014.	08/18/2014	ML14259A088
1255	COMMENTS SUBMITTED DURING THE POWERTECH LIMITED APPEARANCE HEARING, AUG, 18, 2014.	08/18/2014	ML14259A087
1256	NRC HEARING NARRATIVE BY DON KELLEY, M.D. - PRESENTED AT THE POWERTECH LIMITED APPEARING HEARING, AUGUST 18, 2014.	08/18/2014	ML14259A073

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1257	POWERTECH WATER USE PERMIT FROM NRC BY GEORGIA HOLMES - PRESENTED AT THE POWERTECH LIMITED APPEARANCE HEARING, MONDAY, AUGUST 18, 2014.	08/18/2014	ML14259A072
1258	ORDER (ADOPTING TRANSCRIPT CORRECTIONS)	09/30/2014	ML14273A366
1259	NRC STAFF HEARING FILE UPDATE	10/01/2014	ML14274A568
1260	NRC STAFF LETTER TO THE ASLB REGARDING TRANSCRIPT ERRATA LIST	10/06/2014	ML14279A620
1261	ORDER (REQUIRING STATUS REPORT ON OUTSTANDING MANDATORY DISCLOSURES	10/09/2014	ML14282A277
1262	OGLALA SIOUX TRIBE AND CONSOLIDATED INTERVENORS' MOTION TO EXTEND DEADLINE FOR SUBMISSION OF TESTIMONY AND AMEND OR FILE NEW CONTENTIONS (PKG CONTAINS ML14282A869 & ML14282A870).	10/09/2014	ML14282A868
1263	CONSOLIDATED INTERVENORS' UPDATE ON STATUS OF MANDATORY DISCLOSURES	10/14/2014	ML14287A445

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1264	POWERTECH (USA), INC., NRC STAFF, AND OGLALA SIOUX TRIBE UPDATE ON STATUS OF MANDATORY DISCLOSURES	10/14/2014	ML14287A284
1265	POWERTECH (USA), INC.'S RESPONSE TO CONSOLIDATED INTERVENORS' AND OGLALA SIOUX TRIBE MOTION FOR EXTENSION OF TIME (PACKAGE CONTAINS 3 DOCUMENTS).	10/14/2014	ML14287A723
1266	NRC-169 - TRANSECT 2 - FENCE DIAGRAM OF DRILL HOLE RESISTIVITY LOGS (NON-PUBLIC/PROPRIETARY INFORMATION)	10/14/2014	ML14287A801
1267	NRC-166 - DRILL HOLE LOG SPOT CHECK - ELEVATION OF TOP OF FUSON SHALE (NON-PUBLIC/PROPRIETARY INFORMATION)	10/14/2014	ML14287A802
1268	NRC-172 - FENCE DIAGRAM OF RESISTIVITY PROFILES FOR SELECTED DRILL HOLES NEAR PROPOSED SINKHOLE (NON-PUBLIC/PROPRIETARY INFORMATION)	10/14/2014	ML14287A803
1269	NRC-168 - TRANSECT 1 - FENCE DIAGRAM OF DRILL HOLE RESISTIVITY LOGS (NON-PUBLIC/PROPRIETARY INFORMATION)	10/14/2014	ML14287A804
1270	NRC-173 - TABLE 2. DRILL HOLE LOGS USED FOR SPOT CHECKING (NON-PUBLIC/PROPRIETARY INFORMATION)	10/14/2014	ML14287A805

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1271	NRC STAFF LETTER TO THE BOARD IN THE MATTER OF POWERTECH (USA), INC.	10/14/2014	ML14287A810
1272	NRC-003-R - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF HAIMANOT YILMA	10/14/2014	ML14287A811
1273	NRC-160 - RESUME OF RONALD MCGINNIS	10/14/2014	ML14287A812
1274	NRC-161 - LOCATION OF HISTORIC TVA DRILL HOLES	10/14/2014	ML14287A813
1275	NRC-005-R - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF THOMAS LANCASTER	10/14/2014	ML14287A814
1276	NRC-163 - USGS TOPOGRAPHIC MAP FOR THE DEWEY-BURDOCK AREA	10/14/2014	ML14287A815
1277	NRC-162 - FIGURE 2.6-2A FROM POWERTCH'S TECHNICAL REPORT (2014)	10/14/2014	ML14287A816
1278	NRC-158 - NRC STAFF'S SUPPLEMENTAL TESTIMONY ON TVA WELL LOG DATA	10/14/2014	ML14287A806

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1279	NRC-165 - USDA NAIP ORTHOGRAPHIC IMAGE FOR FALL RIVER COUNTY (2012)	10/14/2014	ML14287A807
1280	NRC-004-R - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF KELLEE L. JAMERSON	10/14/2014	ML14287A817
1281	NRC-170 - TRANSECT 1 AND TRANSECT 2 DRILL HOLES	10/14/2014	ML14287A818
1282	NRC-157 - NRC STAFF'S SUPPLEMENTAL TESTIMONY ON TAKE PERMIT APPLICATION, DRAFT AVIAN MONITORING PLAN, AND BLM LETTER	10/14/2014	ML14287A819
1283	NRC-159 - RESUME OF PAUL BERTETTI	10/14/2014	ML14287A820
1284	NRC STAFF'S MOTION TO ADMIT TESTIMONY AND EXHIBITS ADDRESSING POWERTECH'S SEPTEMBER 14, 2014 DISCLOSURES	10/14/2014	ML14287A821
1285	NRC-164 - USGS DIGITAL ELEVATION MODEL (30-M GRID) FOR THE DEWEY-BURDOCK AREA	10/14/2014	ML14287A822
1286	NRC REVISED EXHIBIT LIST FOR POWERTECH USA, INC. 2014 EVIDENTIARY HEARING	10/14/2014	ML14287A823

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1287	NRC STAFF'S CERTIFICATE OF SERVICE FOR THE NRC STAFF'S MOTION TO ADMIT SUPPLEMENTAL TESTIMONY AND EXHIBITS	10/14/2014	ML14287A824
1288	NRC-171 - LOCATIONS OF DRILL HOLES AND SUSPECTED SINKHOLE	10/14/2014	ML14287A808
1289	NRC-167 - LOCATION OF DRILL HOLE TRANSECTS	10/14/2014	ML14287A809
1290	OST-24 - JANUARY 10, 2014 USFWS TAKE PERMIT APPLICATION	01/10/2014	ML14287A825
1291	OST-26 - USEPA CERCLA PRELIMINARY ASSESSMENT	09/24/2014	ML14287A826
1292	OST-25 - USEPA CERCLA PA ANNOUNCEMENT	10/14/2014	ML14287A827
1293	OST-23 - DRAFT AVIAN MITIGATIO PLAN	09/30/2014	ML14287A828
1294	OST-22 - JULY 8, 2014 LETTER FROM BLM	07/08/2014	ML14287A829

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1295	OGLALA SIOUX TRIBE MOTION TO ADMIT ADDITIONAL EXHIBITS	10/14/2014	ML14287A830
1296	NRC STAFF RESPONSE TO REQUEST FOR EXTENSION OF TIME	10/16/2014	ML14289A504
1297	ORDER (GRANTING IN PART MOTION TO EXTEND DEADLINE)	10/22/2014	ML14295A420
1298	NRC STAFF RESPONSE TO OGLALA SIOUX TRIBE'S MOTION TO ADMIT ADDITIONAL EXHIBITS	10/24/2014	ML14297A557
1299	NRC STAFF REVISED EXHIBIT LIST	10/24/2014	ML14297A556
1300	NRC-174 - NRC STAFF'S RESPONSIVE TESTIMONY	10/24/2014	ML14297A558
1301	NRC STAFF'S MOTION TO ADMIT EXHIBIT NRC-171-R	10/24/2014	ML14297A561
1302	NRC-171-R - REVISED MAPS SHOWING LOCATIONS OF DRILL HOLES AND SUSPECTED SINKHOLE WITH CONTOUR INTERVALS	10/24/2014	ML14297A562

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1303	POWERTECH (USA), INC. RESPONSE TO OGLALA SIOUX TRIBE AND NRC STAFF SUPPLEMENTAL TESTIMONY AND EXHIBITS. (PKG. ML14297A592)	10/24/2014	ML14297A595
1304	POWERTECH (USA), INC. REVISED EXHIBIT LIST. (PKG. ML14297A592)	10/24/2014	ML14297A593
1305	APP-072 - ANSWERING TESTIMONY REGARDING NRC STAFF'S ANALYSIS OF TVA WELL LOG DATA. (PKG. ML14297A592)	10/24/2014	ML14297A594
1306	APP-073 - FRANK LICHNOVSKY CV. (PKG. ML14297A592)	10/24/2014	ML14297A596
1307	REPLY TO NRC STAFF AND POWERTECH RESPONSES TO MOTION TO ADMIT ADDITIONAL EXHIBITS FILED ON BEHALF OF THE OGLALA SIOUX TRIBE	11/01/2014	ML14305A028
1308	NRC STAFF HEARING FILE UPDATE - NOVEMBER 2014	11/03/2014	ML14307B727
1309	MOTION FOR LEAVE TO FILE A REPLY TO NRC STAFF AND POWERTECH RESPONSES TO MOTION TO ADMIT ADDITIONAL EXHIBITS FILED ON BEHALF OF THE OGLALA SIOUX TRIBE	10/30/2014	ML14303A389

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1310	POWERTECH MANDATORY DISCLOSURES [PKG CONTAINS ML14307B766 TO ML14307B768]	11/03/2014	ML14307B765
1311	NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S MOTION FOR LEAVE TO SUBMIT REPLY BRIEF	11/04/2014	ML14308A316
1312	NRC STAFF UPDATE TO NOVEMBER 2014 PRIVILEGE INDEX	11/05/2014	ML14309A771
1313	POWERTECH (USA), INC. RESPONSE TO OGLALA SIOUX TRIBE MOTION FOR LEAVE TO SUBMIT A REPLY AND REPLY BRIEF	11/07/2014	ML14311A610
1314	OGLALA SIOUX TRIBE UNOPPOSED MOTION TO ADMIT ADDITIONAL EXHIBITS	11/07/2014	ML14311A926
1315	OST-028 - POWERTECH LETTER TO SOUTH DAKOTA HISTORICAL SOCIETY	10/07/2014	ML14311A927
1316	OST-027 - FISH AND WILDLIFE SERVICE EMAIL LETTER	11/03/2014	ML14311A928
1317	MOTION FOR LEAVE TO FILE NEW OR AMENDED CONTENTION ON BEHALF OF THE OGLALA SIOUX TRIBE (PKG. ML14311B005)	11/07/2014	ML14311B009

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1318	SUPPLEMENTAL DECLARATION OF DR. HANNAN LAGARRY (PKG. ML14311B005)	11/05/2014	ML14311B006
1319	OST-26 - DARROW FREEZEOUT TRIANGLE URANIUM MINE PA REPORT (PKG. ML14311B005)	09/24/2014	ML14311B007
1320	OST-25 - DEWEY BURDOCK CERCLA PA ANNOUNCEMENT (PKG. ML14311B005)	11/07/2014	ML14311B008
1321	ORDER (ADMITTING NEW EXHIBITS AND CLOSING THE EVIDENTIARY RECORD ON CONTENTIONS 1A, 1B, 2, 4, 6 AND 9)	11/13/2014	ML14317A241
1322	OGLALA SIOUX TRIBE MOTION TO ADMIT ADDITIONAL TESTIMONY AND EXHIBITS	11/21/2014	ML14325A853
1323	JOINT MOTION FOR EXTENSION OF TIME AND CLARIFICATION OF FILING DEADLINES	11/25/2014	ML14329A445
1324	ORDER (GRANTING UNOPPOSED MOTION FOR EXTENSION OF TIME AND CLARIFYING FILING)	11/26/2014	ML14330A357
1325	NRC STAFF TRANSMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, DECEMBER 1, 2014 UPDATE	12/01/2014	ML14335A751

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1326	NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S MOTION TO ADMIT NEW CONTENTIONS	12/02/2014	ML14336A673
1327	POWERTECH (USA), INC. RESPONSE TO THE OGLALA SIOUX TRIBE MOTION FOR LEAVE TO SUBMIT NEW OR AMENDED CONTENTIONS	12/02/2014	ML14336A697
1328	OST-038 - EXHIBIT TRR17	11/21/2014	ML14325A857
1329	OST-034 - EXHIBIT DS392	11/21/2014	ML14325A858
1330	OST-033 - EXHIBIT DS178	11/21/2014	ML14325A862
1331	OST-035 - EXHIBIT IHK2	11/21/2014	ML14325A863
1332	OST-039 - EXHIBIT TRT16	11/21/2014	ML14325A864
1333	OST-037 - EXHIBIT IHM62	11/21/2014	ML14325A865

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1334	OST-029 - WRITTEN SUPPLEMENTAL TESTIMONY OF DR. LAGARRY	11/21/2014	ML14325A866
1335	OST-030 - EXHIBIT SNT25	11/21/2014	ML14325A867
1336	OST-031 - EXHIBIT TRT44	11/21/2014	ML14325A868
1337	OST-032 - EXHIBIT ELT4	11/21/2014	ML14325A869
1338	OST-036 - EXHIBIT IHM32	11/21/2014	ML14325A859
1339	OST-041 - EXHIBIT TRJ111	11/21/2014	ML14325A860
1340	OST-040 - EXHIBIT FBM95	11/21/2014	ML14325A861
1341	APP-087 (P) - TRJ111 GEOPHYSICAL LOG HEADER WITHOUT DRIFT SURVEY	12/04/2014	ML14338A891

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1342	APP-078 (P) - IHK2 BOREHOLE SOUTH-NORTH CROSS SECTION	12/04/2014	ML14338A892
1343	APP-083 (P) - TRR17 BOREHOLE WEST-EAST CROSS SECTION	12/03/2014	ML14338A900
1344	APP-084 (P) - TRT16 BOREHOLE SOUTH-NORTH CROSS SECTION	12/04/2014	ML14338A901
1345	APP-076(P) - DS178 LITHOLOGY LOG	12/04/2014	ML14338A902
1346	AFFIDAVIT OF JOHN MAYS CERTIFYING EXHIBITS LISTED AS CONTAINING PROPRIETARY INFORMATION	12/04/2014	ML14338A903
1347	POWERTECH (USA), INC. RESPONSE TO OGLALA SIOUX TRIBE'S NOVEMBER 21, 2014, MOTION TO ADMIT ADDITIONAL TESTIMONY AND EXHIBITS	12/04/2014	ML14338A904
1348	REVISED POWERTECH EXHIBIT LIST	12/04/2014	ML14338A905
1349	APP-080(P) - IHM61 BOREHOLE SOUTH-NORTH CROSS SECTION	12/03/2014	ML14338A906

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1350	APP-086 (P) - TRJ111 GEOPHYSICAL LOG HEADER	12/04/2014	ML14338A907
1351	APP-079 (P) - IHK2 BOREHOLE WEST-EAST CROSS SECTION	12/04/2014	ML14338A893
1352	APP-088 - RESPONSE TO VERBAL AND EMAIL REQUESTS FOR CLARIFICATION OF SELECTED ISSUES RELATED TO THE ENVIRONMENTAL REVIEW, NOVEMBER 4, 2010; ML110820582	11/04/2010	ML14338A894
1353	APP-077 - BOREHOLES EVALUATED IN CROSS SECTIONS	12/03/2014	ML14338A895
1354	APP-075 - POWERTECH (USA), INC., SILVER KING MINES, INC. PROBE LOG.	12/04/2014	ML14338A896
1355	APP-074 (P) - ANSWERING TESTIMONY REGARDING DR. LAGARRY'S ANALYSIS OF BOREHOLE LOG DATA	12/04/2014	ML14338A897
1356	APP-081 (P) - IHM61 BOREHOLE WEST-EAST CROSS SECTION	12/03/2014	ML14339A353

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1357	APP-085 (P) - TRT16 BOREHOLE WEST-EAST CROSS SECTION	12/03/2014	ML14338A898
1358	APP-082 (P) - TRR17 BOREHOLE SOUTH-NORTH CROSS SECTION	12/04/2014	ML14338A899
1359	NRC-175 - NRC STAFF'S ANSWERING TESTIMONY	12/09/2014	ML14343A981
1360	NRC STAFF REVISED EXHIBIT LIST	12/09/2014	ML14343A980
1361	NRC STAFF'S BRIEF IN SUPPORT OF ANSWERING TESTIMONY	12/09/2014	ML14343A979
1362	NRC STAFF'S RESPONSE TO BOARD'S DECEMBER 10, 2014 ORDER	12/19/2014	ML14353A353
1363	POWERTECH (USA), INC. RESPONSE TO THE ATOMIC SAFETY AND LICENSING BOARDS'S REQUEST FOR ARGUMENT ON POTENTIAL NON-PUBLIC STATUS OF OGLALA SIOUX TRIBE'S EXHIBITS	12/19/2014	ML14353A455

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1364	OGLALA SIOUX TRIBE'S MEMORANDUM OF LAW IN RESPONSE TO THE BOARD'S DECEMBER 9, 2014 ORDER REFARDING PUBLIC DISCLOSURE OF ADMITTED TESTIMONY AND EXHIBITS	12/19/2014	ML14353A467
1365	LICENSEE POWERTECH (USA) URANIUM CORPORATION'S UPDATED MANDATED DISCLOSURES (PKG. ML15002A329)	01/02/2015	ML15002A331
1366	EXHIBIT 1 - LETTER TO THE U.S. BUREAU OF LAND MANAGEMENT REGARDING POWERTECH'S PLAN OF OPERATIONS (PKG. ML15002A329)	12/02/2014	ML15002A330
1367	EXHIBIT 2 - POWERTECH (USA) INC.'S REQUEST TO SUSPEND ALLUVIAL WELL SAMPLING FOR THE DEWEY-BURDOCK GROUND DISCHARGE PLAN (PKG. ML15002A329)	12/03/2014	ML15002A332
1368	POWERTECH USA, INC.'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW	01/09/2015	ML15010A044
1369	NRC STAFF'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW (SUBMITTED WITH NRC STAFF'S RESPONSE TO POST-HEARING ORDER) [ML15010A047 AND ML15010A046]	01/09/2015	ML15010A045
1370	OGLALA SIOUX TRIBE'S POST-HEARING INITIAL BRIEF WITH FINDINGS OF FACT AND CONCLUSIONS OF LAW	01/09/2015	ML15010A048

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1371	ORDER (RULING ON CONFIDENTIALITY OF EXHIBITS OST 29 THROUGH OST 041)	01/12/2015	ML15012A372
1372	NOTICE (PURSUANT TO 10 CFR 2.309(J)(1)	01/14/2015	ML15014A205
1373	CONSOLIDATED INTERVENORS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW AND RESPONSE TO POST-HEARING ORDER	01/09/2015	ML15012A472
1374	OFFICIAL EXHIBIT - APP-016-X-00-BD01 - REVISED TR RAI RESPONSE; APPENDICES PART 16; APP. 2.7-M; ML11208B872.	06/30/2011	ML14261A102
1375	OFFICIAL EXHIBIT - APP-072-00-BD01 - ANSWERING TESTIMONY REGARDING NRC STAFF'S ANALYSIS OF TVA WELL LOG DATA.	10/24/2014	ML14344A922
1376	OFFICIAL EXHIBIT - APP-073-00-BD01 - FRANK LICHNOVSKY CV.	10/24/2014	ML14344A923
1377	OFFICIAL EXHIBIT - OST-024-00-BD01 - JANUARY 10 2014 USFWS TAKE PERMIT APPLICATION.	01/10/2014	ML14344A907
1378	OFFICIAL EXHIBIT - OST-023-00-BD01 - DRAFT AVIAN MITIGATION PLAN.	09/30/2014	ML14344A911

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1379	OFFICIAL EXHIBIT - OST-022-00-BD01 - JULY 8 2014 LETTER FROM BLM.	07/08/2014	ML14344A914
1380	OFFICIAL EXHIBIT - OST-028-00-BD01 - POWERTECH LETTER TO SOUTH DAKOTA HISTORICAL SOCIETY.	10/07/2014	ML14344A924
1381	OFFICIAL EXHIBIT - OST-027 -00-BD01 - FISH AND WILDLIFE SEVICE EMAIL LETTER.	11/03/2014	ML14344A925
1382	OFFICIAL EXHIBIT - OST-026-00-BD01 - DARROW FREEZEOUT TRIANGLE URANIUM MINE PA REPORT	09/24/2014	ML14344A926
1383	OFFICIAL EXHIBIT - OST-025-00-BD01 - DEWEY BURDOCK CERCLA PA ANNOUNCEMENT.	11/07/2014	ML14344A928
1384	OFFICIAL EXHIBIT - NON-PUBLIC - NRC-169-00-BD01 - TRANSECT 2 FENCE DIAGRAM OF DRILL HOLE RESISTIVITY LOGS - PROPRIETARY INFORMATION.	10/14/2014	ML14344A882
1385	OFFICIAL EXHIBIT - NRC-160-00-BD01 - RESUME OF RONALD MCGINNIS.	10/14/2014	ML14344A884
1386	OFFICIAL EXHIBIT - NRC-161-00-BD01 - LOCATION OF HISTORIC TVA DRILL HOLES.	10/14/2014	ML14344A885

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1387	OFFICIAL EXHIBIT - NRC-005-R-00-BD01 - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF THOMAS LANCASTER.	10/14/2014	ML14344A886
1388	OFFICIAL EXHIBIT - NRC-163-00-BD01 - USGS TOPOGRAPHIC MAP FOR THE DEWEY-BURDOCK AREA.	10/14/2014	ML14344A887
1389	OFFICIAL EXHIBIT - NRC-162-00-BD01 - FIGURE 2.6-2A FROM POWERTECH'S TECHNICAL REPORT (2014).	06/17/2014	ML14344A888
1390	OFFICIAL EXHIBIT - NRC-004-R-00-BD01 - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF KELLEE L. JAMERSON.	10/14/2014	ML14344A889
1391	OFFICIAL EXHIBIT - NRC-170-00-BD01 - TRANSECT 1 AND TRANSECT 2 DRILL HOLES.	10/14/2014	ML14344A890
1392	OFFICIAL EXHIBIT - NRC-157-00-BD01 - NRC STAFF'S SUPPLEMENTAL TESTIMONY ON TAKE PERMIT APPLICATION, DRAFT AVIAN MONITORING PLAN, AND BLM LETTER.	10/14/2014	ML14344A892
1393	OFFICIAL EXHIBIT - NRC-159-00-BD01 - RESUME OF PAUL BERTETTI.	10/14/2014	ML14344A896
1394	OFFICIAL EXHIBIT - NRC-164-00-BD01 - USGS DIGITAL ELEVATION MODEL (30-M GRID) FOR THE DEWEY-BURDOCK AREA.	10/14/2014	ML14344A899

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1395	OFFICIAL EXHIBIT - NON-PUBLIC - NRC-166-00-BD01 - DRILL HOLE LOG SPOT CHECK ELEVATION OF TOP OF FUSON SHALE - PROPRIETARY INFORMATION.	10/14/2014	ML14344A903
1396	OFFICIAL EXHIBIT - NRC-174-00-BD01 - NRC STAFF'S RESPONSIVE TESTIMONY.	10/24/2014	ML14344A917
1397	OFFICIAL EXHIBIT - NRC-171-R-00-BD01 - REVISED MAPS SHOWING LOCATIONS OF DRILL HOLES AND SUSPECTED SINKHOLE WITH CONTOUR INTERVALS.	10/24/2014	ML14344A921
1398	OFFICIAL EXHIBIT - NON-PUBLIC - NRC-172 - 00-BD01 - FENCE DIAGRAM OF RESISTIVITY PROFILES FOR SELECTED DRILL HOLES NEAR PROPOSED SINKHOLE. - PROPRIETARY INFORMATION.	10/14/2014	ML14344A927
1399	OFFICIAL EXHIBIT - NON-PUBLIC - NRC-168-00-BD01 - TRANSECT 1 FENCE DIAGRAM OF DRILL HOLE RESISTIVITY LOGS - PROPRIETARY INFORMATION.	10/14/2014	ML14344A929
1400	OFFICIAL EXHIBIT - NON-PUBLIC - NRC-173 - 00-BD01 - TABLE 2. DRILL HOLE LOGS USED FOR SPOT CHECKING.	10/14/2014	ML14344A930
1401	OFFICIAL EXHIBIT - NRC-158-00-BD01 - SUPPLEMENTAL TESTIMONY REGARDING NRC STAFF'S ANALYSIS OF TVA WELL LOG DATA.	10/14/2014	ML14344A931

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1402	OFFICIAL EXHIBIT - NRC-165-00-BD01 - USDA NAIP ORTHOGRAPHIC IMAGE FOR FALL RIVER COUNTY (2012).	10/14/2014	ML14344A932
1403	OFFICIAL EXHIBIT - NRC-167-00-BD01 - LOCATION OF DRILL HOLE TRANSECTS.	10/14/2014	ML14344A934
1404	OFFICIAL EXHIBIT - NRC-003-R-00-BD01 - REVISED STATEMENT OF PROFESSIONAL QUALIFICATIONS OF HAIMANOT YILMA.	10/14/2014	ML14344A937
1405	OFFICIAL EXHIBIT - NRC-175-00-BD01 - NRC STAFF'S ANSWERING TESTIMONY.	12/09/2014	ML15020A423
1406	OFFICIAL EXHIBIT - NON-PUBLIC - OST-038 - 00-BD01 - EXHIBIT TRR17.	11/21/2014	ML15020A393
1407	OFFICIAL EXHIBIT - NON-PUBLIC - OST-034-00-BD01 - EXHIBIT DS392.	11/21/2015	ML15020A394
1408	OFFICIAL EXHIBIT - NON-PUBLIC - OST-036-00-BD01 - EXHIBIT IHM32.	11/21/2014	ML15020A395
1409	OFFICIAL EXHIBIT - NON-PUBLIC - OST-041-00-BD01 - EXHIBIT TRJ111.	11/21/2014	ML15020A396

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1410	OFFICIAL EXHIBIT - NON-PUBLIC - OST-040-00-BD01 - EXHIBIT FBM95.	11/21/2014	ML15020A397
1411	OFFICIAL EXHIBIT - NON-PUBLIC - OST-033-00-BD01 - EXHIBIT DS178.	11/21/2014	ML15020A398
1412	OFFICIAL EXHIBIT - NON-PUBLIC - OST-035-00-BD01 - EXHIBIT IHK2.	11/21/2014	ML15020A399
1413	OFFICIAL EXHIBIT - NON-PUBLIC - OST-039-00-BD01 - EXHIBIT TRT16.	11/21/2014	ML15020A400
1414	OFFICIAL EXHIBIT - NON-PUBLIC - OST-037-00-BD01 - EXHIBIT IHM62.	11/21/2014	ML15020A401
1415	OFFICIAL EXHIBIT - OST-029-00-BD01 - WRITTEN SUPPLEMENTAL TESTIMONY OF DR LAGARRY.	11/21/2014	ML15020A402
1416	OFFICIAL EXHIBIT - NON-PUBLIC - OST-030-00-BD01 - EXHIBIT SNT25.	11/21/2014	ML15020A404
1417	OFFICIAL EXHIBIT - NON-PUBLIC - OST-031-00-BD01 - EXHIBIT TRT44.	11/21/2014	ML15020A406

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1418	OFFICIAL EXHIBIT - NON-PUBLIC - OST-032-00-BD01 - EXHIBIT ELT4.	11/21/2014	ML15020A407
1419	OFFICIAL EXHIBIT - NON-PUBLIC - APP-087-00-BD01 - GEOPHYSICAL LOG HEADER WITHOUT DRIFT SURVEY.	12/04/2014	ML15020A408
1420	OFFICIAL EXHIBIT - NON-PUBLIC - APP-078-00-BD01 - IHK2 BOREHOLE SOUTH-NORTH CROSS SECTION.	12/05/2014	ML15020A409
1421	OFFICIAL EXHIBIT - NON-PUBLIC - APP-079-00-BD01 - IHK2 BOREHOLE WEST-EAST CROSS SECTION.	12/04/2014	ML15020A410
1422	OFFICIAL EXHIBIT - APP-077-00-BD01 - BOREHOLES EVALUATED IN CROSS SECTIONS.	12/03/2014	ML15020A411
1423	OFFICIAL EXHIBIT - NON-PUBLIC - APP-075-00-BD01 - POWERTECH (USA), INC., SILVER KING MINES, INC. PROBE LOG.	12/04/2014	ML15020A412
1424	OFFICIAL EXHIBIT - NON-PUBLIC - APP-074-00-BD01 - ANSWERING TESTIMONY REGARDING DR. LAGARRY'S ANALYSIS OF BOREHOLE LOG DATA.	12/04/2014	ML15020A413
1425	OFFICIAL EXHIBIT - NON-PUBLIC - APP-085-00-BD01 - TRT16 BOREHOLE WEST-EAST CROSS SECTION.	12/03/2014	ML15020A414

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1426	OFFICIAL EXHIBIT - NON-PUBLIC - APP-082-00-BD01 - TRR17 BOREHOLE SOUTH-NORTH CROSS SECTION.	12/04/2014	ML15020A415
1427	OFFICIAL EXHIBIT - NON-PUBLIC - APP-083-00-BD01 - TRR17 BOREHOLE WEST-EAST CROSS SECTION.	12/03/2014	ML15020A416
1428	OFFICIAL EXHIBIT - NON-PUBLIC - APP-084-00-BD01 - POWERTECH, INC., TRT16 BOREHOLE SOUTH-NORTH CROSS SECTION.	12/04/2014	ML15020A417
1429	OFFICIAL EXHIBIT - NON-PUBLIC - APP-076-00-BD01 - DS178 LITHOLOGY LOG.	12/04/2014	ML15020A418
1430	OFFICIAL EXHIBIT - NON-PUBLIC - APP-080-00-BD01 - IHM61 BOREHOLE SOUTH-NORTH CROSS SECTION.	12/03/2014	ML15020A420
1431	OFFICIAL EXHIBIT - NON-PUBLIC - APP-086-00-BD01 - POWERTECH (USA), INC., TRJ111 GEOPHYSICAL LOG HEADER, NON-PUBLIC / PROPRIETARY INFORMATION.	12/04/2014	ML15020A421
1432	OFFICIAL EXHIBIT - NON-PUBLIC - APP-081-00-BD01 - IHM61 BOREHOLE WEST-EAST CROSS SECTION NON-PUBLIC/PROPRIETARY INFORMATION.	12/03/2014	ML15020A422

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1433	OFFICIAL EXHIBIT - APP-088-00-BD01 - POWERTECH, INC. RESPONSES TO NRC STAFF'S VERBAL AND EMAIL REQUESTS FOR CLARIFICATION OF SELECTED ISSUES RELATED TO THE DEWEY-BURDOCK URANIUM PROJECT ENVIRONMENTAL REVIEW.	11/04/2010	ML15020A734
1434	POWERTECH (USA), INC'S REPLY TO PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW	01/29/2015	ML15029A708
1435	NRC STAFF'S REPLY BRIEF	01/29/2015	ML15030A066
1436	OGLALA SIOUX TRIBE'S POST-HEARING REPLY BRIEF (PKG. CONTAINS ML15030A068 AND ML15030A070)	01/29/2015	ML15030A067
1437	CONSOLIDATED INTERVENORS' REPLY TO POST-HEARING BRIEFS	01/29/2015	ML15012A472
1438	UPDATE TO NRC STAFF'F HEARING FILE INDEX	02/02/2015	ML15033A387
1439	ERRATA TO POST HEARING BRIEFS	02/02/2015	ML15033A388

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1440	NRC STAFF MARCH 2015 HEARING FILE UPDATE	03/02/2015	ML15061A305
1441	NOTICE (REGARDING EXPECTED ISSUANCE OF INITIAL DECISION)	03/09/2015	ML15068A281
1442	APRIL 2015 STAFF HEARING FILE UPDATE (NOTE: CORRECTED BY #27453, 04/02/15, ML15092A253).	04/01/2015	ML15091A356
1443	APPLICANT'S UPDATED MANDATORY DISCLOSURES APRIL 2015 (ML15091A612, ML15091A618, AND ML15091A620)	04/01/2015	ML15091A607
1444	APRIL 2015 STAFF HEARING FILE UPDATE (CORRECTED TO INCLUDE COS)	04/01/2015	ML15092A253
1445	PARTIAL INITIAL DECISION (LBP-15-16)	04/30/2015	ML15120A299
1446	MEMORANDUM AND ORDER (PROVIDING PARTIES' PROPOSED QUESTIONS FOR THE OFFICIAL RECORD)	04/30/2015	ML15120A308
1447	NRC STAFF HEARING FILE UPDATE - MAY 2015	05/01/2015	ML15121A932

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1448	POWERTECH (USA), INC. PETITION FOR REVIEW OF LBP-15-16 (ML15146A494 THRU ML15146A498)	05/26/2015	ML15146A493
1449	NRC STAFF'S PETITION FOR REVIEW OF LBP-15-16	05/26/2015	ML15146A499
1450	CONSOLIDATED INTERVENORS' PETITION FOR REVIEW OF LBP-15-16	05/26/2015	ML15147A069
1451	OGLALA SIOUX TRIBE'S PETITION FOR REVIEW OF LBP-15-16 AND DECISIONS FINDING TRIBAL CONTENTIONS INADMISSIBLE	05/26/2015	ML15146A500
1452	NRC STAFF'S JUNE 2015 HEARING FILE UPDATE AND STATUS REPORT (PKG CONTAINS ML15152A525 AND ML15152A526)	06/01/2015	ML15152A524
1453	NOTICE OF ATOMIC SAFETY AND LICENSING BOARD RECONSTITUTION	06/09/2015	ML15160A359
1454	POWERTECH RESPONSE TO CONSOLIDATED INTERVENORS PETITION FOR REVIEW OF LBP-15-16 (ML15173A475 THRU ML15173A478).	06/22/2015	ML15173A474
1455	OGLALA SIOUX TRIBE'S CONSOLIDATED RESPONSE TO PETITIONS FOR REVIEW OF LBP-15-16	06/22/2015	ML15173A483

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1456	NRC STAFF'S RESPONSES TO PETITIONS FOR COMMISSION REVEW [ML15173A485 THRU ML15173A487]	06/22/2015	ML15173A484
1457	NRC STAFF NOTICE TO BOARD REGARDING LETTER SENT FROM NRC STAFF INVITING OGLALA SIOUX TRIBE TO FURTHER CONSULTATION WITH THE DEWEY-BURDOCK PROJECT	06/24/2015	ML15175A411
1458	NRC STAFF'S JULY 2015 HEARING FILE UPDATE AND STATUS REPORT (PKG. CONTAINS ML15182A195 AND ML15182A196)	07/01/2015	ML15182A194
1459	NRC STAFF'S REPLY TO OGLALA SIOUX TRIBE'S RESPONSE BRIEF	07/01/2015	ML15182A221
1460	POWERTECH REPLY TO NRC STAFF'S RESPONSE TO POWERTECH'S PETITION REVIEW OF LBP-15-06.	07/02/2015	ML15183A491
1461	OGLALA SIOUX TRIBE'S REPLY IN SUPPORT OF PETITION FOR REVIEW OF LBP-15-16 AND DECISIONS FINDING TRIBAL CONTENTIONS INADMISSIBLE	07/02/2015	ML15183A493
1462	NOTICE OF OGLALA SIOUX TRIBE RESPONSE TO NRC STAFF'S JUNE 23, 2015 LETTER	07/15/2015	ML15196A100

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1463	UPDATE TO NRC STAFF'S HEARING FILE INDEX	08/03/2015	ML15215A657
1464	NRC STAFF'S STATUS REPORT	08/03/2015	ML15215A658
1465	POWERTECH REPLY BRIEF TO OGLALA SIOUX TRIBE RESPONSE BRIEF	07/02/2015	ML15183A492
1466	LETTER TO THE BOARD RE OGLALA SIOUX TRIBE'S QUESTIONS ON MEETING INVITATION SENT IN JUNE 2015. WITH COS AND ATTACHMENTS. (PKG. W/ ML15239B340 THRU ML15239B342)	08/27/2015	ML15239B339
1467	NRC STAFF'S HEARING FILE INDEX UPDATE	09/01/2015	ML15244B131
1468	NRC STAFF'S STATUS REPORT	09/01/2015	ML15244B132
1469	ORDER OF THE SECRETARY (EXTENDING TIME FOR COMMISSION REVIEW).	09/21/2015	ML15264B131

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1470	NOTICE OF SEPTMEBER 24, 2015 LETTER FROM THE OGLALA SIOUX TRIBE TO NRC.	09/24/2015	ML15267A377
1471	UPDATE TO NRC STAFF'S HEARING FILE INDEX	10/01/2015	ML15274A506
1472	NRC STAFF'S STATUS REPORT	10/01/2015	ML15274A517
1473	NRC STAFF NOVEMBER 2015 HEARING FILE INDEX	11/02/2015	ML15306A353
1474	NRC STAFF NOVEMBER 2015 STATUS REPORT	11/02/2015	ML15306A354
1475	NOTICE OF WITHDRAWAL FOR MICHAEL J. CLARK	11/04/2015	ML15308A425
1476	NOTICE OF APPEARANCE OF CHRISTOPHER HAIR.	12/01/2015	ML15335A521
1477	NRC STAFF CONSULTATION STATUS UPDATE.	12/01/2015	ML15335A539

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1478	NRC STAFF HEARING FILE UPDATE.	12/01/2015	ML15335A547
1479	NOTICE OF APPEARANCE OF SHELBIE R. LEWMAN.	12/03/2015	ML15337A425
1480	NRC STAFF HEARING FILE UPDATE	01/04/2016	ML16004A280
1481	NRC STAFF CONSULTATION STATUS REPORT	01/04/2016	ML16004A311
1482	NRC STAFF STATUS REPORT ND HEARING FILE UPDATE (ML16033A100 AND ML16033A101).	02/01/2016	ML16033A099
1483	NRC STAFF'S MARCH 1, 2016 HEARING FILE UPDATE AND CONSULTATION UPDATE (ML16061A078 AND ML16061A079).	03/01/2016	ML16061A077
1484	POWERTECH REQUEST FOR STATUS REPORT ON PETITION FOR REVIEW OF LBP-15-16	03/28/2016	ML16088A113
1485	NRC STAFF'S APRIL 1, 2016 CONSULTATION STATUS REPORT	04/01/2016	ML16092A104

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1486	NRC STAFF STATUS REPORT AND HEARING FILE UPDATES (ML16336A814 AND ML16336A815).	12/01/2016	ML16336A813
1487	COMMISSION MEMORANDUM AND ORDER (CLI-16-20).	12/23/2016	ML16358A434
1488	NRC STAFF STATUS REPORT (JANUARY 2017).	01/03/2017	ML17005A266
1489	NOTICE OF WITHDRAWAL OF PATRICIA JEHLE	01/30/2017	ML17030A277
1490	NOTICE OF APPEARANCE FOR DAVID CYLKOWSKI	02/01/2017	ML17032A178
1491	NRC STAFF HEARING FILE AND STATUS UPDATE (FEBRUARY 2017) (ML17032A361 AND ML17032A362).	02/01/2017	ML17032A360
1492	NRC STAFF HEARING FILE AND STATUS UPDATE (MARCH 2017) (PKG. W/ ML17060A683 AND ML17060A685).	03/01/2017	ML17060A682
1493	ORDER AMENDING SITE VISIT SCHEDULE, IN THE MATTER OF POWERTECH USA, INC. (DEWEY-BURDOCK IN SITU URANIUM RECOVERY FACILITY).	09/05/2013	ML13248A490

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1494	ORDER (ADMITTING ADDITIONAL EXHIBITS CLOSING THE RECORD ON CONTENTION 3 AND SETTING BRIEFING DATES).	12/10/2014	ML14344A620
1495	CONSOLIDATED INTERVENORS' AMENDED HEARING EXHIBITS.	07/07/2014	ML14189A346
1496	CONSOLIDATED INTERVENORS AMENDED HEARING WITNESS LIST.	07/07/2014	ML14189A344
1497	CONSOLIDATED INTERVENORS AMENDED PREFILED HEARING EXHIBITS.	06/26/2014	ML14182A618
1498	CONSOLIDATED INTERVENORS AMENDED PREFILED HEARING WITNESS LIST.	06/26/2014	ML14182A623
1499	CONSOLIDATED INTERVENORS PREFILED HEARING EXHIBITS.	06/20/2014	ML14174B144
1500	CONSOLIDATED INTERVENOR'S PRE-FILED HEARING WITNESS LIST.	06/21/2014	ML14174B240
1501	INT-001 - TESTIMONY OF DR. LOUIS REDMOND REGARDING LAKOTA CULTURAL RESOURCES.	11/29/2012	ML14189A340

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1502	INT-002 - 10/31/09 REPORT OF DR. RICHARD ABITZ ON POWERTECH BASELINE REPORT.	10/31/2009	ML14189A341
1503	INT-003 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF DR. LOUIS REDMOND.	06/20/2014	ML14190B072
1504	INT-004 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF DR. HANNAN LAGARRY	03/04/2010	ML14189A442
1505	INT-005 - STATEMENT OF PROFESSIONAL QUALIFICATIONS OF DR. RICHARD ABITZ.	06/20/2014	ML14189A443
1506	INT-006 - DECLARATION OF WILMER MESTETH REGARDING LAKOTA CULTURAL RESOURCES.	06/20/2014	ML14189A438
1507	INT-007 - TESTIMONY OF SUSAN HENDERSON REGARDING WATER RESOURCES ISSUES AND CONCERNS OF DOWNFLOW RANCHER.	06/20/2014	ML14189A439
1508	INT-008 - TESTIMONY OF DR. DONALD KELLEY A FORMER FORENSIC PATHOLOGIST REGARDING THE RADIOLOGICAL IMPACT ON HUMANS AND OTHER ANIMALS.	06/20/2014	ML14189A440

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1509	INT-009 - STATEMENT OF QUALIFICATIONS OF DR. KELLEY.	06/20/2014	ML14189A441
1510	INT-010 - TESTIMONY OF PEGGY DETMERS A WILDLIFE BIOLOGIST REGARDING THE D-B SITE AND ENDANGERED SPECIES.	06/20/2014	ML14189A623
1511	INT-010A - STATEMENT OF QUALIFICATIONS OF PEGGY DETMERS.	06/20/2014	ML14189A624
1512	INT-010B - MAP - BEAVER CREEK WATERSHED.	06/20/2014	ML14189A620
1513	INT-010C - MAP - CENTRAL FLYWAY.	06/20/2014	ML14189A621
1514	INT-010D - MAP - WHOOPING CRANE ROUTE.	06/20/2014	ML14189A622
1515	INT-010E - MAP - D-B PROJECT SITE.	06/20/2014	ML14189A639
1516	INT-010F - GOOGLE PHOTO - DEWEY PROJECT - CLOSE.	06/20/2014	ML14189A640

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1517	INT-010G - GOOGLE PHOTO - DEWEY PROJECT - MEDIUM HEIGHT.	06/20/2014	ML14189A636
1518	INT-010H - GOOGLE PHOTO - DEWEY PROJECT - WIDE.	06/20/2014	ML14189A637
1519	INT-010I - MAP - 5 STATE AREA - D-B PROJECT.	06/20/2014	ML14189A638
1520	INT-010J - GPS GOOGLE PHOTO - D-B PROJECT - CLOSE-UP.	09/08/2012	ML14189A656
1521	INT-010K - GPS GOOGLE PHOTO - D-B PROJECT - DRAINAGE.	09/08/2012	ML14189A657
1522	INT-010L - GPS GOOGLE PHOTO - D-B PROJECT - WIDESHOT.	09/08/2012	ML14189A654
1523	INT-010M - MAP - D-B AREA.	06/20/2014	ML14189A655
1524	INT-010N - GPS GOOGLE PHOTO - D-B PROJECT - TRIANGLE.	10/15/2013	ML14189A685`0`

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1525	INT-010O - DIAGRAM - WHOOPING CRANE BIOACCUMULATON.	06/20/2014	ML14189A683
1526	INT-010P - BEAVER CREEK FINAL FECAL COLIFORM.	01/13/2010	ML14189A684
1527	INT-011 - TESTIMONY OF MARVIN KAMMERA, A RANCHER, ON POTENTIAL IMPACTS ON DOWN FLOW RANCHERS AS TO INYAN KARA WATER QUANTITY AND QUALITY.	06/20/2014	ML14189A566
1528	INT-012 - TESTIMONY OF DAYTON HYDE, OWNER/OPERATOR OF BLACK HILLS WILD HORSE SANCTUARY, ON POTENTIAL IMPACTS AND CONCERNS ABOUT PROPOSED ISL MINE ON DOWNFLOW SURFACE AND UNDERGROUND WATER RESOURCES.	02/26/2010	ML14189A208
1529	INT-013 - TESTIMONY OF DR. HANNON LAGARRY A GEOLOGIC STRATIGRAPHER REGARDING FRACTURES, FAULTS, AND OTHER GEOLOGIC FEATURES NOT ADEQUATELY CONSIDERED BY POWERTECH OR NRC STAFF.	06/20/2014	ML14189A206
1530	INT-014 - TESTIMONY OF LINSEY MCLANE, A BIO-CHEMIST REGARDING BIOACCUMULATION OF HEAVY METALS IN PLANT AND ANIMAL SPECIES.	06/20/2014	ML14189A207
1531	INT-016 - PETITION TO INTERVENE, WITH EXHIBITS.	03/08/2010	ML14189A587

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1532	INT-017 - STATEMENT OF CONTENTIONS ON DSEIS, WITH EXHIBITS.	01/25/2013	ML14189A589
1533	INT-018 - INT STATEMENT OF CONTENTIONS ON FSEIS, WITH EXHIBITS.	03/17/2014	ML14189A689
1534	NRC-041 - 8/31/2011 NRC LETTER FROM POWERTECH LETTER AND PROPOSAL IN RESPONSE TO THE AUG 12, 2011 REQUEST FOR NHPA SECTION 106 INFO. THIS LETTER ENCLOSED A PROPOSAL WHICH OUTLINED A PHASED APPROACH TO	08/31/2011	ML14175B611
1535	NRC-077 - 05/28/2010 NRC STAFF REQUEST FOR ADDITIONAL INFORMATION FOR PROPOSED DEWEY-BURDOCK IN SITU RECOVERY FACILITY (ADAMS ACCESSION NO. ML101460286).	05/28/2010	ML14172A089
1536	APRIL 2012 NRC STAFF HEARING FILE UPDATE.	04/02/2012	ML12093A360
1537	APRIL 2012 STATUS REPORT WITH CERTIFICATE OF SERVICE	04/02/2012	ML12093A362
1538	NOTICE OF AVAILABILITY OF REPORT “NUMERICAL MODELING OF HYDROGEOLOGICAL CONDITIONS, DEWEY-BURDOCK PROJECT, SOUTH DAKOTA."	03/06/2012	ML12066A231

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1539	NRC STAFF ESTIMATE OF THE SAFETY EVALUATION REPORT, DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT AND FINAL SEIS IN THE MATTER OF POWERTECH (USA) INC.	05/01/2012	ML12122B012
1540	NRC STAFF TRANSMITTAL OF POWERTECH HEARING FILE AND MANDATORY DISCLOSURES, UPDATE - MAY 1, 2012 INDEX.	05/01/2012	ML12122B011
1541	CONSOLIDATED INTERVENORS' CONSOLIDATED REPLY RE: DSEIS.	03/25/2013	ML13086A523
1542	CONSOLIDATED INTERVENOR' OPENING STATEMENT.	07/07/2014	ML14189A345
1543	CONSOLIDATED INTERVENORS MOTION TO STRIKE PAGES 11-21 OF POWERTECH RESPONSE TO STAY.	05/13/2014	ML14133A389
1544	CONSOLIDATED INTERVENORS' OPENING STATEMENT	06/26/2014	ML14182A604
1545	OGLALA SIOUX TRIBE'S CROSS EXAMINATION MOTION.	07/22/2014	ML14203A674

ID NO.	DESCRIPTION	DOCUMENT DATE	ACCESSION NUMBER
1546	POWERTECH RESPONSE TO OGLALA SIOUX TRIBE PETITION FOR REVIEW OF LBP-15-16, (ML15173A479 THRU ML5173A482).	06/22/2015	ML15175A505
1547	CONSOLIDATED INTERVENOR'S REPLY TO POST-HEARING BRIEFS	01/29/2015	ML15030A055
1548	LIMITED APPEARANCE STATEMENT FROM ELIZABETH H. WILEY REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	05/07/2015	ML15127A617
1549	LIMITED APPEARANCE STATEMENT FROM STEPHANIE STRONG REGARDING POWERTECH (USA) INC.'S LICENSE APPLICATION FOR AN IN-SITU URANIUM RECOVERY FACILITY.	08/14/2014	ML14226A765
1550	NRC STAFF HEARING FILE AND STATUS UPDATE (APRIL 2017), (PKG. CONTAINS ML17093A567 AND ML17093A578).	04/03/2017	ML17093A566

CERTIFICATE OF SERVICE

I hereby certify that on April 6, 2017, the foregoing Certified Index to the Record was served on all counsel of record in case number 17-1059 through the electronic filing system (CM/ECF) of the U.S. Court of Appeals for the District of Columbia Circuit.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Stephen G. Burns, Chairman
Kristine L. Svinicki
Jeff Baran

In the Matter of POWERTECH (USA), INC. (Dewey-Burdock *In Situ* Uranium Recovery Facility)	Docket No. 40-9075-MLA

CLI-16-20

MEMORANDUM AND ORDER

This decision addresses four petitions for review relating to a materials license application for an *in situ* uranium recovery facility filed by Powertech (USA), Inc.[1] All parties to the proceeding—the Oglala Sioux Tribe, Consolidated Intervenors, Powertech, and the NRC Staff—have filed petitions for review of the Atomic Safety and Licensing Board's Partial Initial Decision and in the case of the Oglala Sioux Tribe and Consolidated Intervenors, earlier Board decisions finding several of their proffered contentions inadmissible.[2]

[1] Powertech (USA) Inc.'s Submission of an Application for a Nuclear Regulatory Commission Uranium Recovery License for Its Proposed Dewey-Burdock In Situ Leach Uranium Recovery Facility in the State of South Dakota (Feb. 25, 2009) (ADAMS accession no. ML091030707).

[2] LBP-15-16, 81 NRC 618 (2015); *see Oglala Sioux Tribe's Petition for Review of LBP-15-16 and Decisions Finding Tribal Contentions Inadmissible* (May 26, 2015) (Tribe's Petition); *Consolidated Intervenors' Petition for Review of LBP-15-16* (May 26, 2015) (Consolidated Intervenors' Petition); *Brief of Powertech (USA), Inc. Petition for Review of LBP-15-16* (May 26,

As discussed below, we take review of these petitions in part. We grant each party's petition with respect to the finality of the Board's ruling on Contentions 1A and 1B, find that these contentions should be considered "final" for the purposes of the petitions for review at issue here, and, pursuant to our inherent supervisory authority over agency adjudications, direct that the proceeding remain open for the narrow issue of resolving the deficiencies identified in Contentions 1A and 1B. We deny the remainder of Consolidated Intervenors' petition for review. With respect to Powertech's and the Staff's petitions for review, we also take review of the Board's direction to the Staff to address the deficiencies identified in Contentions 1A and 1B and we affirm the Board's direction to the Staff to submit monthly status reports and to file an agreement between the parties or a motion for summary disposition to resolve the deficiencies identified by the Board. We deny the remainder of Powertech's and the Staff's petitions for review. With respect to the Tribe's petition for review, we take review of the Board's rejection of Contention 8 as inadmissible. We find that the Board erred in its reasoning for dismissing Contention 8, but we affirm the Board's decision. We deny the remainder of the Tribe's petition for review.

I. BACKGROUND

In situ uranium recovery involves injecting a solution, called lixiviant, into an ore body through an injection well. As it flows through the ore body, the lixiviant dissolves the underground uranium. A separate production well extracts the uranium-containing solution from the ground. The uranium is then extracted from the solution though a process called ion

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2015) (Powertech's Petition); *NRC Staff's Petition for Review of LBP-15-16* (May 26, 2015) (Staff's Petition).

The Board has referred to Susan Henderson, Dayton Hyde, and Aligning for Responsible Mining as Consolidated Intervenors, although it originally called them Consolidated Petitioners. *See* LBP-14-5, 79 NRC 377, 379 n.3 (2014); LBP-13-9, 78 NRC 37, 42 n.2 (2013).

exchange. After extraction, the lixiviant is recycled and reinjected into the ore body to dissolve more uranium.[3] The *in situ* uranium recovery process is used widely throughout Wyoming, South Dakota, Nebraska, and New Mexico to recover subterranean uranium for enrichment and later use in nuclear power plants.

In order to comply with its National Environmental Policy Act (NEPA) obligations and recognizing the widespread use of this technology in this region of the country, the Staff prepared a generic environmental impact statement (GEIS) to address certain aspects of the environmental analysis for these facilities that tend to be similar across sites.[4] The GEIS also identifies resource areas that require site-specific information to fully analyze the environmental impacts. It also notes that subsequent site-specific environmental review documents may summarize and incorporate by reference information from the GEIS.[5] Any subsequent site-specific environmental impact analysis must also include new and significant information necessary to evaluate the *in situ* recovery license application.[6]

This proceeding began in February 2009, when Powertech filed an application for an *in situ* uranium recovery facility in Custer and Fall River Counties, South Dakota. In response, the Oglala Sioux Tribe and Consolidated Intervenors challenged the license application.[7] The

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[3] Ex. APP-021-A, "Powertech (USA), Inc., Dewey-Burdock Project Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota Technical Report," (Feb. 2009), at 1-6 (ML14247A342).

[4] Exs. NRC-010-A-1 to NRC-010-B-2, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities" (Final Report), NUREG-1910, vols. 1-2 (May 2009) (ML14246A328, ML14247A345, ML14246A333, ML14246A332, ML14246A351) (GEIS).

[5] Ex. NRC-010-A-1, GEIS, at xxxvii.

[6] *Id.*

[7] *Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe* (Apr. 6, 2010) (Tribe's Petition to Intervene); *Consolidated Request for Hearing and Petition for Leave to Intervene* (Mar. 8, 2010) (Consolidated Intervenors' Petition to Intervene).

Board granted their hearing requests in August 2010.[8] On November 26, 2012, the Staff issued the Draft Supplemental Environmental Impact Statement (DSEIS) for public comment.[9] The NRC Staff issued a Safety Evaluation Report (SER) in March 2013.[10] On January 29, 2014, the Staff issued the FSEIS.[11] The Staff issued the license to Powertech on April 8, 2014.[12] The

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[8] LBP-10-16, 72 NRC 361, 443-44 (2010).

[9] Exs. NRC-009-A-1 to NRC-009-B-2, "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota, Supplement to the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities" (Draft Report for Comment), NUREG-1910, Supplement 4, vols. 1-2 (Nov. 2012) (ML14247A350, ML14246A329, ML14246A330, ML14246A331) (DSEIS).

Both the Tribe and individual members of Consolidated Intervenors (Susan Henderson and Dayton Hyde) commented on the DSEIS and later filed proposed contentions relating to the DSEIS. Exs. NRC-008-A-1 to NRC-008-B-2, "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota, Supplement to the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities" (Final Report), NUREG-1910, Supplement 4, vols. 1-2 (Jan. 2014), app. E, at E-5 to E-6 (ML14246A350, ML14246A326, ML14246A327, ML14247A334) (FSEIS); *see Consolidated Intervenors' New Contentions Based on DSEIS* (Jan. 25, 2013) (Consolidated Intervenors' DSEIS Contentions); *List of Contentions of the Oglala Sioux Tribe Based on the Draft Supplemental Environmental Impact Statement* (Jan. 25, 2013) (Tribe's DSEIS Contentions). On July 22, 2013, the Board admitted three of the new contentions and migrated seven of the originally admitted contentions. LBP-13-9, 78 NRC at 113-15.

[10] Ex. NRC-135, "Safety Evaluation Report for the Dewey-Burdock Project Fall River and Custer Counties, South Dakota" (Mar. 2013) (ML13052A182). The Staff issued a revised SER in April 2014 to correct certain technical references. Ex. NRC-134, "Safety Evaluation Report (Revised) for the Dewey-Burdock Project Fall River and Custer Counties, South Dakota" (Apr. 2014) (ML14245A347).

[11] Exs. NRC-008-A-1 to NRC-008-B-2, FSEIS. On March 17, 2014, the Tribe and Consolidated Intervenors filed additional contentions related to the FSEIS. *Consolidated Intervenors' Statement of Contentions* (Mar. 17, 2014) (Consolidated Intervenors' FSEIS Contentions); *Statement of Contentions of the Oglala Sioux Tribe Following Issuance of Final Supplemental Environmental Impact Statement* (Mar. 17, 2014) (Tribe's FSEIS Contentions). The Board ruled that the contentions previously admitted in reference to the DSEIS migrated to the FSEIS and held inadmissible the remaining proposed contentions. LBP-14-5, 79 NRC at 401.

[12] Ex. NRC-012, License Number SUA-1600, Materials License for Powertech (USA) Inc. (Apr. 8, 2014) (ML14246A408) (License).

Board held an evidentiary hearing on all nine admitted contentions in August 2014. In November 2014, the Tribe moved to file two new environmental contentions.[13]

The Board decision, LBP-15-16, resolved seven contentions in favor of Powertech and the Staff but found deficiencies in the Staff's NEPA analysis and NHPA consultation.[14] The Board upheld the license with an additional license condition, ruled inadmissible the two post-hearing contentions proffered by the Tribe, and directed the Staff to submit monthly reports regarding its progress in resolving the identified deficiencies.[15]

Our decision today involves four petitions for review that were filed by the parties to this proceeding. We summarize each petition below, along with the relevant procedural history for each set of issues. A full procedural history can be found in the Board's various decisions on this matter.[16]

A. The Oglala Sioux Tribe's and Consolidated Intervenors' Petitions for Review

The Oglala Sioux Tribe appeals the Board's resolution of several of its admitted contentions in favor of Powertech and the Staff.[17] The Tribe also seeks review of the Board's ruling on two of its admitted contentions that left the license in place and required the Staff to conduct additional consultation.[18] Consolidated Intervenors petition for review of the Board's decision resolving their admitted contentions in favor of Powertech and the Staff.[19] They further

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[13] *Motion for Leave to File New or Amended Contention on Behalf of the Oglala Sioux Tribe* (Nov. 7, 2014) (Tribe's Motion for New Contentions).

[14] LBP-15-16, 81 NRC at 657-58, 708-10.

[15] *Id.* at 708-10.

[16] *See id.* at 626-35; *see also* LBP-14-5, 79 NRC at 379-81; LBP-13-9, 78 NRC at 43-45; LBP-10-16, 72 NRC at 376-78.

[17] Tribe's Petition at 19-25.

[18] *Id.* at 18-19.

[19] Consolidated Intervenors' Petition at 2 & n.3, 4-7.

challenge the Board's ruling that left the license in place despite ruling in Consolidated Intervenors' favor on two of their admitted contentions.[20]

In Contentions 1A and 1B, the Tribe and Consolidated Intervenors challenged the NEPA analysis of cultural resources in the FSEIS and the Staff's compliance with the National Historic Preservation Act (NHPA).[21] The Board concluded that the Staff had fulfilled its NHPA obligations with respect to identification of historic properties. It nonetheless held that the Staff's analysis in the FSEIS did not satisfy NEPA's hard look requirement regarding cultural resources and that the Staff's consultation with the Tribe had been insufficient to comply with the Staff's additional obligations under the NHPA.[22] The Board retained jurisdiction over these contentions and required the Staff to "promptly initiat[e] a government-to-government consultation with the Oglala Sioux Tribe" to address the deficiencies identified in the Board's decision.[23] The Tribe and Consolidated Intervenors seek review of the Board's decision to leave the license in place pending resolution of Contentions 1A and 1B.[24]

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[20] *Id.* at 3, 6-7.

Consolidated Intervenors have requested that we set a briefing schedule for any issues that we accept for review. *Id.* at 8-9. In accordance with 10 C.F.R. § 2.341(c)(2), we have decided these matters on the basis of the petitions for review, and therefore deny Consolidated Intervenors' request to establish a briefing schedule.

Consolidated Intervenors also challenge the Board's ruling in LBP-10-16 that "certain petitioners" lacked standing to intervene. *Id.* at 2. In their petition, Consolidated Intervenors do not identify which petitioners they are referencing. We therefore deny review of that portion of their petition.

[21] *Oglala Sioux Tribe's Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law* (Jan. 9, 2015), at 12, 27 (Tribe's Post-Hearing Brief); *Consolidated Intervenors' Proposed Findings of Fact and Conclusions of Law and Response to Post-Hearing Order* (Jan. 9, 2015), at 1-2, 14 (Consolidated Intervenors' Post-Hearing Brief).

[22] LBP-15-16, 81 NRC at 653-57.

[23] *Id.* at 657-58, 708, 710.

[24] Tribe's Petition at 18-19; Consolidated Intervenors' Petition at 6-7.

In Contention 2, the Tribe and Consolidated Intervenors argued that the FSEIS did not contain sufficient background groundwater characterization.[25] The Board resolved this contention in favor of Powertech and the Staff, and the Tribe seeks review of the Board's decision.[26]

In Contention 3, the Tribe and Consolidated Intervenors argued that the FSEIS insufficiently analyzed certain geological and manmade features that may permit groundwater migration.[27] The Board resolved this contention in favor of Powertech and the Staff but added a license condition regarding the proper treatment of unplugged boreholes.[28] Both the Tribe and Consolidated Intervenors seek review of the Board's decision.[29]

In Contention 6, the Tribe and Consolidated Intervenors challenged the FSEIS's analysis of mitigation measures and argued that it impermissibly deferred the development of additional mitigation measures.[30] The Board resolved this contention in favor of Powertech and the Staff, and the Tribe seeks review of the Board's decision.[31]

Additionally, the Tribe challenges the Board's decision in LBP-15-16 to reject as inadmissible new contentions submitted after the hearing regarding borehole data and an Environmental Protection Agency (EPA) Preliminary Assessment regarding potential Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

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[25] Tribe's Post-Hearing Brief at 38; Consolidated Intervenors' Post-Hearing Brief at 21.

[26] LBP-15-16, 81 NRC at 666, 708-09; *see* Tribe's Petition at 19-21.

[27] Tribe's Post-Hearing Brief at 43; Consolidated Intervenors' Post-Hearing Brief at 28, 47.

[28] LBP-15-16, 81 NRC at 681, 709.

[29] Tribe's Petition at 22-23; Consolidated Intervenors' Petition at 2 n.3, 4-7.

[30] Tribe's Post-Hearing Brief at 61-62; Consolidated Intervenors' Post-Hearing Brief at 53-56.

[31] LBP-15-16, 81 NRC at 697, 709; Tribe's Petition for Review at 23-25.

cleanup.[32] Further, it seeks review of earlier Board decisions that found two of its contentions (Contentions 7 and 8) inadmissible.[33] In proposed Contention 7, the Tribe argued that the application was deficient because it did not include a reviewable plan for disposal of byproduct material or discuss the environmental effects of such disposal.[34] The Tribe resubmitted this contention on both the DSEIS and the FSEIS, and the Board dismissed it as inadmissible each time.[35] In proposed Contention 8, the Tribe argued that the DSEIS had been issued without the requisite scoping process.[36] The Board held this contention inadmissible, finding that it did not articulate a material dispute, as required by the contention admissibility standards.[37]

Finally, Consolidated Intervenors challenge the Board's decision at the outset of the proceeding finding one of their contentions inadmissible.[38] In proposed Contention D, Consolidated Intervenors argued that Powertech's application was so disorganized that it violated 10 C.F.R. § 40.9, and the Board rejected this portion of the contention as inadmissible.[39]

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[32] Tribe's Petition at 8-11; *see* LBP-15-16, 81 NRC at 704-06, 709.

[33] Tribe's Petition at 3-8.

[34] Tribe's Petition to Intervene at 31-34.

[35] Tribe's FSEIS Contentions at 33-39; Tribe's DSEIS Contentions at 27-30, *see* LBP-14-5, 79 NRC at 396-97; LBP-13-9, 78 NRC at 71-72.

[36] Tribe's DSEIS Contentions at 30-33.

[37] LBP-13-9, 78 NRC at 74-75.

[38] Consolidated Intervenors' Petition at 2 n.3, 3-4, 7.

[39] Consolidated Intervenors' Petition to Intervene at 36; *see* LBP-10-16, 72 NRC at 402.

B. Powertech's and the NRC Staff's Petitions for Review

On appeal, the Staff and Powertech challenge the Board's resolution of Contentions 1A and 1B in favor of the Tribe and Consolidated Intervenors.[40] Additionally, both parties seek review of the Board's retention of jurisdiction over these contentions.[41] Finally, Powertech challenges the Board's imposition of an additional license condition in resolving Contention 3 that requires Powertech to locate and properly abandon unplugged boreholes within each wellfield prior to operations.[42]

II. DISCUSSION

A. Standard of Review

We will grant a petition for review at our discretion, upon a showing that the petitioner has raised a substantial question as to whether

> (i) A finding of material fact is clearly erroneous or in conflict with a finding as to the same fact in a different proceeding;
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> (ii) A necessary legal conclusion is without governing precedent or is a departure from or contrary to established law;
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> (iii) A substantial and important question of law, policy, or discretion has been raised;
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> (iv) The conduct of the proceeding involved a prejudicial procedural error; or
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> (v) Any other consideration that we may deem to be in the public interest.[43]

[40] Powertech's Petition at 6-22; Staff's Petition at 17, 23. The Tribe filed a response to both petitions on June 22, 2015. *Oglala Sioux Tribe's Consolidated Response to Petitions for Review of LBP-15-16* (June 22, 2015) (Tribe's Response).

[41] Powertech's Petition at 5-6, 6 n.9; Staff's Petition at 13-16, 16 n.73.

[42] Powertech's Petition at 22-25; *see* LBP-15-16, 81 NRC at 709.

[43] 10 C.F.R. § 2.341(b)(4).

We review questions of law *de novo,* but we defer to the Board's findings with respect to the underlying facts unless they are "clearly erroneous."[44] The standard for showing "clear error" is a difficult one to meet: petitioners must demonstrate that the Board's determination is "not even plausible" in light of the record as a whole.[45] For this reason, where a petition for review relies primarily on claims that the Board erred in weighing the evidence in a merits decision, we seldom grant review.[46] In addition, we give substantial deference to the Board on issues of contention admissibility and will affirm admissibility determinations absent a showing of an error of law or abuse of discretion.[47] In *Pa`ina Hawaii, LLC* (Materials License Application) we said the following about our standard of review:

> We refrain from exercising our authority to make *de novo* findings of fact in situations where a Licensing Board has issued a plausible decision that rests on carefully rendered findings of fact. As we have stated many times, while we have discretion to review all underlying factual issues *de novo*, we are disinclined to do so where a Board has weighed arguments presented by experts and rendered reasonable, record-based factual findings. Our standard of "clear error" for overturning a Board's factual findings is quite high. We defer to a board's factual findings, correcting only clearly erroneous findings—that is, findings not even plausible in light of the record viewed in its entirety—where we have strong

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[44] *Honeywell International, Inc*. (Metropolis Works Uranium Conversion Facility), CLI-13-1, 77 NRC 1, 18-19 (2013); *David Geisen*, CLI-10-23, 72 NRC 210, 224-25, 242 (2010).

[45] *Honeywell,* CLI-13-1, 77 NRC at 18 n.102; *Geisen,* CLI-10-23, 72 NRC at 224-25.

[46] *See, e.g.*, *DTE Electric Co*. (Fermi Nuclear Power Plant, Unit 3), CLI-14-10, 80 NRC 157, 162-63 (2014); *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc*. (Pilgrim Nuclear Power Station), CLI-12-1, 75 NRC 39, 46 (2012) (stating "where a Board's decision rests on a weighing of extensive fact-specific evidence presented by technical experts, we generally will defer"); *Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-10-17, 72 NRC 1, 30 (2010) (noting that the Commission is "generally disinclined to upset *fact*-driven Licensing Board determinations") (internal quotations omitted).

[47] *Entergy Nuclear Operations, Inc*. (Indian Point, Units 2 and 3), CLI-15-6, 81 NRC 340, 354-55 (2015); *Calvert Cliffs 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-09-20, 70 NRC 911, 914 (2009); *Southern Nuclear Operating Co*. (Vogtle Electric Generating Plant, Units 3 and 4), CLI-09-16, 70 NRC 33, 35 (2009).

reason to believe that a board has overlooked or misunderstood important evidence.[48]

B. Contentions Rejected Prior to Hearing

The Tribe and Consolidated Intervenors seek review of three Board decisions that found several of their proposed contentions inadmissible.

1. The Tribe's Proposed Contention 7

In proposed Contention 7, the Tribe challenged the lack of a reviewable plan for disposal of byproduct material as defined in Section 11e.(2) of the Atomic Energy Act of 1954, as amended (byproduct material).[49] The Tribe submitted this contention three times: with respect to the environmental report, the DSEIS, and the FSEIS.[50] In each case, the Tribe provided a different basis for the contention, and the Board dismissed each iteration as inadmissible.[51] In its petition for review, the Tribe argues that the Board "erred at law and abused its discretion" each time it found Contention 7 inadmissible.[52] We do not find that the Tribe raises a substantial question regarding the admissibility of this contention. With respect to each Board decision, the Tribe provides a separate basis to support its petition.

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[48] *Pa`ina Hawaii, LLC* (Materials License Application), CLI-10-18, 72 NRC 56, 72-73 (2010) (internal quotations and citations omitted).

[49] Tribe's Petition to Intervene at 31-34. Section 11e.(2) of the Atomic Energy Act of 1954, as amended, defines "byproduct material" as "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." 42 U.S.C. § 2014(e)(2).

[50] Tribe's FSEIS Contentions at 33-39; Tribe's DSEIS Contentions at 27-30; Tribe's Petition to Intervene at 31-34.

[51] *See* Tribe's FSEIS Contentions at 33-39; Tribe's DSEIS Contentions at 27-30; Tribe's Petition to Intervene at 31-34; *see also* LBP-14-5, 79 NRC at 397; LBP-13-9, 78 NRC at 71-72; LBP-10-16, 72 NRC at 434-35.

[52] Tribe's Petition at 3.

a. Proposed Contention and Board Orders LBP-10-16, LBP-13-9, and LBP-14-5

The Board rejected Contention 7 in LBP-10-16, finding that the Tribe did not show that Powertech had failed to comply with any NRC or other federal regulation.[53] The Tribe argued that 10 C.F.R. § 40.31(h) and Criterion 1 in Appendix A to 10 C.F.R. Part 40 require Powertech to provide a specific plan for disposal of byproduct material in its application. The Board rejected this argument and explained that—per our case law—these provisions apply to uranium mills, not *in situ* recovery sites.[54] Additionally, the Tribe argued that NEPA required that the application contain a specific disposal plan. The Board disagreed, holding that the Staff, not the applicant, is bound by NEPA.[55] But the Board noted that the Tribe would have the opportunity, if it were not satisfied with the treatment of this issue in the Staff's environmental documents, to renew this contention after issuance of those documents.[56]

The Tribe did just that when it filed a similar contention with respect to the analysis in the DSEIS, which the Board ruled inadmissible in LBP-13-9.[57] The Board determined that the Staff had addressed impacts related to byproduct material in both the DSEIS and the GEIS.[58] The Board observed that, insofar as the Tribe claimed that the contention was one of "omission," the

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[53] LBP-10-16, 72 NRC at 434. The Tribe called this Contention 7 in its initial petition and its DSEIS Contentions. It refers to the same contention as FSEIS Contention 2 in its FSEIS Contentions. To minimize confusion, we will refer to this contention as Contention 7 throughout this decision.

[54] *Id.* (citing *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 8 (1999) ("We agree with the Presiding Officer's general conclusion that section 40.31(h) and Part 40, Appendix A, 'were designed to address the problems related to mill tailings and not problems related to [*in situ*] mining.'")).

[55] *Id.* at 435.

[56] *Id.*

[57] Tribe's DSEIS Contentions at 27-30; *see* LBP-13-9, 78 NRC at 71-72.

[58] LBP-13-9, 78 NRC at 71.

contention was moot because the DSEIS contained the information the Tribe claimed was missing.[59] The Board stated that

> because the Oglala Sioux Tribe neither substantively disputes the analysis of impacts related to disposal of byproduct material in relevant sections of the DSEIS and the GEIS, nor addresses the license condition related to disposal of byproduct material, the Board rejects this contention as failing to comply with the admissibility dictates of 10 C.F.R. § 2.309(f)(1)(vi).[60]

Upon issuance of the FSEIS, the Tribe refiled an identical contention alleging inadequate analysis of direct, indirect, and cumulative impacts of disposal of byproduct material.[61] The Board found the contention inadmissible and explained that the section of the FSEIS the Tribe cited did not differ materially from the parallel section in the DSEIS. Accordingly, the Board held that the Tribe failed to meet the requirements of 10 C.F.R. § 2.309(c)(1)(ii) for the filing of a new contention.[62]

b. The Tribe's Petition for Review

On appeal, the Tribe challenges the Board's ruling, supported by both the plain language of the regulation and our precedent, that 10 C.F.R. § 40.31(h) and Part 40 Appendix A, Criterion 1, are inapplicable to *in situ* recovery facilities. We disagree—this point is well settled and we see no reason to revisit it here.[63]

Further, the Tribe argues that Part 40 Appendix A, Criterion 2, which is applicable to *in situ* uranium recovery facilities, requires a plan for waste disposal in the application. Based on

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[59] *Id.*

[60] *Id.* at 71-72.

[61] Tribe's FSEIS Contentions at 33-39.

[62] LBP-14-5, 79 NRC at 397. Additionally, the Board noted that Powertech's draft license contained license conditions requiring that "Powertech [have a] byproduct material disposal contract in place prior to the commencement of operations." *Id.*

[63] *Hydro Resources, Inc.*, CLI-99-22, 50 NRC at 8.

the plain language of Criterion 2, we disagree. Criterion 2 states that "byproduct material from [*in situ*] extraction operations … must be disposed of at existing large mill tailings disposal sites …."[64] This provision mandates that disposal of byproduct material take place at an existing disposal site—it does not require that the application include a waste disposal plan or designate which waste disposal site will be used.

Next, the Tribe argues that the Standard Review Plan "specifically discusses the need for a … waste disposal plan."[65] But the Tribe's argument regarding the Standard Review Plan does not demonstrate Board error. The Standard Review Plan is not a regulation; it is guidance for the Staff in reviewing an application, and it provides one way to comply with our regulations.[66] Additionally, as the Board explained in LBP-10-16, the Staff's standard practice allows applicants *either* to identify a waste disposal site in their applications *or* to implement a license condition regarding waste disposal.[67] As discussed below, Powertech's license includes two conditions related to waste disposal.[68] The Tribe has not identified any regulation to the contrary.

Additionally, the Tribe takes issue with the Board's statement that an applicant is not bound by NEPA.[69] The Board had stated that although "[t]he Tribe also argue[d] that a specific disposal plan must be included in Powertech's Application in order to comply with NEPA. … It is

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[64] 10 C.F.R. pt. 40, app. A, Criterion 2.

[65] Tribe's Petition at 4.

[66] *Crow Butte Resources, Inc.* (Marsland Expansion Area), CLI-14-2, 79 NRC 11, 23 n.70 (2014) (citing *Curators of the University of Missouri*, CLI-95-1, 41 NRC 71, 98 (1995)).

[67] LBP-10-16, 72 NRC at 435.

[68] *See* Ex. NRC-012, License, at 6, 12.

[69] Tribe's Petition at 4.

settled law that an applicant is not bound by NEPA, but by NRC regulations in Part 51."[70] Insofar as it could be interpreted as implying that the Tribe was premature in filing its environmental contentions on the application, the Board's decision was incorrect. Although it is true that "the ultimate burden with respect to NEPA lies with the NRC Staff," our regulations require that intervenors file environmental contentions on the applicant's environmental report.[71] In any case, any Board error here was harmless because it also stated that the Tribe would have the opportunity to formulate a contention regarding disposal of byproduct material on the DSEIS, and indeed, the Tribe did so.[72]

The Tribe asserts that the Board's recognition that planning for waste disposal is an important aspect of our regulations necessarily raises a substantial question for our review.[73] In support of this argument, the Tribe refers to concerns the Board expressed regarding whether waste disposal would be addressed in Powertech's license.[74] In LBP-10-16, the Board noted that "if a condition dealing with … byproduct material is not included in the license, the Tribe has no recourse because it cannot challenge the license at that time."[75] However, Powertech's

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[70] LBP-10-16, 72 NRC at 435.

[71] *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), CLI-10-2, 71 NRC 27, 34 (2010); *see* 10 C.F.R. § 2.309(f)(2).

[72] LBP-10-16, 72 NRC at 435. *See* Tribe's DSEIS Contentions at 27-30; *see also Geisen*, CLI-10-23, 72 NRC at 245 ("[T]o prevail on appeal, [a party] must show not only that the majority erred but also that the error had a prejudicial effect on the [party's] case." (citations omitted)).

[73] The Tribe argues that "[a]lthough the [Board] excluded Contention 7, the Board recommended 'that this issue be considered by the Commission (or Board) when it conducts the mandatory review and hearing that must be held in this case.'" Tribe's Petition at 4 (quoting LBP-10-16, 72 NRC at 435). The Board cited 10 C.F.R. § 51.107(a), which refers to issuance of a combined license for a nuclear power reactor; it has no applicability to *in situ* leach facilities. Mandatory hearings are not held in materials licensing proceedings like this one.

[74] Tribe's Petition at 4.

[75] LBP-10-16, 72 NRC at 435.

license contains multiple conditions regarding disposal of byproduct material. License Condition 12.6 requires Powertech to submit to the NRC a disposal agreement with a licensed disposal site before beginning operations.[76] License Condition 9.9 requires Powertech to maintain such a disposal agreement; if the agreement expires or otherwise terminates, Powertech must halt operations.[77]

Although the Board held that Contention 7 was rendered moot by the analysis of the impacts of the disposal of byproduct material in the DSEIS, the Tribe argues that the DSEIS only identified a possible site for the disposal of byproduct material; the Tribe reiterates its argument that the DSEIS's analysis of the impacts of byproduct material disposal was lacking.[78] On appeal, the Tribe argues that the Board erred in rejecting Contention 7 as a contention of omission.[79] But, as explained above, the Board found that the DSEIS and the GEIS analyzed the impacts of the disposal of byproduct material, and it pointed to specific sections of both documents.[80] The Board's ruling did not rest on the distinction between a contention of omission and one of inaccuracy—it found that the Tribe's proposed contention failed to challenge or address the information in the DSEIS and the draft license condition related to waste disposal.[81] On appeal, the Tribe argues that the discussion of waste disposal in the GEIS was insufficient to fulfill the Staff's responsibilities, but the Tribe fails to consider that, as the

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[76] Ex. NRC-012, License, at 12.

[77] *Id.* at 6.

[78] Tribe's Petition at 5; *see* LBP-13-9, 78 NRC at 71.

[79] Tribe's Petition at 5. As the Board noted, the Tribe itself characterized this contention as one of omission. *See* Tribe's DSEIS Contentions at 28; *see also* LBP-13-9, 78 NRC at 71.

[80] LBP-13-9, 78 NRC at 71.

[81] *Id.* at 71-72.

Board noted, both the DSEIS and the draft license condition also addressed waste disposal.[82] The Tribe does not identify any error regarding the Board's ruling on this point; therefore it does not raise a substantial question for our review.

Next, the Tribe argues that the Board dismissed Contention 7 as inadmissible "simply because the draft license contained a provision requiring the applicant to establish a disposal plan at some point in the future."[83] But the Tribe misstates the Board's basis for its ruling. The Board based its ruling on the Staff's analysis in the GEIS, the DSEIS, and expectation that the license would include conditions regarding waste disposal.[84] Given the Board's reliance on the Staff's analysis and the expected license conditions—which, are indeed present in Powertech's license—we see no substantial question for review here.

The Tribe's final argument in its petition for review with respect to Contention 7 invokes the United States Court of Appeals for the District of Columbia Circuit's decision vacating the waste confidence rule, now called the continued storage rule (10 C.F.R. § 51.23).[85] The Tribe argues that the court's vacatur of the former waste confidence rule confirms that the Tribe has raised a substantial question regarding the Board's dismissal of its proposed Contention 7 in LBP-14-5 and is analogous to this proceeding.[86]

But the court's decision regarding continued storage has no bearing on this issue. Neither the waste confidence rule nor the continued storage rule applies to 11e.(2) byproduct

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[82] Tribe's Petition at 5; *see* LBP-13-9, 78 NRC at 71-72.

[83] Tribe's Petition at 5.

[84] LBP-13-9, 78 NRC at 71-72.

[85] Tribe's Petition at 5-6; *see New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012).

[86] In a decision issued on June 3, 2016, the U.S. Court of Appeals for the District of Columbia Circuit denied the petitions for review challenging the NRC's updated continued storage rule. *New York v. NRC*, 824 F.3d 1012 (D.C. Cir. 2016), *reh'g denied* 2016 U.S. App. LEXIS 14584 (D.C. Cir. Aug. 8, 2016).

material. These rules only apply to environmental impacts of spent fuel storage at power reactors and spent fuel storage facilities after the end of a reactor's license term and before disposal in a deep geologic repository.[87] Moreover, License Condition 12.6 expressly prevents Powertech from beginning operations—and therefore producing byproduct material—before it has in place an agreement with a licensed waste disposal site. And License Condition 9.9 prevents Powertech from continuing to operate if the waste disposal agreement expires or is otherwise terminated. In sum, the continued storage rule is inapplicable to Powertech's facility and Powertech's license is conditioned to ensure that it will not produce byproduct material without a plan for disposal. Accordingly, the Tribe does not raise a substantial question for review.

2. The Tribe's Proposed Contention 8

The Tribe petitions for review of the Board's rejection of its proposed Contention 8, in which it argued that the DSEIS had been issued without the requisite scoping process.[88] The Board rejected the contention for failing to demonstrate that a "genuine dispute exists with the applicant/licensee on a material issue of law or fact."[89] The Board held that 10 C.F.R. §§ 51.26(d) and 51.92(d) both exempt the Staff from conducting a scoping process for a

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[87] *See* 10 C.F.R. § 51.23.

[88] Tribe's Petition at 7; *see* Tribe's DSEIS Contentions at 30-33; LBP-13-9, 78 NRC at 74-75. In Contention 8, which the Tribe submitted on both the application and the DSEIS, the Tribe also challenged the requirement to submit environmental contentions before the Staff's completion of its NEPA analysis. The Board rejected—in both LBP-10-16 and LBP-13-9—the Tribe's argument that this requirement violates NEPA. LBP-13-9, 78 NRC at 74; LBP-10-16, 72 NRC at 437-38. The Board explained that the challenge "could be properly characterized as 'an impermissible attack on NRC regulations, in contravention of 10 C.F.R § 2.335.'" LBP-13-9, 78 NRC at 74 (quoting LBP-10-16, 72 NRC at 436). The Tribe has not challenged the Board's reasoning on this portion of Contention 8.

[89] LBP-13-9, 78 NRC at 74-75 (quoting 10 C.F.R. § 2.309(f)(1)(vi)).

"supplemental" EIS based on a plain language reading of the regulation.[90] Further, the Board found that the Staff had engaged in a scoping process when it developed the GEIS and had conducted additional outreach during development of the SEIS, thereby satisfying the scoping requirement.[91] Therefore, the Board concluded that the Tribe's contention was inadmissible.[92]

In its petition for review, the Tribe argues that the exceptions to the scoping requirements in 10 C.F.R. §§ 51.26(d) and 51.92(d) do not apply to site-specific EISs that tier off of a GEIS merely because the Staff may describe them as supplements.[93] In support of this argument, the Tribe refers to an Office of Inspector General (OIG) Audit Report from August 2013.[94] With respect to scoping, the Audit Report concluded that

> NRC did not fully comply with the scoping regulations because of incorrect understanding of the regulations related to scoping for EISs that tier off of a generic EIS. Specifically, NRC staff refer to the tiered site-specific EIS as a "supplement" to the generic EIS, leading to the belief that the exception in 10 [C.F.R.] § 51.26(d) applies to tiered EISs. Some NRC managers assert that the public scoping process for the generic EIS for [*in situ*] uranium recovery suffices for subsequent, site-specific uranium recovery applications.
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> However, during that generic EIS scoping process in 2007, NRC staff emphasized in response to public comments that all applications would receive a site-specific review. Staff also emphasized that there would be a request for public input on scoping through a "scoping meeting" on site-specific issues if an EIS were prepared for a future application.[95]

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[90] *Id.* at 75.

[91] *Id.*

[92] *Id.*

[93] Tribe's Petition at 7.

[94] "Audit of NRC's Compliance with 10 CFR Part 51 Relative to Environmental Impact Statements," OIG-13-A-20 (Aug. 20, 2013) (ML13232A192) (Audit Report). The OIG published the Audit Report after the Board's dismissal of the scoping portion of the Tribe's proposed Contention 8 in LBP-13-9.

[95] *Id.* at 24.

The Audit Report specifically identified the DSEIS for this project as deficient because it lacked a formal scoping process.[96]

We take review of the Board's denial of the Tribe's proposed Contention 8 with respect to scoping pursuant to 10 C.F.R. § 2.341(b)(4)(ii).[97] The Tribe's contention identifies an issue of law with respect to our NEPA scoping process. We find that the Board's reasoning was flawed because it relied on a section of our NEPA regulations (10 C.F.R. § 51.92) that is not applicable here. Despite this error on the part of the Board, we affirm the Board's ruling and find that, even without a separate scoping process on the SEIS, the Staff provided the Tribe with ample opportunities at an early stage in the process to participate in the development of the site-specific, supplemental EIS. The Tribe had the opportunity to participate in the NEPA process from the beginning, and it has not demonstrated harm or prejudice resulting from the lack of a separate, formal scoping process on the site-specific SEIS; thus, the Board's error was harmless.

We agree with the Staff's observation that tiering and supplementing are not mutually exclusive concepts.[98] However, we agree with the petitioners that the exception in 10 C.F.R. § 51.92(d) does not apply to a supplemental, site-specific EIS that tiers off a GEIS. Section 51.92(d) states: "[t]he supplement to a *final environmental impact statement* will be prepared in the same manner as the *final environmental impact statement* except that a scoping process need not be used."[99] This provision provides an exception from the scoping process for supplements to *final* EISs. The GEIS is not a final EIS for the purpose of the specific federal

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[96] *Id.* at 22; *see* Tribe's Petition at 7.

[97] We review questions of law *de novo*. *See Geisen*, CLI-10-23, 72 NRC at 242.

[98] *NRC Staff's Response to Oglala Sioux Tribe's Petition for Review of LBP-15-16* (June 22, 2015), at 8 (Staff's Response to Tribe).

[99] 10 C.F.R. § 51.92(d) (emphasis added).

action here—the proposed licensing of Powertech's *in situ* uranium recovery facility. The Powertech site-specific SEIS is not a supplement in the sense meant by 10 C.F.R. § 51.92(d). The Staff's reference to the SEIS for this project as a supplement does not change the applicability of the exception in 10 C.F.R. § 51.92(d)—it applies to supplements to final EISs, not site-specific supplements to a GEIS.

Because we determine that the Tribe is correct that 10 C.F.R. § 51.92 does not apply here, we now turn to the effect of the Board's error. After considering the Staff's involvement with the Tribe and other interested stakeholders throughout the NEPA process, we find that the Tribe has not shown that the lack of scoping resulted in harm or prejudice. Despite the fact that the Staff did not engage in a separate, formal scoping process in preparing the DSEIS, the Staff provided the Tribe with ample opportunities at an early stage in the process to participate in the development of the site-specific EIS.[100] For example, the Staff states that in 2009 it proposed a meeting with the Tribe to discuss the project, but that the Tribe was unable to attend.[101] Further, "[i]n early 2010, the Staff placed advertisements in six newspapers with circulation in the Dewey-Burdock area, including the Lakota Country Times and the Native Sun, inviting the public to comment on the Dewey-Burdock Project."[102] This public outreach demonstrates that the Tribe and the public had sufficient opportunity to provide input to the Staff regarding the scope of the Staff's environmental analysis. Moreover, the Staff conducted full scoping for the GEIS, which considered specific features of the Black Hills and identified Dewey-Burdock on

[100] *See, e.g.*, Staff's Response to Tribe at 8-9 (listing opportunities for the Tribe's participation).

[101] *Id.* at 8-9; *see* Tr. at 771.

[102] Staff's Response to Tribe at 9; *see* Ex. NRC-008-A-1, FSEIS § 1.4.2.

maps and figures. The GEIS also specified that it would serve as part of Dewey-Burdock's environmental analysis.[103]

It is well settled that parties challenging an agency's NEPA process are not entitled to relief unless they demonstrate harm or prejudice—and the Tribe has not done so here.[104] Federal case law makes clear that procedural violations of NEPA do not automatically void an agency's ultimate decision.[105] For example, in *Northwest Coalition for Alternatives to Pesticides v. Lyng*, although the Bureau of Land Management had not properly notified the plaintiff during the scoping process, the Ninth Circuit upheld the District Court's determination that the plaintiff was unable to demonstrate prejudice after having participated in the development of the EIS.[106] Also in *Lyng*, the court, discussing the high bar for overturning a federal administrative decision, referred to a Fourth Circuit case holding that individuals not given notice of public hearings on a proposed wastewater treatment plant did not suffer prejudice, even though they were not provided the opportunity to participate until "the eleventh hour" of the NEPA process.[107] Here, by contrast, the Tribe was involved from the beginning of the process, despite the acknowledged lack of formality in the scoping for this EIS.

Further, the scoping process is intended to provide notice to individuals potentially affected by the proposed federal action.[108] Here, although the Staff did not conduct a formal

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[103] *See* Staff's Response to Tribe at 9.

[104] *Nw. Coal. for Alts. to Pesticides v. Lyng*, 844 F.2d 588, 594-95 (9th Cir. 1988); *Cty. of Del Norte v. United States*, 732 F.2d 1462, 1467 (9th Cir. 1984); *Cent. Delta Water Agency v. U.S. Fish & Wildlife Serv.*, 653 F. Supp. 2d 1066, 1086-87 (E.D. Cal. 2009); *Muhly v. Espy*, 877 F. Supp. 294, 300-01 (W.D. Va. 1995).

[105] *Lyng*, 844 F.2d at 595.

[106] *Id.* at 594-95.

[107] *Id.* at 595 (citing *Providence Rd. Cmty. Ass'n v. EPA,* 683 F.2d 80, 82 (4th Cir. 1982)).

[108] *Kootenai Tribe of Idaho v. Veneman,* 313 F.3d 1094, 1116 (9th Cir. 2002) ("The primary purpose of the scoping period is to notify those who may be affected by a proposed government

scoping process for the DSEIS for the Dewey-Burdock project, the Tribe had ample notice of the project and numerous opportunities throughout the process to participate in the development of the DSEIS. The Tribe argues that it was "deprived … of the opportunity to present its concerns at the proper time," but it has not argued that any particular section of the site-specific EIS is deficient because of the lack of a formal scoping process.[109]

We are satisfied that the Tribe had the opportunity to provide input on the development of the DSEIS in this case; therefore, the Tribe has not demonstrated harm or prejudice resulting from the lack of a formal scoping process. We find that any error by the Board was harmless and decline to order a hearing on the merits of this contention.[110]

3. Consolidated Intervenors' Proposed Contention D

a. Proposed Contention and Board Order

Consolidated Intervenors challenge the Board's partial denial of their proposed Contention D in LBP-10-16.[111] In the dismissed part of Contention D, Consolidated Intervenors argued that Powertech's application violated 10 C.F.R. § 40.9 "by being disorganized …."[112] In

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action which is governed by NEPA that the relevant entity is beginning the EIS process; this notice requirement ensures that interested parties are aware of and therefore are able to participate meaningfully in the entire EIS process, from start to finish." (citing *Lyng*, 844 F.2d at 594–95)), *abrogated on other grounds by Wilderness Soc'y v. U.S. Forest Serv.*, 630 F.3d 1173 (9th Cir. 2011).

[109] Tribe's Petition at 8.

[110] Notably, the Tribe has not articulated a request for any specific relief regarding the Board's dismissal of this portion of Contention 8 on the DSEIS. Because the Staff has revised its guidance to provide for scoping for future supplemental EISs that tier off of a generic EIS, we decline to delve into the underlying legal issue. Memorandum from Catherine Haney, NMSS, to Stephen D. Dingbaum, OIG (June 30, 2015), at 2 (ML15166A406).

[111] Consolidated Intervenors' Petition at 2 n.3, 3-4, 7. In their petition for review, Consolidated Intervenors cite LBP-15-16 as the Board order that dismissed portions of their proposed Contention D. *Id.* at 2 n.3. To clarify, the Board actually held inadmissible the relevant portions of Contention D in LBP-10-16. *See* LBP-10-16, 72 NRC at 402-03.

[112] Consolidated Intervenors' Petition to Intervene at 36; *see* LBP-10-16, 72 NRC at 400-01. The Board only denied Consolidated Intervenors' Contention D with respect to the

denying this portion of Contention D, the Board found that the application was not "so incomprehensible as to be useless to the public" and stated that "issues of disorganization in an application cannot be said to be germane to the licensing process."[113]

b. Consolidated Intervenors' Petition for Review

On appeal, Consolidated Intervenors argue that the Board created "new standards for accuracy and completeness under [10 C.F.R. § 40.9]" and held "that [a]pplications must be 'incomprehensible' and 'useless to the public' to be deficient under [10 C.F.R. § 40.9]."[114] They claim that the Board's decision "undermines the entire purpose of having an [a]pplication if the standard is so low that it will pass muster if it is barely comprehensible and a hair better than 'useless.'"[115] Finally, Consolidated Intervenors argue that "[t]he public has a strong interest in the standard for accuracy and completeness of source material license applications being higher than that set by the Board ('incomprehensible'[;] 'useless to the public')."[116]

We find that Consolidated Intervenors have not identified a substantial question for our review here. They have not demonstrated that the Board erred at law or abused its discretion in dismissing this portion of Contention D. Consolidated Intervenors have misconstrued the Board's holding; the Board did not adopt or create a new standard for an application to be deemed deficient under 10 C.F.R. § 40.9. Rather, the Board determined that Powertech's application was sufficiently comprehensible for compliance with our regulations. That is, the

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comprehensibility of the application. LBP-10-16, 72 NRC at 402-03. The Board admitted portions of the contention that related to the technical adequacy of baseline water quality and adequate confinement of the host aquifer. *Id.* at 403.

[113] *Id.* at 402-03 (quoting *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 280 (1998)).

[114] Consolidated Intervenors' Petition at 2 n.3, 7.

[115] *Id.* at 3-4.

[116] *Id.* at 7.

Board simply disagreed with Consolidated Intervenors' argument that the application was incomprehensible and useless. Pursuant to 10 C.F.R. § 2.341(b)(4)(i), we will take review of a Board's factual findings when those findings are clearly erroneous or in conflict with a finding regarding the same fact in a different proceeding.[117] Consolidated Intervenors have not raised a substantial question with respect to the Board's factual conclusions here. Therefore, we deny Consolidated Intervenors' petition for review.

C. New Contentions Held Inadmissible

The Tribe has petitioned for review of the Board's ruling in LBP-15-16 finding its two newly proposed contentions inadmissible.[118] The Tribe filed these two contentions after the conclusion of the evidentiary hearing in August 2014 in response to the Board's post-hearing order directing Powertech to disclose to all parties additional information regarding borehole log data concerning the project site.[119] The Staff reviewed the data and determined that it did not contradict the findings in the FSEIS.[120] Thereafter, the Tribe proposed two new contentions: the first related to the Staff's October 2014 submissions regarding the data and the second related to EPA documents regarding potential CERCLA cleanup at the Powertech site.[121]

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[117] *See Honeywell*, CLI-13-1, 77 NRC at 18-19; *Geisen*, CLI-10-23, 72 NRC at 224-25.

[118] Tribe's Petition at 8-11; *see* LBP-15-16, 81 NRC at 704-06.

[119] Post Hearing Order (Sept. 8, 2014), at 19 (unpublished) (Post-Hearing Order); *see* Ex. OST-19, Press Release, Powertech Uranium Corp., Powertech Uranium (Azarga Uranium) Enters into Data Purchase Agreement for Dewey-Burdock Project (July 16, 2014) (ML14247A415).

[120] *NRC Staff's Motion to Admit Testimony and Exhibits Addressing Powertech's September 14, 2014 Disclosures* (Oct. 14, 2014), at 1; Ex. NRC-158, Supplemental Testimony Regarding NRC Staff Analysis of TVA Well Log Data (Oct. 14, 2014), at 12 (ML14344A931) (Staff's Supplemental Testimony).

[121] Tribe's Motion for New Contentions at 2-3.

1. The Tribe's New Contention 1

a. Proposed Contention and Board Order

In its first new contention, the Tribe argued that the Staff was required to evaluate the well log data as part of the NEPA process, and that the methodology the Staff used to evaluate the well logs (by conducting a "spot check") was unacceptable.[122]

The Board found that the contention did not meet the requirements of 10 C.F.R. § 2.309(c)(1)(ii) because the information in the well logs was not materially different from information already in the record.[123] The Board also noted that the Tribe failed to meet the requirements of 10 C.F.R. § 2.309(f)(1)(vi) because it had not raised a genuine dispute on a material issue of law or fact—the Staff's method for evaluating borehole data by reviewing representative borehole logs had not changed throughout the proceeding.[124] Further, the Board noted that the Tribe had not met the requirements in 10 C.F.R. § 51.92 for demonstrating the need to supplement a FSEIS—in particular that the information in question was "new and significant."[125]

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[122] *Id.* at 6-9.

[123] LBP-15-16, 81 NRC at 704-05. *See* 10 C.F.R. § 2.309(c)(1)(i)-(iii); *see also* Amendments to Adjudicatory Process Rules and Related Requirements, 77 Fed. Reg. 46,562, 46,571 (Aug. 3, 2012) (clarifying the requirements governing hearing requests, intervention petitions, and motions for leave to file new or amended contentions). Although this proceeding began in 2009, the Board ruled on the Tribe's proposed new contentions in 2015 and had previously adopted the 2012 amendments to 10 C.F.R. Part 2 for this proceeding. Order (Concerning Changes to 10 C.F.R. Part 2) (Aug. 21, 2012) (unpublished).

[124] LBP-15-16, 81 NRC at 705.

[125] *Id.* The Tribe objects to the Board's discussion of this point in its petition for review. The Tribe argues that the Board "conflate[d] the contention admissibility standard with the substantive standard of whether the new information would require a supplement to the NEPA documents." Tribe's Petition at 9. Regardless, the Tribe's challenge does not raise a substantial question for review, because the Tribe's New Contention 1 did not meet the requirements of 10 C.F.R. §§ 2.309(c)(1)(ii) and 2.309(f)(1)(vi). If the information is not materially different from previously available information, it stands to reason that it does not "paint a seriously different picture of the environmental landscape" for this proceeding. *Hydro*

b. The Tribe's Petition for Review

On appeal, the Tribe argues that the Board's denial of the Tribe's request to develop and present its contention presents a substantial question for review.[126] It challenges the Board's factual determinations that new well log data did not present materially different information and that the NRC's "spot check" methodology has been used throughout the Staff's review and issuance of the Powertech's license.[127] But this challenge does not show how the Board's determination here is in error. The Board determined that the Tribe did not present any information that was materially different than what was previously available.[128] The Tribe raised this contention after the hearing was complete and the Board had the benefit of hearing from all of the parties on the borehole information and the Staff's review methodology. On appeal, the Tribe does not give us a reason to find that the Board, which was familiar with the information available throughout the pendency of the proceeding, committed an error or abuse of discretion. Therefore, we decline to take review of the Board's dismissal of this contention as inadmissible.

2. The Tribe's New Contention 2

a. Proposed Contention and Board Order

In its second new contention, the Tribe argued that the Staff had not considered in its NEPA analysis information in a newly released EPA assessment regarding a historic hardrock

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Resources, Inc., CLI-99-22, 50 NRC at 14 (quoting *Sierra Club v. Froehike*, 816 F.2d 205, 210 (5th Cir. 1987)).

[126] The Tribe argues that the Board's post-hearing order provides support for its argument that rejection of this contention presents a substantial question for review. Tribe's Petition at 10. There, the Board ordered disclosure of various documents. Post-Hearing Order at 10-12, 19. The Board denied the Tribe's request for sanctions, and denied Powertech's motion for reconsideration. *Id.* at 12, 16. While the Tribe's description of the Board's post-hearing order is accurate, those rulings do not support its petition for review.

[127] Tribe's Petition at 8-10.

[128] *See* LBP-15-16, 81 NRC at 704-05; *see also* Ex. NRC-158, Staff's Supplemental Testimony, at 9-13.

uranium mine site within the Dewey-Burdock project area.[129] The Tribe argued that "the EPA states that it has determined that a CERCLA removal action is recommended for the site and will proceed."[130] In its contention, the Tribe asserted that the CERCLA removal action was therefore reasonably foreseeable, and that the Staff should have considered the action in the cumulative impacts analysis in the EIS.[131]

The Board held this contention inadmissible because the Tribe "fail[ed] to present sufficient information to show a genuine dispute exists on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi)."[132] Moreover, the Board found that the Tribe disregarded the analysis in the FSEIS of the environmental concerns raised in the EPA Preliminary Assessment, as well as the EPA Preliminary Assessment's repeated references to the FSEIS.[133] Given that the EPA documents themselves referred to the Staff's analysis in both the DSEIS and FSEIS, the Board concluded that the Tribe had not met the contention admissibility requirements, specifically 10 C.F.R. § 2.309(f)(1)(vi).[134]

b. The Tribe's Petition for Review

In its petition for review, the Tribe argues that the Board erred because it "glossed over" the fact that "[t]he EPA identified a new contamination pathway with implications for pollution containment at the site that is not addressed in the application, any NRC materials, or the

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[129] Tribe's Motion for New Contentions at 11; *see also* Ex. OST-026, Letter from Ryan M. Lunt, Task Order Project Manager, Seagull Envtl. Techs., Inc., to Victor Ketellapper, Site Assessment Team Leader, U.S. Envtl. Prot. Agency, Region 8 (Sept. 24, 2014), attach. "Preliminary Assessment Report Regarding the Darrow/Freezeout/Triangle Uranium Mine Site Near Edgemont, South Dakota" (ML14344A926).

[130] Tribe's Motion for New Contentions at 11.

[131] *Id.*

[132] LBP-15-16, 81 NRC at 706.

[133] *Id.*

[134] *Id.*

FSEIS."[135] The Tribe asserts that the FSEIS discusses the unreclaimed mines but does not address "the contamination pathway from the unreclaimed mines to the groundwater" and argues that this presents a substantial question for our review.[136]

Contrary to the Tribe's argument on appeal, the Board did not overlook the Tribe's arguments regarding environmental concerns related to the abandoned mines. In finding New Contention 2 inadmissible, the Board determined that the Tribe had "fail[ed] to show that the Preliminary Assessment is or contains significant new information" and therefore did not demonstrate a genuine dispute on a material issue of law or fact.[137] The Board's ruling was based on its determination that the information in the Preliminary Assessment, including information regarding groundwater contamination, did not differ significantly from that in the FSEIS so as to demonstrate that a genuine dispute existed on a material issue of law or fact.[138] The Tribe's petition does not raise a substantial question regarding the Board's finding that the information in the Preliminary Assessment about unreclaimed mines was insufficient to meet the requirements of 10 C.F.R. § 2.309(f)(1)(vi). Therefore, we deny review of the Board's dismissal of New Contention 2.

We now turn to the parties' claims with respect to the Board's merits decision.

D. Contentions Decided on the Merits

1. Contentions 1A and 1B

As we discuss in detail below, we find that the Board's ruling on Contentions 1A and 1B is final, and consideration of the petitions for review under 10 C.F.R. § 2.341(b)(4) is appropriate at this time. We deny each party's petition for review with respect to Contentions 1A and 1B—

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[135] Tribe's Petition at 11.

[136] *Id.*

[137] LBP-15-16, 81 NRC at 706.

[138] *Id.*

thus leaving in place the Board's ruling in favor of the Tribe and Consolidated Intervenors. Further, under our inherent supervisory authority over agency adjudications, we leave the proceeding open for the narrow issue of resolving the deficiencies identified by the Board.

a. Partial Initial Decision

First, we must clarify the appropriate standard of review of the Board's decision on these contentions. By its terms, the Board presented LBP-15-16 as a "partial initial decision" that left the ultimate resolution of Contentions 1A and 1B for a future decision.[139] Under this approach, the Board retained jurisdiction pending the Staff's remedy of the deficiencies the Board identified in the Board's ruling on Contentions 1A and 1B.[140] Each party, in turn, questioned the Board's decision to retain jurisdiction.[141]

The Board received full briefing and held oral argument and a merits hearing on the issues raised in Contentions 1A and 1B. The Board found in favor of the Tribe and Consolidated Intervenors and identified deficiencies in the Staff's efforts to comply with NEPA and the NHPA.[142] With briefing on these issues completed and the Board's having found in favor of the Tribe and Consolidated Intervenors, we find that the Board's resolution of Contentions 1A and 1B is final and consideration of the petitions for review of these contentions is appropriate at this time.[143]

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[139] *Id.* at 658, 710.

[140] *Id*.

[141] Consolidated Intervenors' Petition at 2 & n.3, 3, 6-7; Powertech's Petition at 5-6, 6 n.9; Staff's Petition at 13-16; *see also* Tribe's Petition at 18-19 (arguing that the "proper remedy" is to "vacate the [licensing] decision and remand back to the agency for further proceedings").

[142] *See* LBP-15-16, 81 NRC at 708.

[143] *See* 10 C.F.R. § 2.341(b)(4); *Pa`ina*, CLI-10-18, 72 NRC at 69-74 (fully reviewing appeals from a licensing board order on an issue where the board ruled in favor of the intervenor on the merits but directed further corrective action); *Vermont Yankee*, CLI-10-17, 72 NRC at 4-9 (same).

b. Contentions and Board Order

In Contention 1A, the Tribe and Consolidated Intervenors challenged the FSEIS's treatment of historic and cultural resources under the NHPA and NEPA.[144] In Contention 1B, the Tribe and Consolidated Intervenors challenged the adequacy of the Staff's NHPA consultation process.[145]

With respect to Contention 1A, the Board held that the Staff had complied with the NHPA requirement to "make a good faith and reasonable effort to identify properties … eligible for inclusion in the National Register of Historical Places within the Dewey-Burdock [*in situ* leach] project area."[146] The Board found that the Staff had largely complied with Advisory Council on Historic Preservation (ACHP) guidance on identification of historic properties.[147] However, with respect to the Staff's NEPA responsibilities, the Board found insufficient the Staff's analysis of the environmental effects of the Dewey-Burdock project on Native American cultural, historic, and religious resources.[148] Accordingly, it held that the Record of Decision was incomplete because the Staff "did not give this issue its required hard look in the FSEIS."[149] Regarding Contention 1B, section 106 consultation, the Board acknowledged that it could not

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[144] Tribe's FSEIS Contentions at 5-9; Consolidated Intervenors' FSEIS Contentions at 6-14. The Tribe and Consolidated Intervenors previously filed similar contentions on the application and the DSEIS. *See* Tribe's DSEIS Contentions at 4-10; Consolidated Intervenors' DSEIS Contentions at 2-7; *Petitioners' Request for Leave to File a New Contention Based on SUNSI Material* (April 30, 2010), at 1-6; Tribe's Petition to Intervene at 12-17.

[145] Tribe's FSEIS Contentions at 9-14; Consolidated Intervenors' FSEIS Contentions at 14-20. The Tribe previously filed similar contentions on the application and the DSEIS. Tribe's DSEIS Contentions at 4-10; Tribe's Petition to Intervene at 12-17.

[146] LBP-15-16, 81 NRC at 654.

[147] *Id.*

[148] *Id.* at 655. More specifically, the Board found a deficiency in the analysis of sites that might be significant to the Oglala Sioux Tribe.

[149] *Id.*

definitively determine whether the Staff or the Tribe bore responsibility for what the Board considered a breakdown in consultation. But the Board found that the NHPA consultation process between the Staff and the Tribe was inadequate because it did not provide sufficient opportunity for the Tribe to articulate its views on the Dewey-Burdock project's effects on historic properties and participate in the resolution of adverse effects.[150]

The Board directed the Staff to conduct additional consultation with the Tribe "to satisfy the hard look at impacts required by NEPA … [and] to satisfy the consultation requirements of the NHPA."[151] By the terms of its order, the Board issued a partial initial decision with respect to these contentions and, therefore, retained jurisdiction over the proceeding pending the Staff's curing of the deficiencies in the FSEIS and consultation with the Tribe.[152] On appeal, each party challenged the Board's issuance of a partial initial decision and retention of jurisdiction.[153]

c. Petitions for Review

(1) THE TRIBE'S AND CONSOLIDATED INTERVENORS' PETITIONS FOR REVIEW

Although the Board found in favor of the Tribe and Consolidated Intervenors, both parties have appealed the relief the Board granted with respect to these contentions.

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[150] *Id.* at 656-57.

[151] *Id.* at 657. The Board noted that it could have suspended Powertech's license, and it attributed its decision to leave the license in place to the Tribe's incomplete participation in the consultation process. *Id.* at 658.

[152] *Id.* at 710.

[153] Consolidated Intervenors' Petition at 2 & n.3, 3, 6-7; Powertech's Petition at 5-6, 6 n.9; Staff's Petition at 13-16; *see also* Tribe's Petition at 18-19 (arguing that the "proper remedy" is to "vacate the [licensing] decision and remand back to the agency for further proceedings").

(a) The Tribe's Petition for Review

The Tribe challenges the Board's decision to leave the license in place, despite finding that the NRC Staff's analysis did not comply with NEPA or the NHPA.[154] Given the Board's decision, the Tribe argues that NEPA and the NHPA prohibit the Board from leaving the license in place and asserts that "the proper remedy is that employed by federal courts up[on] a finding of a violation of NEPA: to vacate the decision and remand back to the agency for further proceedings necessary to achieve compliance."[155]

We disagree. It is well settled that a failure to comply with every aspect of procedural statutes like those at issue here does not necessarily void agency action; federal courts have required that parties demonstrate harm or prejudice to disturb an agency's decision.[156] Here, the Tribe has not articulated any harm or prejudice; in fact, it did not request a stay of the effectiveness of the license, despite the Board's invitation for it to do so.[157] Nor has the Tribe raised a substantial question that would merit granting its petition for review with respect to this issue.[158] Therefore, we deny this portion of the Tribe's petition for review and its request that we vacate Powertech's license.

(b) Consolidated Intervenors' Petition for Review

Consolidated Intervenors argue that "the Board improperly withheld an initial decision and refused to rule on Contentions 1A [and] 1B thereby depriving the Tribe and tribal

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[154] Tribe's Petition at 19.

[155] *Id.* (citing *New York*, 681 F.3d at 471).

[156] *Lyng*, 844 F.2d at 594-95; *Cty. of Del Norte*, 732 F.2d at 1467; *Cent. Delta Water Agency*, 653 F. Supp. 2d at 1086-87; *Muhly*, 877 F. Supp. at 300-01.

[157] *See* LBP-15-16, 81 NRC at 658.

[158] *See Pa`ina*, CLI-10-18, 72 NRC at 69-74 (noting that the board ruled in favor of the intervenor after a merits hearing but directed the parties to undertake additional action to cure identified deficiencies); *Vermont Yankee*, CLI-10-17, 72 NRC at 4-9 (same).

members … an opportunity to appeal the Board's decision."[159] Despite their argument that the Board's decision deprived them of an opportunity to appeal the decision, Consolidated Intervenors challenge the Board's decision to leave the license in place—tying their objection to the NRC's federal trust responsibility.[160] But they do not articulate why the federal trust responsibility precludes the Board from finding as it did; nor do Consolidated Intervenors attempt to demonstrate the existence of a substantial question that would merit granting their petition for review. Instead, they argue that the Board misconstrued the trust responsibility federal agencies owe to the Tribe by "presuming that the Tribe will act '[u]nreasonably.'"[161] This argument misconstrues the Board's decision and does not raise a legal question or demonstrate factual error on the part of the Board. In ruling on Contentions 1A and 1B, the Board did not presume that the Tribe would act unreasonably. Rather, the Board stated that "[e]ven after a thorough review of the record … [it was] not able to decide definitively which party or specific actions led to the impasse preventing an adequate tribal cultural survey."[162] Therefore, the Board directed the Staff to resume consultation with the Tribe, but it reminded the Tribe of its obligation to engage in a meaningful manner with the Staff.[163] We do not see how this statement presumes any unreasonable action or misconstrues the NRC's trust responsibility, nor does it satisfy our standards for granting a petition for review. Therefore, we deny Consolidated Intervenors' petition for review with respect to these contentions.

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[159] Consolidated Intervenors' Petition at 2.

[160] *Id.* at 3.

[161] *Id.*; *see also id.* at 6.

[162] LBP-15-16, 81 NRC at 656.

[163] *Id.* at 657-58, 658 n.236.

(2) POWERTECH AND THE STAFF'S PETITIONS FOR REVIEW

Powertech and the Staff appeal the Board's rulings on Contentions 1A and 1B as well as the Board's retention of jurisdiction.[164]

(a) Powertech's Petition for Review

On appeal, Powertech argues, at length, that the Board's ruling on Contentions 1A and 1B was inconsistent, legally flawed, and factually incorrect. Specifically, Powertech claims that the Board erred in finding the Staff's NHPA analysis deficient by committing clear error of law, ignoring the ACHP's determinations regarding the propriety of the Staff's analysis, providing "special treatment" to the Tribe as a litigant and consulting party, and ignoring critical facts regarding the nature of the government-to-government consultation between the NRC Staff and the Tribe.[165] With respect to the Board's NEPA determination, Powertech argues that the Board erred in finding that the Staff's analysis does not comply with NEPA. In Powertech's view, the NRC Staff has satisfied its NEPA obligation to assess the impacts to historic and cultural resources by considering and evaluating all the available information or information that could reasonably be obtained.[166] Powertech asserts that in requiring more from the Staff, the Board has committed a clear error of law.[167] We disagree. At bottom, Powertech's dispute with the Board's decision is factual, not legal. When assessing a petition for review on factual issues, we typically defer to a Board's findings, absent a showing of clear error.[168] Here, Powertech challenges the Board's weighing of the evidence to find that the Staff's NEPA and NHPA

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[164] Powertech's Petition at 6-22; Staff's Petition at 14-25.

[165] Powertech's Petition at 7, 9-11, 16.

[166] *Id.* at 20-22.

[167] *Id.* at 17.

[168] 10 C.F.R. § 2.341(b)(4)(i).

analyses do not satisfy the NRC's statutory obligations. For example, with respect to the Staff's NEPA analysis, Powertech claims that the Staff considered and evaluated "all available information or information that reasonably could be obtained …."[169] Yet none of Powertech's claims show clear error on the part of the Board, absent which we will not reconsider the Board's resolution of factual issues.[170] We therefore deny Powertech's petition for review with respect to the Board's findings in Contentions 1A and 1B.

(b) The Staff's Petition for Review

On appeal, the Staff argues that the Board misapplied NEPA's hard look standard as a matter of law, under which the Board should assess whether the Staff "made reasonable efforts" to obtain complete information on the cultural resources at issue here.[171] In its brief, the Staff describes the efforts it undertook and argues that these efforts were sufficient to meet the hard-look standard.[172] The Staff asks us to view the Board's application of the hard-look standard as a legal issue under 10 C.F.R. § 2.341(b)(4)(ii).[173] But the fundamental issue here—whether Staff complied with NEPA—is inherently factual.

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[169] Powertech's Petition at 21-22.

[170] We recognize that, as Powertech notes, the ACHP participated in the section 106 process and concluded that the NRC Staff's process complies with the "content and spirit" of the section 106 process. Ex. NRC-031, Letter from John Fowler, ACHP, to Waste Win Young, Standing Rock Sioux Tribe, at 3 (Apr. 7, 2014) (ML14241A473); *see* Powertech's Petition at 3, 9, 11, 15-16. The Staff likewise asks us to treat the ACHP's and North Dakota SHPO's views as dispositive of the fact that it complied with the NHPA. Staff's Petition at 24. Here, where the Board has weighed the relevant facts, including the cited exhibits, and determined that the Staff has not satisfied its obligations under the NHPA and NEPA, we will not disturb the Board's findings absent clear error.

[171] Staff's Petition at 17-18.

[172] *Id.* at 19-20.

[173] *Id.* at 17.

As a general matter, we defer to the Board's findings with respect to the underlying facts unless they are "clearly erroneous."[174] Here, the Board weighed the evidence and determined that the analysis of the environmental effects on cultural resources in the FSEIS was insufficient.[175] The Staff challenges this determination, describing the efforts it made to gather information on cultural resources, but the Staff has not demonstrated that the Board's findings are clearly erroneous.[176] Given the complexity of this proceeding, which involved hundreds of exhibits and over five years of litigation, we are not inclined to second guess the Board's fact-finding.

The Staff next challenges the Board's determination that, on the one hand, the Staff complied with the NHPA regarding identification of historic properties, but the Staff's analysis of cultural, religious, and historic resources under NEPA was insufficient. It argues that the Board's finding that it had complied with the NHPA in identifying historic properties compels the Board to conclude that the Staff also complied with NEPA with respect to cultural resources.[177] The Staff acknowledges that the Board relied on precedent in stating that NEPA compliance does not necessarily follow from NHPA compliance.[178] But it challenges the Board's application of that legal principle to the facts in this case, stating that it had taken a hard look at cultural resources in the FSEIS and arguing that "[t]he Board did not cite any authority supporting its divergent findings on whether the Staff complied with a common requirement of both

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[174] *Honeywell*, CLI-13-1, 77 NRC at 18-19; *Geisen*, CLI-10-23, 72 NRC at 224-25.

[175] LBP-15-16, 81 NRC at 644-55.

[176] Staff's Petition at 19-20.

[177] *Id.* at 21-22.

[178] *Id.*; *see* LBP-15-16, 81 NRC 654-55 (citing *Te-Moak Tribe of W. Shoshone of Nev. v. U.S. Dep't of Interior*, 608 F.3d 592, 606, 610 (9th Cir. 2010); *Hydro Resources, Inc.* (P.O. Box 777 Crownpoint, New Mexico 87313), LBP-05-26, 62 NRC 442, 472 (2005)).

statutes ...."[179] The Staff's challenge to the Board's alleged failure to cite authority for its findings is misplaced. Federal case law supports the legal principle that NHPA and NEPA compliance do not necessarily mirror one another.[180] The Board found that NEPA requires an analysis of the effects on all of the cultural resources present at the site, not only those properties eligible for listing on the National Register of Historic Places, which is the standard for further analysis under the NHPA.[181] The Staff does not demonstrate that the Board's factual finding was implausible. Therefore, we decline to disturb the Board's finding here.

Next, the Staff seeks review of the Board's ruling on Contention 1B that the Staff failed to adequately consult with the Tribe under the NHPA.[182] The Staff argues that the Board's holdings on Contentions 1A and 1B are contradictory because in Contention 1A the Board held "that the Staff complied with the NHPA when identifying cultural resources" while in Contention 1B, the Board held that the NHPA consultation process was inadequate.[183] But the Board's rulings on compliance with the NHPA are not contradictory; its rulings on NHPA compliance in Contentions 1A and 1B relate to different obligations.

The NHPA imposes several obligations on federal agencies, which proceed in a step-by-step manner.[184] The consultation requirement continues throughout the steps. The first step is identifying any historic properties that might be affected by the federal undertaking (here

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[179] Staff's Petition at 22.

[180] *See Te-Moak*, 608 F.3d at 606-07, 610.

[181] *See* 36 C.F.R. § 800.4 (requiring agencies to identify "historic properties"); *id.* § 800.16 (defining historic properties as "districts, sites, buildings, structures, or objects included in or eligible for inclusion in, the National Register of Historic Places"); *see generally id*. § 60.4 (providing the criteria for inclusion in the National Register of Historic Places).

[182] Staff's Petition at 23.

[183] *Id. Compare* LBP-15-16, 81 NRC at 654, *with id.* at 657.

[184] *Id.* at 638-41.

licensing), and in doing so, making a reasonable and good faith effort to seek information from consulting parties, including Native American Tribes, to aid in that identification.[185] In ruling on Contention 1A, the Board determined that the Staff had satisfied the NHPA's consultation requirements with respect to identifying historic properties.[186] In other words, the Board determined that the Staff had satisfactorily completed the first step in the process.

But, as discussed by the Board, the identification of historic properties is not the end of the NHPA consultation process. After it identifies eligible sites that might be affected by the project, an agency must assess[187] and resolve[188] potential adverse effects in consultation with tribes that attach religious and cultural significance to those sites.[189] In its ruling on Contention 1B, the Board found that the Staff had not adequately consulted with the Tribe on the second and third steps; that is, despite its good faith effort to consult in order to identify historic properties, the Staff had not demonstrated that it provided the Tribe with the opportunity to identify concerns about those properties and participate in the resolution of any adverse effects.[190] The Board, after a merits hearing, reasonably concluded that the Staff's consultation with the Tribe was insufficient to meet these requirements. Thus, the Staff has not raised a substantial question for review. For the reasons stated above, we deny review of the Staff's petition with respect to Contentions 1A and 1B.

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[185] 36 C.F.R. § 800.4.

[186] LBP-15-16, 81 NRC at 654.

[187] 36 C.F.R. § 800.5.

[188] *Id.* § 800.6.

[189] *Id.* § 800.2(c)(2)(ii)(A).

[190] LBP-15-16, 81 NRC at 656-57. *See also* 36 C.F.R. § 800.2(c)(2)(ii)(A).

(3) RETENTION OF JURISDICTION

Both the Staff and Powertech appeal the Board's retention of jurisdiction pending resolution of the deficiencies identified in Contentions 1A and 1B.[191] In retaining jurisdiction, the Board directed the Staff to: (1) initiate government-to-government consultation with the Tribe; (2) file monthly status reports; and (3) submit "an agreement reflecting the parties' settlement … or a motion for summary disposition of Contentions 1A and 1B."[192] Both the Staff and Powertech argue that in each instance the Board "exceeded its authority" by retaining jurisdiction over the proceeding and prescribing "a process for the Staff to resolve" the deficiencies identified in Contentions 1A and 1B.[193] Consolidated Intervenors also questioned the Board's retention of jurisdiction over these contentions. Consolidated Intervenors argue that doing so constitutes prejudicial procedural error.[194]

With respect to the Board's specific direction to the Staff to initiate "government-to-government" consultation, we agree in principle with the Staff and Powertech. To the extent that the Board's ruling can be viewed as providing specific direction to the Staff, the Board overstepped its authority.[195] But, based upon our review of the Board's decision, the Board has not stated that it will direct or oversee the Staff's review of cultural resources; instead, it leaves it to the Staff—either by agreement among the parties or by motion for summary disposition—to

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[191] Staff's Petition at 15-16; Powertech's Petition at 6.

[192] LBP-15-16, 81 NRC at 708, 710.

[193] Staff's Petition at 15-16; *see also* Powertech's Petition at 5-6, 6 n.9.

[194] Consolidated Intervenors' Petition at 6-7.

[195] *See, e.g.*, *Duke Energy Corp.* (Catawba Nuclear Station, Units 1 and 2), CLI-04-6, 59 NRC 62, 74 (2004) ("NRC Staff Reviews, which frequently proceed in parallel to adjudicatory proceedings, fall under the direction of Staff management and the Commission itself, not the licensing boards.").

determine when it has addressed the deficiencies identified by the Board.[196] All the Board has required is that the Staff provide reports regarding its consultation efforts in a manner similar to that in which it reports on the progress of its review and the Board's directions to the parties in this respect do not exceed the bounds of its authority. Our regulations provide the Board with the authority to "take appropriate action to control the … hearing process," "[r]egulate the course of the hearing and the conduct of the participants," and "[i]ssue orders necessary to carry out the presiding officer's duties and responsibilities under [10 C.F.R. Part 2]."[197] In circumstances like these, we have made it clear that a Board has relative latitude to fashion appropriate remedies regarding issues properly before it.[198] The Staff is free to select whatever course of action it deems appropriate to address the deficiencies identified in the Board's order, including, but not limited to further government-to-government consultation.[199] For these reasons, we decline to disturb the Board's approach—the Staff must still file monthly reports, along with an agreement or a motion for summary disposition—depending on the outcome of its efforts to

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[196] LBP-15-16, 81 NRC at 710.

[197] 10 C.F.R. § 2.319.

[198] *Pa`ina*, CLI-10-18, 72 NRC at 96 (affirming the Board's decision to require an additional period for written public comment on a supplemental EA); *see also Offshore Power Systems* (Floating Nuclear Power Plants), ALAB-489, 8 NRC 194, 206 (1978) ("[T]he boards have broad and strong discretionary authority to conduct their functions with efficiency and economy. However, they must exercise it with fairness to all the parties …." (citation omitted)); *Wisconsin Electric Power Co., et al.* (Point Beach, Unit 2), ALAB-82, 5 AEC 350, 351 (1972) ("Administrative agencies and courts have long been accepted as 'collaborative instrumentalities of justice.'" (quoting *United States* v. *Morgan*, 313 U.S. 409, 422 (1941))); *Duke Power Co., et al.* (Catawba Nuclear Station, Units 1 and 2), LBP-83-24A, 17 NRC 674, 680 (1983).

[199] We note, however, that in licensing reviews such as this one, where Native American Tribes could be affected by the NRC's licensing action, we expect the Staff's actions to be guided by the principles outlined in the NRC's Tribal Protocol Manual. "Tribal Protocol Manual," NUREG-2173 (2014) (ML14274A014).

address the deficiencies. Therefore, we deny Powertech's, the Staff's, and Consolidated Intervenors' petitions for review of the Board's retention of jurisdiction over these contentions.

2. Contention 2

a. Contention and Board Order

The Tribe seeks review of the Board's resolution of Contention 2 in favor of Powertech and the Staff. In Contention 2, the Tribe argued that

> the FSEIS violates 10 C.F.R. Part 40, Appendix A, Criterion 7, 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations … in that it fails to provide an adequate baseline groundwater characterization or demonstrate that ground water samples were collected in a scientifically defensible manner, using proper sample methodologies.[200]

The Tribe also challenged the fact that "while the FSEIS contains data from 2007-2009, the background water quality for use in the actual regulatory process for the facility will be established [at] a future date, outside of the NEPA process, and outside of the public's review."[201] The Tribe objected to the collection of additional background groundwater quality data after issuance of the license, but before the facility begins operating, and argued that the practice violates NEPA.[202]

In ruling on Contention 2, the Board noted that NRC case law supports the industry practice of definitively establishing groundwater quality baselines after licensing but before operation.[203] Additionally, the Board noted that it found the testimony offered by the Staff's and Powertech's witnesses more detailed and persuasive than the testimony offered by the Tribe's

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[200] Tribe's Post-Hearing Brief at 38.

[201] *Id.* at 39.

[202] *Id.* at 38-39.

[203] LBP-15-16, 81 NRC at 665 (quoting *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-1, 63 NRC 1, 6 (2006)).

witness.[204] In reaching its decision, the Board examined the Tribe's exhibits regarding the EPA's Preliminary Assessment to determine that document's relevance to this contention.[205] The Board found unavailing the Tribe's argument that the conclusions in the Preliminary Assessment translated to an insufficient discussion of historic mining operations in the FSEIS.[206]

b. The Tribe's Petition for Review

On appeal, the Tribe challenges the Board's ruling, claiming that the Board erred as a matter of law when it permitted Powertech to defer collection of groundwater data to after licensing but before operation.[207] Based on our review of the record, we find that the Tribe has not raised a substantial question of law with respect to the applicable standards for site characterization. The Tribe mischaracterizes the Board's ruling when it claims that the Board allowed the Staff and Powertech to defer gathering groundwater data until after licensing.[208] The Board did not rule that "meaningful" baseline characterization may be deferred until the post-licensing period. Rather, it held that the pre-licensing groundwater monitoring used to describe the site for NEPA purposes need not conform to the post-licensing, pre-operation groundwater monitoring requirements applicable to a licensed facility because the monitoring

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[204] *Id.* at 666.

[205] *Id.*

[206] *Id.* The Board reasoned that the conclusion in the Preliminary Assessment that lack of groundwater sampling data limited the availability of background concentrations did not force a conclusion that the FSEIS's discussion of background water quality data was insufficient. It explained that the Preliminary Assessment was focused on CERCLA and the FSEIS was focused on our environmental regulations and the CEQ regulations. CERLCA's objectives are different from NEPA's objectives. With respect to CERCLA, it is important to determine the background levels to assess the impact of *past* mining activities on the site. By contrast, for NEPA purposes, the site's current baseline is important to determine the potential future impacts of the proposed project on the site.

[207] Tribe's Petition at 19-20.

[208] *Id.* at 20.

activities at these two stages serve different purposes.[209] We see no substantial question of law relating to NEPA's site characterization requirements.

The Tribe further asserts that the Board "committed … error and abused its discretion" by not requiring the Staff to account for past mining activity in its baseline water quality data.[210] In support of this argument, the Tribe argues that "[t]he Board even ignored evidence from the EPA Preliminary Assessment … confirming the lack of meaningful data as to the impacts associated with historic mining at the site and how that impacts current water quality and future impacts from the Dewey-Burdock site."[211] Contrary to the Tribe's assertions, the Board did not disregard the Preliminary Assessment; it specifically addressed the Tribe's argument regarding the Preliminary Assessment in its decision.[212] The Board found that due to the different objectives of NEPA and CERCLA, the Preliminary Assessment's finding regarding background data did not impact the adequacy of the analysis in the FSEIS.[213] The Tribe does not explain how the Board's determination on this point constitutes clear error or abuse of discretion.[214] The

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[209] LBP-15-16, 81 NRC at 665 (quoting *Strata Energy, Inc.* (Ross *In Situ* Uranium Recovery Project), LBP-15-3, 81 NRC 65, 91-92 (2015)). In the *Strata* proceeding, we recently denied review of the Board's decision on a contention that was substantially similar to the Tribe's Contention 2, on the same grounds. *Strata Energy, Inc.* (Ross *In Situ* Uranium Recovery Project), CLI-16-13, 83 NRC 566, 583-84 (2016) ("[T]he groundwater monitoring used to describe the environmental conditions at the site for NEPA purposes need not conform to the groundwater monitoring requirements applicable to an operating facility. The two standards serve different purposes.") (citations omitted).

[210] Tribe's Petition at 20.

[211] *Id.*

[212] LBP-15-16, 81 NRC at 666.

[213] *Id.*

[214] *See* Tribe's Petition at 20.

Tribe does not present a substantial question for review with respect to the Board's ruling on Contention 2; therefore, we decline to take review.[215]

3. Contention 3

a. Contention and Board Order

In Contention 3, the Tribe and Consolidated Intervenors argued that the Dewey-Burdock site contains numerous geological and man-made features that will permit groundwater migration.[216] Overall, the Board resolved this contention in favor of Powertech and the Staff.[217] The Board carefully and extensively considered evidence presented by all four parties, and it concluded that the Staff had taken the required hard look at the confinement of the overall ore zone.[218] Because of the numerous issues covered by this contention, the Board explained its ruling on each specific technical issue related to fluid containment separately.[219]

In its ruling on Contention 3, the Board conditioned Powertech's license as follows:

> Prior to conducting tests for a wellfield data package, the licensee will attempt to locate and properly abandon all historic drill holes located within the perimeter well ring for the wellfield. The licensee will document, and provide to the NRC, such efforts to identify and properly abandon all drill holes in the wellfield data package.[220]

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[215] The Tribe also argues that the Board abused its discretion in disregarding the Tribe's argument that Regulatory Guide 4.14 is outdated. *Id.* at 20-21. The Tribe's dissatisfaction with Regulatory Guide 4.14 does not demonstrate Board error presenting a substantial question for our review, particularly since, as the Staff points out, the Regulatory Guide did not form a basis for the Board's decision. *See* LBP-15-16, 81 NRC at 665-66; *see also* Staff's Response to Tribe at 17-18.

[216] *See* Tribe's Post-Hearing Brief at 43-56.

[217] LBP-15-16, 81 NRC at 681.

[218] *Id.* at 676.

[219] *See id.* at 676-81.

[220] *Id.* at 679, 709.

The Board explained that it conditioned the license because "despite the NRC Staff's claim that 'because there are a number of improperly plugged or abandoned boreholes at the Dewey-Burdock site, as a condition of its license Powertech must address these boreholes before beginning operations,' [the Board] did not find any such explicit condition in the license."[221] It concluded that with the additional license condition, the FSEIS and the record contain "adequate hydrogeological information to demonstrate the ability to contain fluid migration and assess potential impacts to groundwater."[222]

b. Petitions for Review

Both the Tribe and Consolidated Intervenors have petitioned for review of the Board's ruling on this contention.[223] Additionally, Powertech has petitioned for review of the license condition the Board imposed as part of its ruling.[224] As explained below, none of the petitions for review regarding this contention raise a substantial question.

(1) THE TRIBE'S PETITION FOR REVIEW

Although the Tribe characterizes its challenges to the Board's ruling on Contention 3 as legal arguments, the arguments generally relate to how the Board weighed the evidence.[225] With respect to those challenges, based upon our review of the record, we find that none of the Tribe's arguments demonstrate a substantial question for review regarding the Board's factual findings.

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[221] *Id.* at 679 (quoting *NRC Staff's Reply Brief* (Jan. 29, 2015), at 26).

[222] *Id.* at 681.

[223] Tribe's Petition at 22-23; Consolidated Intervenors' Petition at 2 & n.3, 4-7.

[224] Powertech's Petition at 22-25.

[225] *See* Tribe's Petition at 22.

The Tribe argues that the Board committed legal error in holding that, while "small faults and joints may be present in the project area, their presence does not support Intervenors' assertions [regarding the impacts of the faults and joints.]"[226] The Tribe asserts that the Board "appl[ied] an inappropriate legal standard when it effectively placed the burden on the Tribe to demonstrate the impacts associated with these faults and fractures."[227] We disagree—the Board has neither shifted the burden of proof nor applied an inappropriate legal standard. In its ruling, the Board made clear that "[t]his is not simply a question of whether faults and joints are present, but rather whether they are large and open enough to produce a substantial breach in the confining layers …."[228] The Board carefully weighed the evidence and made a factual finding that the faults and joints would not provide pathways for groundwater migration.[229] We defer to the Board's findings with respect to the underlying facts unless they are "clearly erroneous."[230] Here, the Tribe has not raised a substantial question of clear error on the part of the Board.

Next, the Tribe objects to the Board's imposition of a license condition requiring Powertech to attempt to locate and abandon boreholes.[231] The Tribe characterizes the license condition imposed by the Board as the sole means of achieving compliance and preventing leakage.[232] We disagree. In addition to the license condition imposed by the Board, License Condition 11.5 requires Powertech to monitor for excursions and take corrective action—

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[226] LBP-15-16, 81 NRC at 678.

[227] Tribe's Petition at 23.

[228] LBP-15-16, 81 NRC at 677.

[229] *Id.* at 671-73; 677-78.

[230] *Honeywell*, CLI-13-1, 77 NRC at 18-19; *Geisen*, CLI-10-23, 72 NRC at 224-25.

[231] Tribe's Petition at 22-23.

[232] *Id.* at 22.

including potentially terminating injection of lixiviant within the wellfield until the excursion is corrected.[233] This requirement provides incentive for Powertech to locate and abandon the boreholes. Moreover, the Board's additional license condition requires Powertech to "document its efforts" to find and fill the boreholes, enabling the Staff to assess whether Powertech's efforts are undertaken in good faith.[234] Additionally, absent evidence to the contrary, we assume at the licensing stage that a licensee will comply with its obligations.[235]

The Tribe argues that the Board "relie[d] entirely" on a license condition outside the NEPA process.[236] But the Tribe's assertion is inaccurate. As explained above, the Board relied on much more than one license condition; it weighed all parties' evidence and testimony on this contention, along with the information in the FSEIS and the record.[237] We see no clear error in the Board's reasonable conclusion that the additional license condition will ensure Powertech's compliance with the requirement to attempt to find and plug historic boreholes. Accordingly, we deny the Tribe's petition for review with respect to Contention 3.

(2) CONSOLIDATED INTERVENORS' PETITION FOR REVIEW

Like the Tribe, Consolidated Intervenors challenge the Board's weighing of the evidence in its ruling on Contention 3. Consolidated Intervenors argue that the Board shifted the burden of proof and instituted "a new 'compelling' standard"; they refer to the Board's findings with

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[233] Ex. NRC-012, License, at 10-11.

[234] LBP-15-16, 81 NRC at 679, 709.

[235] *See Curators of the University of Missouri*, CLI-95-8, 41 NRC 386, 400 (1995); *cf. Pacific Gas and Electric Co.* (Diablo Canyon Power Plant, Units 1 and 2), CLI-03-2, 57 NRC 19, 29 (2003).

[236] Tribe's Petition at 22.

[237] LBP-15-16, 81 NRC at 676-81; Ex. NRC-008-A-2, FSEIS § 4.5.2.1.1.2.2.

respect to whether leakage was caused by unplugged boreholes or by naturally occurring fissures and joints.[238]

Contrary to Consolidated Intervenors' argument, the Board's decision contains careful consideration of the parties' evidence regarding several subjects in dispute.[239] The Board neither shifted the burden of proof nor created a new standard of proof. It appropriately weighed the evidence presented by the parties and made factual determinations based on that evidence.[240]

Additionally, Consolidated Intervenors argue that the Board erred when it accepted a witness's "unsubstantiated opinion," and they argue generally that the Board committed factual error regarding leakage at the site.[241] Consolidated Intervenors argue that the Board should not have credited an expert witness proffered by Powertech because that witness was "speaking from the perspective of the mining industry" rather than in the interest of public health and safety.[242] The witness the Board cited is an experienced engineer and hydrologist.[243] Consolidated Intervenors have raised no objection to his qualifications aside from the fact that he testified for the applicant. Our deference to the Board is particularly great when it comes to weighing the credibility of witnesses.[244] Our review of the record demonstrates that the Board examined the exhibits, questioned witnesses, and considered the parties' pleadings and

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[238] Consolidated Intervenors' Petition at 2 & n.3, 4, 6-7; *see* LBP-15-16, 81 NRC at 677.

[239] LBP-15-16, 81 NRC at 676-81.

[240] *Id.*

[241] Consolidated Intervenors' Petition at 2 & n.3, 4-6.

[242] *Id.* at 5.

[243] *See* Ex. APP-014, Curriculum Vitae of Hal. P. Demuth, M.S., Petrotek Engineering Corporation (ML14240A422).

[244] *See, e.g.*, *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-03-8, 58 NRC 11, 26 (2003) (citations omitted).

statements of position in making its decision.[245] Because Consolidated Intervenors have not raised a substantial question regarding the Board's findings of fact, we deny their petition with respect to this contention.

(3) POWERTECH'S PETITION FOR REVIEW

Powertech seeks review of the Board's imposition of an additional license condition regarding location and abandonment of historic boreholes. It argues that the Board's addition of this license condition constituted clear error of fact because Powertech had already committed to plugging historic boreholes.[246] We find that any factual error in the Board's determination that the license did not contain an explicit condition regarding historic boreholes was harmless. While Powertech is bound by License Condition 9.2 to its commitment to plug boreholes, we do not see the inherent conflict between that commitment and the Board's additional license condition that Powertech and the Staff assert exists. The Board's general license condition can be implemented through the more specific procedures contained in Powertech's commitment. We also see little in the way of additional burden here, particularly if, as Powertech asserts, the Dewey-Burdock site's artesian conditions make it easier to identify improperly plugged boreholes, and it has documentation that historical boreholes were plugged according to State regulations.[247]

Next, Powertech asserts that the Board committed factual and legal error in imposing the license condition *sua sponte*.[248] Powertech argues that because "[n]one of the argument or testimony pertained to plugging and abandoning *all* boreholes prior to the commencement of

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[245] *See, e.g.*, LBP-15-16, 81 NRC at 667-81.

[246] Powertech's Petition at 22-23.

[247] *Id.* at 25 n.57.

[248] *Id.* at 23-25.

licensed operations in a given wellfield," the Board imposed the license condition *sua sponte*.[249] But as the record reflects, historical boreholes were one of the issues raised in Contention 3; the Board imposed this license condition in ruling on that contention, which was the subject of a full evidentiary hearing.[250] Moreover, as the Staff points out in its response to Powertech's petition, "[the Tribe's and Consolidated Intervenors'] arguments could reasonably be construed as claiming that, in order to ensure adequate containment, Powertech must properly abandon all boreholes within the perimeter of each wellfield."[251] The Board ruled on a matter properly before it in imposing an additional license condition on Powertech. Powertech's argument that the license condition was imposed *sua sponte* does not raise a substantial question for review. We deny review of Powertech's petition regarding Contention 3.

4. Contention 6

In Contention 6, the Tribe argued that discussion of mitigation measures in the FSEIS was inadequate for two reasons. First, the Tribe asserted that the FSEIS's discussion and evaluation of mitigation measures was insufficiently detailed.[252] Second, it argued that the Staff erroneously deferred development of further mitigation measures until after the issuance of the FSEIS and the Record of Decision.[253] In its petition, the Tribe challenges the Board's ruling by asserting that the Board failed to address several of its arguments and that the Board's ruling on Contention 6 is inconsistent with its ruling on Contention 1A.

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[249] *Id.* at 24.

[250] *See* LBP-15-16, 81 NRC at 674-75, 679.

[251] *NRC Staff's Response to Powertech's Petition for Review of LBP-15-16* (June 22, 2015), at 7 n.16.

[252] *Oglala Sioux Tribe's Statement of Position on Contentions* (June 20, 2014), at 27-28 (Tribe's Statement of Position). Consolidated Intervenors adopted the Tribe's arguments with respect to Contention 6. *Consolidated Intervenors' Opening Statement* (July 7, 2014), at 9.

[253] Tribe's Statement of Position at 28.

a. Contention and Board Order

With respect to the portion of its contention that challenged the discussion of mitigation measures in the FSEIS, the Tribe argued before the Board that NEPA requires an EIS to "detail[] with [a] specific description, supporting data, and analysis of process and effectiveness" each mitigation measure.[254] The Tribe asserted that the Dewey-Burdock project FSEIS merely listed potential mitigation measures and lacked scientific evidence or analysis regarding the effectiveness of each measure.[255]

The Board, after a merits hearing and review of the record, determined that the Staff's discussion and evaluation of mitigation measures was sufficient.[256] The Board agreed with the Tribe's arguments regarding NEPA's requirements for analysis of mitigation measures, but it found that the Staff had met those requirements.[257] In its holding, the Board determined that the Tribe completely overlooked Chapter 4 of the FSEIS, which contained extensive analysis of mitigation measures.[258] Further, the Board stated that the FSEIS "fully evaluated the impacts and mitigation strategies detailed under other [expert agency] permits."[259] Finally, the Board concluded that Powertech's license requires compliance with mitigation and monitoring measures described in the FSEIS, the Record of Decision, and the license.[260] Accordingly, the

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[254] *Id.* at 38.

[255] *Id.* at 30-32.

[256] LBP-15-16, 81 NRC at 690-91.

[257] *Id.* at 690.

[258] *Id.* at 690-91.

[259] *Id.* at 692.

[260] *Id.* at 691.

Board found that Powertech would be required to comply with mitigation strategies analyzed in the FSEIS from initial, pre-licensing activities through decommissioning.[261]

In the second portion of Contention 6, the Tribe argued that the Staff violated NEPA by deferring development of certain mitigation measures—particularly mitigation of adverse effects on cultural resources—until after issuance of the FSEIS.[262] The Tribe also challenged the Staff's analysis of the proposed monitoring well network, historical well hole plugging, and wildlife protections and monitoring.[263]

Regarding the development of mitigation measures after FSEIS completion, the Board ruled that "[t]he release of an FSEIS does not mark the completion of the NEPA review process."[264] The Board noted that the FSEIS referenced the yet-to-be-issued Programmatic Agreement and explained that mitigation measures adopted in the Programmatic Agreement could mitigate impacts on historic or cultural resources.[265] Further, the Board determined that the FSEIS included analysis of certain mitigation measures to be implemented post-licensing.

In finding the FSEIS's analysis adequate, the Board relied upon the generally accepted presumption that Powertech will comply with its obligations as listed in the license, the FSEIS, and associated documents.[266] The Board noted that monitoring programs are "a principal aid" to the Staff and the licensee in determining whether mitigation measures are effective.[267] Moreover, it stated that several of Powertech's license conditions require Powertech to

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[261] *Id.*

[262] Tribe's Statement of Position at 28.

[263] *Id.* at 33-34.

[264] LBP-15-16, 81 NRC at 694.

[265] *Id.*

[266] *Id.* at 695.

[267] *Id.*

document, maintain, and submit to NRC its monitoring results.[268] In sum, the Board held that the mitigation and monitoring plans in the FSEIS, while not final, complied with NEPA.[269] Accordingly, the Board resolved Contention 6 in favor of Powertech and the Staff.

b. The Tribe's Petition for Review

On appeal, the Tribe argues that it had identified significant analytical gaps in the agency's review of mitigation measures, and that the Board failed to address all of its arguments when ruling on Contention 6.[270] We disagree. The Board, after a careful examination of the record, determined that the FSEIS contained sufficient analysis of mitigation measures.[271] Absent clear error, which the Tribe has not demonstrated, we decline to disturb the Board's determination that the FSEIS's analysis of mitigation measures was sufficient for NEPA compliance. Therefore, we deny the Tribe's petition with respect to this point.

The Tribe also seeks review of the Board's decision regarding deferral of development of mitigation measures and argues that the Board erred at law and abused its discretion.[272] For the reasons stated below, we deny the Tribe's petition for review with respect to this issue.

First, the Tribe argues that future development of mitigation measures through the Programmatic Agreement violated NEPA.[273] The Tribe asserts that the Board's ruling disregarded the Tribe's claim that the Programmatic Agreement failed to include "any actual

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[268] *Id.* at 695-97.

[269] *Id.* at 694 (quoting *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, NM 87313), CLI-06-29, 64 NRC 417, 426-27 (2006)).

[270] Tribe's Petition at 24 (citing LBP-15-16, 81 NRC at 689).

[271] LBP-15-16, 81 NRC at 690-92.

[272] Tribe's Petition at 24.

[273] *Id.*

mitigation [measures]," in violation of NEPA.[274] We disagree with the Tribe's argument regarding lack of analysis in the Programmatic Agreement. Our examination of the record reveals that the Programmatic Agreement and the FSEIS contain discussion of mitigation measures for cultural resources, and the Board did not find deficiencies in those discussions.[275] Because the Tribe fails to address these discussions, it does not raise a substantial question for review of the Board's finding that they are adequate for NEPA compliance.

Next, the Tribe challenges the Board's ruling regarding the FSEIS's discussion of mitigation measures in numerous areas, including wildlife protection, wellfield testing, air impacts, and historical well hole plugging and abandonment.[276] It argues that "the [Board's] ruling also substantially ignore[d] the Tribe's arguments regarding other mitigation issues," which, in the Tribe's view, the Staff did not sufficiently describe or analyze in the FSEIS.[277]

We disagree. In ruling on these points, the Board did not disregard the Tribe's arguments; it determined—based on precedent and its review of the record—that the mitigation and monitoring plans discussed in the FSEIS and Programmatic Agreement contained the level

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[274] *Id.*

[275] *See, e.g.*, Ex. NRC-018-A, "Programmatic Agreement Among U.S. Nuclear Regulatory Commission, U.S. Bureau of Land Management, South Dakota State Historic Preservation Office, Powertech (USA), Inc., and Advisory Council on Historic Preservation Regarding the Dewey-Burdock [*In Situ*] Recovery Project Located in Custer and Fall River Counties, South Dakota" (Mar. 3, 2014), at 5 (requiring Powertech to protect all unevaluated properties until National Register-eligibility determinations are completed), at 10 (requiring Powertech to halt ground-disturbing activities within a 150-foot area and take numerous additional steps if a previously unknown cultural resource is discovered during the implementation of the Dewey-Burdock Project) (ML14246A401) (Programmatic Agreement); Ex. NRC-008-A-2, FSEIS § 4.9.1.1.1. The Staff's mitigation recommendations appear in the far-right columns of Tables 4.9-1 through 4.9-6.

[276] Tribe's Petition at 25.

[277] *Id.*

of detail required by NEPA.[278] The Tribe's petition does not articulate a substantial question for review with respect to this portion of the Board's decision.

Finally, the Tribe asserts that the Board's ruling with respect to Contention 6 is "internally inconsistent" because it conflicts with the Board's ruling on Contention 1A where it found, in part, that the Staff's analysis of mitigation measures for cultural resources did not satisfy NEPA.[279] The Board found generally that the Staff's analysis of mitigation was sufficient. Specifically regarding mitigation of cultural resources, the Board ruled that

> [t]he FSEIS … explains that mitigation measures adopted in the Programmatic Agreement "could reduce an adverse impact to a historic or cultural resource." … Therefore, the Board finds that the NRC Staff completing the Programmatic Agreement after the FSEIS was released, but before the issuance of the Record of Decision or the license, adequately satisfied NEPA.[280]

Regarding Contention 6, the Board concluded that the Staff's analysis of mitigation measures for cultural resources fulfilled NEPA's requirements. We agree with the parties, however, that this statement is inconsistent with the Board's ruling on Contention 1A. Specifically, there the Board stated that "the FSEIS does not include mitigation measures sufficient to protect [the Tribe's] cultural, historical, and religious sites that may be affected by the Powertech project."[281] With this statement, the Board appears to be mixing the requirements of NEPA and the NHPA—NEPA does not require the adoption of mitigation measures, only a discussion of their potential effects. Regardless, by pointing out these inconsistent Board statements, the Tribe has demonstrated only harmless error because the mitigation measures for cultural resources are covered by Contentions 1A and 1B. Thus, a separate ruling on this specific issue under

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[278] LBP-15-16, 81 NRC at 694-95.

[279] Tribe's Petition at 25; *see* LBP-15-16, 81 NRC at 655.

[280] LBP-15-16, 81 NRC at 694.

[281] *Id.* at 655.

Contention 6 is not necessary. Therefore, we find that the Tribe does not raise a substantial question for our review with respect to Contention 6.

III. CONCLUSION

For the foregoing reasons, we *deny* in part each party's petition for review. We *grant* each party's petition with respect to the finality of the Board's ruling on Contentions 1A and 1B and find that these contentions should be considered "final" for the purposes of the petitions for review at issue here. We *grant* the Staff's and Powertech's petitions for review with respect to the Board's direction to the Staff regarding the resolution of Contentions 1A and 1B. Pursuant to our inherent supervisory authority over agency adjudications, we *direct* that the proceeding remain open for the narrow purpose of resolving the deficiencies identified by the Board in Contentions 1A and 1B and *affirm* the Board's direction to the Staff to submit monthly status reports and the Board's direction to file an agreement between the parties or a motion for summary disposition to resolve the deficiencies identified by the Board. We *grant* the Tribe's petition for review with respect to proposed Contention 8 and dismiss that contention.

IT IS SO ORDERED.

For the Commission

NRC Seal

/RA/

_____
Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 23rd day of December, 2016

Commissioner Svinicki, dissenting in part.

I fully join the majority's order today with one exception: the Staff's and Powertech's appeals of Contentions 1A and 1B. For the reasons expressed below, I would take review of these petitions because the Board applied the wrong legal standards to these contentions. Moreover, when considered under the correct legal standards, the evidentiary record supports resolving Contentions 1A and 1B in favor of the Staff. Therefore, I would enter judgment in favor of the Staff and direct the Board to terminate this proceeding.

A. Contention 1A

On appeal, the Staff argues that the Board's ruling on Contention 1A constitutes legal error because it misapplied NEPA's hard look standard, under which the Board should assess whether the Staff "made reasonable efforts" to obtain adequate information on the cultural resources at issue here.[1] In its brief, the Staff describes the efforts it undertook and argues that these efforts were sufficient to meet the hard look standard.[2] The Staff asks us to view the Board's application of the hard look standard as a legal issue under 10 C.F.R. § 2.341(b)(4)(ii).[3] I would take review of the Staff's petition for review of Contention 1A and reverse the Board's ruling that the Staff's environmental analysis did not adequately address the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources.

We have previously acknowledged that for some NEPA reviews, necessary data may "prove to be unavailable, unreliable, inapplicable, or simply not adaptable."[4] In such cases, we

[1] Staff's Petition at 17-18.

[2] *Id.* at 19-20.

[3] *Id.* at 17.

[4] *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010).

have directed the Staff to provide a reasonable analysis of the available information with a "disclosure of incomplete or unavailable information."[5] Likewise, Federal courts have upheld agency determinations not to analyze impacts "for which there are not yet standard methods of measurement or analysis."[6] Moreover, the NRC looks for guidance to the Council on Environmental Quality's implementing regulations for NEPA, which specify that an agency need not include relevant information if "the overall costs of obtaining it are exorbitant."[7]

While the Board cited to these principles in its discussion of legal standards, it did not apply these rules to the FSEIS.[8] Instead of responding to the Staff's argument that "it complied with NEPA by making repeated attempts to obtain information on cultural resources,"[9] the Board examined whether the FSEIS "adequately catalogued" the "cultural, historical, and religious sites of the Oglala Sioux Tribe."[10] Because it found that the FSEIS did not contain this information, the Board concluded that the "NRC Staff did not give this issue its required hard look in the FSEIS."[11] Consequently, the Staff is correct that the Board's ruling on Contention 1A constitutes legal error. Instead of considering whether the Staff could reasonably obtain the information it acknowledged was missing, the Board invalidated the FSEIS simply because the

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[5] *Id*.

[6] *Town of Winthrop v. F.A.A.*, 535 F.3d 1, 13 (1st Cir. 2008).

[7] 40 C.F.R. § 1502.22; *see also Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-11-11, 74 NRC 427, 443-44 (2011) (observing that while the NRC is not bound by CEQ regulations, it looks to them for guidance).

[8] LBP-15-16, 81 NRC at 638 (noting that "an environmental impact statement is not intended to be a research document" (internal quotation marks omitted)).

[9] *Id*. at 652.

[10] *Id*. at 655.

[11] *Id*.

information was missing in the first place.[12] This approach is facially inconsistent with our precedent, Federal case law, and the CEQ regulations, which recognize that in some instances information relevant to an EIS will not be reasonably available and direct the agency to proceed in accord with NEPA's rule of reason in the face of such lacunae.[13] Therefore, the Board's ruling on Contention 1A rests on a legal error.[14]

While the Commission would normally hesitate to wade through such a detailed factual record ourselves, particularly when we have not had the advantage of observing testimony first hand,[15] in this case other findings from the Board indicate that the missing information was not reasonably available. Specifically, upon reviewing the record in its entirety, the Board concluded that the amount of "funds requested to collect tribal cultural information" by the Oglala Sioux was "patently unreasonable."[16] If information is only available at a patently unreasonable cost, here potentially four million dollars to conduct one part of the cultural survey (itself only one part of the larger NEPA review), it follows that such information is not reasonably available.[17] Moreover, because this information missing from the FSEIS was not reasonably available, its absence from the FSEIS analysis cannot be a basis upon which the FSEIS fails to meet NEPA's hard look standard.

In its Response, the Tribe argues that the precedents cited by Staff do not stand for the legal principle that when relevant information to an EIS is unavailable, the agency must only

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[12] *Id*.

[13] *Pilgrim*, CLI-10-22, 72 NRC at 208; *Town of Winthrop*, 535 F.3d at 13; 40 C.F.R. § 1502.22.

[14] 10 C.F.R. § 2.341(b)(4)(ii).

[15] *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-303, 2 NRC 858, 867 (1975) (noting that "Licensing Boards are the Commission's primary fact finding tribunals").

[16] LBP-15-16, 81 NRC at 657 & n.229.

[17] Staff's Petition at 6 (citing Tr. at 804, 807).

make reasonable efforts to obtain the information.[18] Specifically, the Tribe argues that many of the cases relied on by the Staff only hold that agencies need not consider remote and speculative impacts in an EIS.[19] But, it appears that the Staff only cited to these precedents to establish NEPA's general rule of reason.[20] Moreover, several of the authorities relied on by the Staff appear to support the position that agencies need only undertake reasonable efforts to acquire missing information, such as 40 C.F.R. § 1502.22, *Town of Winthrop*, and *Pilgrim.*[21] For the most part, the Tribe did not discuss these authorities in its response.[22] While the Tribe asserts that *Pilgrim* "simply confirmed" that an EIS is "not intended to be a research document,"[23] these quotations from *Pilgrim* support the Staff's position because they indicate that an agency need not take extraordinary efforts to obtain or create missing information.

B. Contention 1B

Powertech advances a similar argument with respect to Contention 1B — that the Board did not apply the correct standard for tribal consultation under the NHPA implementing regulations.[24] I would take review of Powertech's petition with respect to Contention 1B and

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[18] Tribe's Response at 15-17.

[19] *Id*. (citing *Ground Zero Ctr. for Non-Violent Action v. U.S. Dep't of the Navy*, 383 F.3d 1082 (9th Cir. 2004); *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017 (9th Cir. 1980); *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287 (2010)).

[20] Staff's Petition at 17-18.

[21] *Id*. (citing *Pilgrim*, CLI-10-22, 72 NRC at 208; *Town of Winthrop*, 535 F.3d at 13; 40 C.F.R. § 1502.22).

[22] Tribe's Response at 16.

[23] *Id*. (quotation marks omitted).

[24] *See* Powertech's Petition at 9-11 ("T]he Licensing Board's attempt to distinguish between the characterizations of consultation as 'reasonable' versus 'meaningful' is not part of the NHPA statutory framework or regulatory regime.").

reverse the Board's ruling that the consultation process between the Staff and the Tribe was inadequate.

Under the NHPA's implementing regulations, the NRC must provide every tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its view on the undertaking's effects on such properties, and participate in the resolution of such adverse effects."[25] While the "Tribe is entitled to 'identify its concerns,' to 'advise,' to 'articulate,' and to 'participate,'" courts have warned that "consultation is not the same thing as control over a project."[26] Even if a party's involvement is limited, if that limited involvement is by choice, the agency has provided the party with a reasonable opportunity to participate.[27]

With regard to Contention 1B, the Board initially stated the correct legal standard, whether the Staff provided a "reasonable opportunity" for consultation.[28] However, in evaluating Contention 1B, rather than apply that standard, the Board sought to determine "which party or specific action led to the impasse preventing an adequate tribal cultural survey."[29] Ultimately, the Board determined that the "NRC Staff is at least partly at fault for the failed consultation process" largely because it never "held a single consultation session, on a government-to-government basis, solely with members of the Oglala Sioux Tribe."[30] Likewise, the Board

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[25] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[26] *Narragansett Indian Tribe v. Warwick Sewer Authority*, 334 F.3d 161, 168 (1st Cir. 2003).

[27] *Montana Wilderness Ass'n v. Connell*, 725 F.3d 988, 1009 (9th Cir. 2013).

[28] LBP-15-16, 81 NRC at 639 (quoting 36 C.F.R. § 800.2(c)(2)(ii)(A)).

[29] *Id*. at 656.

[30] *Id*. And the Tribe's status as a litigant in this proceeding does not alter its role as a consulting party. To be sure, the ACHP's regulations list various consulting parties, including both Indian tribes and "[c]ertain individuals and organizations with a demonstrated interest in the

concluded that the "Oglala Sioux Tribe does share some responsibility for the ... lack of meaningful consultation."[31] Therefore, because the Board focused its attention on apportioning culpability for what became an impasse, instead of determining whether the opportunity for consultation itself was a reasonable one, the Board's decision constituted legal error.[32]

As noted above, the Commission generally hesitates to make factual findings in the first instance, but again the record developed by the Board is sufficient to answer the question posed: here, whether the Staff provided a reasonable opportunity for consultation. One of the most striking aspects of this record is that the ACHP, the agency expert in implementing the NHPA, signed the NRC's Programmatic Agreement for the Dewey-Burdock project, and in so doing, found that it set forth a phased process for compliance with section 106.[33] While the ACHP's agreement is not binding on the Commission, its findings are entitled to considerable

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undertaking … due to their legal or economic relation to the undertaking or affected properties." *See* 36 C.F.R. § 800.2(c)(2) and (5). But the Board's implication that the Tribe's status as an intervenor somehow elevates its status as a consulting party is incorrect. *See* LBP-15-16, 81 NRC at 656.

[31] LBP-15-16, 81 NRC at 656.

[32] 10 C.F.R. § 2.341(b)(4)(ii).

[33] Ex. NRC-018-D, Letter from Charlene Dwin Vaughn, Advisory Council on Historic Preservation, to Kevin Hsueh, NRC (Apr. 7, 2014) (ML14246A405); *see* Ex. NRC-18-E, Advisory Council on Historic Preservation Signature Page of Programmatic Agreement Among U.S. Nuclear Regulatory Commission, U.S. Bureau of Land Management, South Dakota State Historic Preservation Office, Powertech (USA), Inc., and Advisory Council on Historic Preservation Regarding the Dewey-Burdock [*In Situ*] Recovery Project Located in Custer and Fall River Counties South Dakota (Apr. 7, 2014) (ML14246A417); *see also* Ex. NRC-018-A, Programmatic Agreement, at 2; Ex. NRC-018-B, Appendices Related to the Programmatic Agreement Among U.S. Nuclear Regulatory Commission, U.S. Bureau of Land Management, South Dakota State Historic Preservation Office, Powertech (USA), Inc., and Advisory Council on Historic Preservation Regarding the Dewey-Burdock [*In Situ*] Recovery Project Located in Custer and Fall River Counties South Dakota, app. A, at 2-7 (ML14246A406); 36 C.F.R. § 800.4(b)(2).51-52.

weight.[34] On balance, the record demonstrates that the Staff has committed to phased compliance with section 106, as endorsed by the ACHP. I fully expect the Staff to satisfy its obligations under the Programmatic Agreement, which include consultation. Accordingly, I would conclude that the Staff has provided the Tribe with a reasonable opportunity to consult and will continue to take appropriate actions under the Programmatic Agreement.

In its Response, the Tribe argues that the factual record contains sufficient information to rebut the Staff's and Powertech's efforts to "blame the Tribe for the problems with NRC Staff's NHPA compliance."[35] But, as noted above, the correct standard is not whether there is sufficient evidence to apportion blame, but whether the opportunity to consult was reasonable. While the Tribe may well be disappointed with how the consultation unfolded, courts have consistently held that "a reasonable opportunity to consult" does not guarantee any specific results.[36] Consequently, this argument is not persuasive.

Next, the Tribe argues that Federal case law supports the reasonableness of the Board's holding.[37] But, it appears that these cases involve very different factual backgrounds.[38] Indeed,

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[34] *Public Service Co. of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 527 (1977).

[35] Tribe's Response at 19.

[36] *Narragansett Indian Tribe*, 334 F.3d at 168. While some courts have determined that agency shortcomings, such as misrepresenting important facts or only relying on written communications, may render an opportunity to consult unreasonable, *Pueblo of Sandia v. United States*, 50 F.3d 856. 860-62 (10th Cir. 1995), on balance the record does not support such findings here.

[37] Tribe's Response at 19-21 (citing *Quechan Indian Tribe of Fort Yuma Indian Reservation v. Dep't of the Interior*, 755 F. Supp. 2d 1104 (D. Ariz. 2008); *Attakai v. United States*, 746 F. Supp. 1395 (D. Ariz. 1990); *Slockish v. U.S. Federal Highway Admin.*, 682 F. Supp. 2d 1178 (D. Or. 2010); *Pueblo of Sandia*, 50 F.3d at 856).

[38] *Quechan Tribe*, 755 F. Supp. 2d at 1119 (noting that the Tribe was not provided with adequate information or time); *Slockish*, 682 F. Supp. 2d at 1197 (stating that in deciding whether the NHPA claim was moot, the court "must begin by assuming ... that the defendants have violated the NHPA").

the Tribe concedes that many of the cases have distinguishing characteristics from the instant case.[39] Finally, some aspects of these cases appear to be unfavorable to the Tribe's position; for example one district court noted, "None of this analysis is meant to suggest federal agencies must acquiesce to every tribal request."[40] Consequently, I am not persuaded by the Tribe's efforts to rehabilitate the Board's legal analysis.

Therefore, because the Board applied the incorrect legal standards to Contentions 1A and 1B, I would overturn the Board's determinations with respect to those two contentions and find (1) that the Staff's NEPA analysis of the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources was adequate and (2) the Staff has provided the Tribe with a reasonable opportunity to consult under the NHPA. Consequently, I would find in favor of the Staff on these two contentions and direct the Board to terminate this proceeding.

[39] Tribe's Response at 21-22 (observing that *Attakai* and *Pueblo of Sandia* involved cases in which the agency wholly failed to consult with an affected Tribe).

[40] *Quechan Tribe*, 755 F. Supp. 2d at 1119.

Commissioner Baran, dissenting in part.

I join in the Commission's decision except for the portion of the decision that denies review of the Tribe's claim that the Board erred by not vacating the license for failure to complete an adequate NEPA review. I respectfully dissent on this issue.

As I stated in my partial dissent in the *Strata* proceeding and my dissent in the *Turkey Point* proceeding, a core requirement of NEPA is that an agency decisionmaker must consider an adequate environmental review *before* making a decision on a licensing action.[1] If the Commission allows a Board to supplement and cure an inadequate NEPA document *after* the agency has already made a licensing decision, then this fundamental purpose of NEPA is frustrated.

In this case, the Board found that the Staff's FSEIS did not meet the requirements of NEPA because the FSEIS was deficient with respect to the effects of the licensing action on Native American cultural, religious, and historic resources.[2] Thus, the agency did not have an adequate environmental analysis at the time it decided whether to issue the license. In fact, the deficiencies in the NEPA analysis remain unaddressed today, and therefore the Staff still cannot make an adequately informed decision on whether to issue the license. The Staff's licensing decision was based on (and continues to rest on) an inadequate environmental review. As a result, the Staff has not complied with NEPA.

The Commission should suspend the license until the Staff has, in accordance with the Board's order, filed its final monthly status report demonstrating that the FSEIS complies with

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[1] *Strata*, CLI-16-13, 83 NRC at 604 (citing *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)), *appeal docketed*, No. 16-1298 (D.C. Cir. Aug. 24, 2016); *Florida Power & Light Co.* (Turkey Point Nuclear Generating Units 3 and 4), CLI-16-18, 84 NRC __ (Dec. 15, 2016) (slip op.).

[2] LBP-15-16, 81 NRC at 708, 655-58. The Board also identified a NEPA deficiency with respect to hydrogeological information, the subject of Contention 3, and conditioned Powertech's license to cure this deficiency. *See id.* at 679, 681, 709.

NEPA and our regulations. Once the Staff had satisfied the Board's order and completed an adequate NEPA analysis on which to base its decision, the Staff would then be in a position to decide whether to modify, reinstate, condition, or revoke the license.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
(Dewey-Burdock In Situ Recovery Facility)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **COMMISSION MEMORANDUM AND ORDER (CLI-16-20)** have been served upon the following persons by Electronic Information Exchange, and by electronic mail as indicated by an asterisk.

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POWERTECH (USA) INC., DEWEY-BURDOCK IN SITU RECOVERY FACILITY
DOCKET NO. 40-9075-MLA
COMMISSION MEMORANDUM AND ORDER (CLI-16-20)

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Dated at Rockville, Maryland
this 23RD day of December, 2016

Cite as 72 NRC 361 (2010) **LBP-10-16**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Richard F. Cole
Dr. Mark O. Barnett

In the Matter of **Docket No. 40-9075-MLA**
(ASLBP No. 10-898-02-MLA-BD01)

POWERTECH (USA), INC.
(Dewey-Burdock In Situ Uranium Recovery Facility)

August 5, 2010

RULES OF PRACTICE: STANDING TO INTERVENE

A petitioner's participation in a licensing proceeding hinges on a demonstration that the petitioner has standing. Section 189a of the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 to 2297h-13 (2006), mandates that the NRC provide a hearing "upon the request of any person whose interest may be affected by the proceeding." *Id.* § 2239(a)(1)(A). The Commission's regulations specify that a petition for review and request for hearing must include a showing that the petitioner has standing and that the Board should consider (1) the nature of the petitioner's right under the AEA or the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 (2006), to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order that may be issued in the proceeding on the petitioner's interest. 10 C.F.R. § 2.309(a), (d)(1)(ii)-(iv).

RULES OF PRACTICE: STANDING TO INTERVENE

The Commission customarily follows judicial concepts of standing. *Quivira*

RULES OF PRACTICE: SELECTION OF HEARING PROCEDURES

The selection of hearing procedures for contentions at the outset of a proceeding is not immutable because, *inter alia,* the availability of Subpart G procedures under 10 C.F.R. § 2.310(d) depends critically on whether the credibility of eyewitnesses is important in resolving a contention, and witnesses relevant to each contention are not identified, under 10 C.F.R. § 2.336(a)(1), until *after* contentions are admitted. *See Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), LBP-07-15, 66 NRC 261, 272 (2007); *see also* 10 C.F.R. § 2.1402(b).

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MEMORANDUM AND ORDER

(Ruling on Petitions to Intervene and Requests for Hearing)

I. INTRODUCTION

Before this Board are two petitions to intervene and requests for a hearing. The first petition was filed by six individuals and two organizations sharing common counsel (Consolidated Petitioners),[1] and the second was filed by the Oglala Sioux Tribe (Oglala Sioux or Tribe).[2] These petitions to intervene and requests for hearing challenge an application submitted by Powertech (USA), Inc. (Powertech) requesting a license to construct and to operate a proposed in-situ

[1] Consolidated Request for Hearing and Petition for Leave to Intervene (Mar. 8, 2010) (ADAMS Accession No. ML100680010) (Petition). David Frankel, Esq., filed the Petition on his own behalf and on behalf of the following persons and organizations: Theodore P. Ebert, Gary Heckenlaible, Susan Henderson, Dayton Hyde, Lilias C. Jones Jarding, the Clean Water Alliance, and Aligning for Responsible Mining. *Id.* at 1.

[2] Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe (Apr. 6, 2010) (ADAMS Accession No. ML100960645) (Tribe Petition).

leach uranium recovery (ISL) facility in Custer and Fall River Counties, South Dakota.[3] This facility is to be known as the Dewey-Burdock ISL facility.

Notice of the Powertech license application (Application) was published in the *Federal Register* on January 5, 2010.[4] That publication provided interested parties notice of the Application and the opportunity to request a hearing.

In this Memorandum and Order, we find that three individuals and the two organizations among the Consolidated Petitioners have demonstrated they have standing to participate in this proceeding, and one of their contentions as pled and three of their contentions as modified by the Board are admissible. Three other members of the Consolidated Petitioners have not demonstrated standing and are not admitted. We also find that the Oglala Sioux Tribe has shown it has standing to participate in this proceeding and three of its contentions as pled and one as modified by the Board are admissible.

Based on these findings, we grant the hearing requests of the Consolidated Petitioners and the Oglala Sioux Tribe and admit them as parties in this proceeding.

II. BACKGROUND

Powertech originally submitted an application on February 25, 2009, for a combined source[5] and 11e(2) byproduct material license[6] to construct and operate the proposed Dewey-Burdock ISL facility in the Black Hills region of South Dakota on February 25, 2009.[7] By letter dated June 19, 2009, Powertech withdrew the application in order to revise the application to provide additional NRC Staff-requested information on hydrology/site characterization, waste disposal, location of extraction operations, protection of water resources, and operational issues. Powertech resubmitted its Dewey-Burdock license application on August 10, 2009, with additional data and information requested by the NRC Staff.[8] The

[3] Powertech (USA) Inc.'s Submission of an Application for a Nuclear Regulatory Commission Uranium Recovery License for Its Proposed Dewey-Burdock In-Situ Leach Uranium Recovery Facility in the State of South Dakota (Feb. 25, 2009) (ADAMS Accession No. ML091030707).

[4] Notice of Opportunity for Hearing, License Application Request of Powertech (USA), Inc. Dewey-Burdock In Situ Uranium Recovery Facility in Fall River and Custer Counties, SD, and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information (SUNSI) for Contention Preparation, 75 Fed. Reg. 467 (Jan. 5, 2010).

[5] The Atomic Energy Act of 1954, as amended, defines "source material" in section 11(z). 42 U.S.C. § 2014. *See also* 10 C.F.R. § 40.4.

[6] The Atomic Energy Act of 1954, as amended, defines "byproduct material" in section 11(e)(2). 42 U.S.C. § 2014. *See also* 10 C.F.R. §§ 30.4 and 40.4.

[7] *See supra* note 3.

[8] Dewey-Burdock Project Supplement to Application for NRC Uranium Recovery License Dated February 2009 (Aug. 10, 2009) (ADAMS Accession No. ML092870155).

NRC Staff accepted Powertech's Application for docketing on October 2, 2009,[9] and subsequently published a January 5, 2010 notice of opportunity to request a hearing on the Application, along with instructions on how to gain access to sensitive unclassified nonsafeguards information (SUNSI) associated with the Application.[10]

On January 15, 2010, Consolidated Petitioners submitted a request for access to SUNSI material,[11] which was reviewed and denied by the NRC Staff.[12] Consolidated Petitioners then joined a motion filed by the Oglala Sioux for a 90-day extension of time to file its hearing request, which was opposed by both Powertech and the NRC Staff, and was subsequently denied by the Commission on March 5, 2010.[13] On March 8, 2010, Consolidated Petitioners filed their Request for Hearing and Petition for Leave to Intervene,[14] and this Licensing Board was established on March 12, 2010.[15] After requesting and being granted an extension of time by this Licensing Board,[16] Powertech and the NRC Staff filed their answers to the Consolidated Petition on April 12, 2010,[17] and Consolidated Petitioners filed their reply to the Powertech and NRC Staff answers on April 22, 2010.[18]

The Oglala Sioux requested access to SUNSI in this case on January 15, 2010,

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[9] Results of Acceptance Review, Powertech (USA), Inc.'s Proposed Dewey-Burdock Facility, Fall River and Custer Counties, South Dakota (Oct. 2, 2009) (ADAMS Accession No. ML092610201).

[10] *See* 75 Fed. Reg. at 467.

[11] E-mail Request from David Cory Frankel, Legal Director for Aligning for Responsible Mining, et al. for Access to Sensitive Unclassified Non-safeguards Information (SUNSI) (Jan. 15, 2010) (ADAMS Accession No. ML100192098).

[12] NRC Staff Response to David Frankel Denying Request for Access to SUNSI Information (Jan. 25, 2010) (ADAMS Accession No. ML100252219).

[13] Order of the Secretary (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640426).

[14] *See supra* note 1.

[15] Establishment of Atomic Safety and Licensing Board (Mar. 12, 2010) (unpublished); *see also* Powertech (USA), Inc.; Establishment of Atomic Safety and Licensing Board, 75 Fed. Reg. 13,141 (Mar. 18, 2010).

[16] *See* Joint Motion for Extension of Time for Late-Filed Contentions and to Respond to Request for Hearing (Mar. 31, 2010) (ADAMS Accession No. ML100900058); Licensing Board Order (Granting Motion for Extension of Time) (Apr. 1, 2010) (unpublished) (ADAMS Accession No. ML100910251). This Order also granted Consolidated Petitioners additional time to file new or amended contentions based on information recently released by the Staff. *Id.* at 2.

[17] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Apr. 12, 2010) (ADAMS Accession No. ML101020722) (Powertech Answer to Petition); NRC Staff Response to Hearing Request of Consolidated Petitioners (Apr. 12, 2010) (ADAMS Accession No. ML101020723) (Staff Answer to Petition).

[18] Petitioners' Consolidated Reply to Applicant and NRC Staff Answers to Hearing Request/Petition to Intervene (Apr. 19, 2010) (ADAMS Accession No. ML101100001) (Reply).

and was granted access by the NRC Staff on January 25, 2010.[19] As a result, a Protective Order granting access to the requested information was issued by the Chief Administrative Judge of the Licensing Board Panel on March 5, 2010.[20] The Protective Order stated that the Oglala Sioux was to file its Hearing Request within 25 days of receiving the SUNSI material from the NRC Staff.[21] The Oglala Sioux timely filed its Hearing Request and Petition for Leave to Intervene on April 6, 2010.[22] Powertech and the NRC Staff timely filed answers to the Oglala Sioux Petition on May 3, 2010,[23] and the Oglala Sioux filed its reply to the Powertech and NRC Staff answers on May 14, 2010.[24]

On April 30, 2010, Consolidated Petitioners filed a new contention (designated Contention K by the Board), which they state is based on SUNSI material provided to Consolidated Petitioners' expert on April 1, 2010.[25] Answers to Contention K were timely filed by the NRC Staff and Powertech on May 21, 2010, and May 23, 2010, respectively.[26] The Consolidated Petitioners, however, did not file a reply to the Powertech and NRC Staff answers.[27]

The Board held an oral argument on standing and contention admissibility in Custer, South Dakota, on June 8 and 9, 2010.

III. THE ISL PROCESS

With this procedural backdrop established, we note by way of explanation the

[19] *See* NRC Staff Response to Grace Dugan Granting Access to SUNSI Information (ADAMS Accession No. ML100210203) (Jan. 25, 2010).

[20] Licensing Board Order (Protective Order Governing the Disclosure of Sensitive Unclassified Non-Safeguards Information (SUNSI)), (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640405) (Protective Order).

[21] *Id.* at 4.

[22] *See supra* note 2.

[23] Applicant Powertech (USA) Inc.'s Response to Petitioner Oglala Sioux Tribe's Request for a Hearing/Petition for Intervention (May 3, 2010) (ADAMS Accession No. ML101230722) (Powertech Answer to Tribe); NRC Staff's Response to Oglala Sioux Tribe's Hearing Request (May 3, 2010) (ADAMS Accession No. ML101230726) (Staff Answer to Tribe).

[24] Reply to NRC Staff and Applicant Responses to the Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe (May 14, 2010) (ADAMS Accession No. ML101340870) (Tribe Reply).

[25] Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (Apr. 30, 2010) (ADAMS Accession No. ML101200675) (New Contention).

[26] NRC Staff's Response to Consolidated Petitioners' Contention filed April 30, 2010 (May 21, 2010) (ADAMS Accession No. ML1014105410) (Staff Answer to New Contention); Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (May 23, 2010) (ADAMS Accession No. ML1014300009) (Powertech Answer to New Contention).

[27] Tr. at 381.

technical background to this proceeding. As described in Powertech's Application, an in situ leach facility, also known as an in situ recovery (ISR) facility, is designed to remove underground (subsurface) uranium without physical mining.[28] An aqueous solution, called a lixiviant, is injected into the naturally existing underground water (groundwater) through an injection well, which dissolves the uranium in the lixiviant. The lixiviant solution consists of oxygen, carbon dioxide, and water. The uranium-containing or pregnant lixiviant is then pumped back to the surface from a production well, where the uranium is removed from the lixiviant by a process called ion exchange. The uranium-free lixiviant is then reinjected back into the ground to dissolve more uranium, and the cycle is repeated until all of the economically recoverable uranium in the ore body has been removed.

The ion exchange resin used to remove the uranium from the lixiviant is used until its removal capacity has been exhausted. At that point, the ion exchange resin is flushed with salt water to wash the uranium from the ion exchange resin, and the resulting uranium-free ion exchange resin is reused. The uranium is then removed from the salt water solution by chemical precipitation, and the resulting uranium solids are then washed, dried, and packaged for offsite shipment. The packaged solid uranium powder is the final product of an ISL facility.

As noted above, there are both injection wells, which are used to inject the uranium-free lixiviant into the subsurface, and production wells, which are used to remove the uranium-laden lixiviant from the ground. In a typical configuration, four injection wells surround a center production well in a well field. In addition to continuously recycling the lixiviant, approximately 0.5 to 3% more groundwater is withdrawn from the production wells than is injected through the injection wells.

The purpose of withdrawing more water is to ensure that groundwater continuously flows from outside the ore zone, through the ore zone, and into the production well, which is intended to keep uranium-laden lixiviant from migrating beyond the injection wells and contaminating the surrounding groundwater. After treating the pregnant lixiviant to remove uranium (and associated radium), the bulk of the lixiviant is refortified with oxygen and carbon dioxide and reinjected into the ground through the injection well. The nominally uranium-free excess water (commonly referred to as "bleed") is either applied on the surface via irrigation or reinjected into the subsurface away from the ore zone.

In addition to injection and production wells, monitoring wells sited outside of and above the ore zone (and the associated injection and production wells)

[28] At oral argument, counsel for Powertech explained that ISL and ISR "are the same thing — just one is a newer term." Tr. at 31. Powertech's proposed uranium recovery method and process are described in section 1.7 of the Technical Report submitted with its Application (ADAMS Accession No. ML092870298).

are designed to detect any uranium that might inadvertently migrate beyond well fields. In so doing, the monitoring wells serve to detect any underground uranium leaks (excursions of lixiviant) from the ideally self-contained process.[29]

IV. STANDING OF PETITIONERS TO PARTICIPATE IN THIS PROCEEDING

A. Legal Requirements for Standing in NRC Proceedings

A petitioner's participation in a licensing proceeding hinges on a demonstration that the petitioner has standing. Section 189a of the Atomic Energy Act of 1954 (AEA)[30] mandates that the NRC provide a hearing "upon the request of any person whose interest may be affected by the proceeding."[31] The Commission's regulations specify that a petition for review and request for hearing must include a showing that the petitioner has standing and that the Board should consider (1) the nature of the petitioner's right under the AEA or the National Environmental Policy Act (NEPA)[32] to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order that may be issued in the proceeding on the petitioner's interest.[33]

The Commission customarily follows judicial concepts of standing.[34] In order to establish standing in federal court, a party must show three key elements: injury-in-fact, causation, and redressability.[35] As the Commission has stated, standing requires that a petitioner allege "a particularized injury that is fairly traceable to the challenged action and is likely to be redressed by a favorable decision."[36] In proceedings involving nuclear power reactors a petitioner is presumed to have standing to intervene without the need to specifically plead injury, causation, and

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[29] For a description of the proposed facility, *see* Technical Report at 3-1 to 3-57 (ADAMS Accession No. ML092870299).

[30] 42 U.S.C. §§ 2011 to 2297h-13 (2006).

[31] *Id.* § 2239(a)(1)(A).

[32] 42 U.S.C. § 4321 (2006).

[33] 10 C.F.R. § 2.309(a), (d)(1)(ii)-(iv).

[34] *Quivira Mining Co.* (Ambrosia Lake Facility, Grants, New Mexico), CLI-98-11, 48 NRC 1, 5-6 (1998) (citing *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976)).

[35] *Lujan v. Defenders of Wildlife,* 504 U.S. 555, 560-61 (1992).

[36] *Quivira,* CLI-98-11, 48 NRC at 6 (citing *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 92 (1993)).

redressability if the petitioner lives within 50 miles of the nuclear power reactor.[37] However, no such proximity presumption applies in source materials cases such as this one.[38]

1. Injury-in-Fact

Under judicial concepts of standing, a petitioner must suffer from, or be in imminent danger of suffering, an injury-in-fact. The Supreme Court has defined injury-in-fact as "an invasion of a legally protected interest which is . . . concrete and particularized and actual or imminent rather than conjectural or hypothetical."[39] An injury-in-fact must go beyond generalized grievances to affect a petitioner "in a personal and individual way."[40] Thus, standing generally has been denied when the threat of injury is not concrete and particularized.[41]

Additionally, a petitioner's claimed injury must be arguably within the zone of interests protected by the governing statute in the proceeding.[42] "In order to determine whether an interest is in the 'zone of interests' of a statute, it is necessary 'first [to] discern the interests "arguably . . . to be protected" by the statutory provision at issue,' and 'then [to] inquire whether the [petitioner's] interests affected by the agency action are among them.'"[43] Generally, the AEA and NEPA are the statutes that govern proceedings before the Licensing Board. In this case, however, interests protected by the National Historic Preservation Act (NHPA)[44] are at issue as well.

2. Causation

To establish causation, a petitioner must show that there is "a causal connection between the injury and the conduct complained of — the injury has to be 'fairly . . . trace[able] to the challenged action of the defendant, and not . . . th[e]

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[37] *See, e.g., Florida Power & Light Co.* (St. Lucie Nuclear Power Plant, Units 1 and 2), CLI-89-21, 30 NRC 325, 329 (1989) (observing that the presumption applies in proceedings for nuclear power plant "construction permits, operating licenses, or significant amendments thereto").

[38] *See USEC Inc.* (American Centrifuge Plant), CLI-05-11, 61 NRC 309, 311-12 (2005).

[39] *Lujan,* 504 U.S. at 560 (internal citations omitted).

[40] *Id.* at 560 n.1.

[41] *See, e.g., Whitmore v. Arkansas,* 495 U.S. 149, 158-59 (1990); *Los Angeles v. Lyons,* 461 U.S. 95, 105-06 (1983).

[42] *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195-96 (1998).

[43] *U.S. Enrichment Corp.* (Paducah, Kentucky Gaseous Diffusion Plant), CLI-01-23, 54 NRC 267, 273 (2001) (citing *National Credit Union Administration v. First National Bank,* 522 U.S. 479, 492 (1998)).

[44] 16 U.S.C. § 470 to 470x-6.

result [of] the independent action of some third party not before the court.'"[45] In source materials cases, the petitioner has the burden of showing a "specific and plausible means" by which the proposed license activities may affect him or her.[46] Petitioners must therefore demonstrate a plausible chain of causation between the licensed activity and the alleged injury. A Board's determination of standing does "not depend[ ] on whether the cause of the injury flows directly from the challenged action, but whether the chain of causation is plausible."[47]

3. Redressability

The third requirement necessary for a petitioner to demonstrate standing is redressability. Redressability requires a petitioner to show that its alleged injury-in-fact could be cured or alleviated by some action of the tribunal.[48] For example, if a petitioner showed that the modification or denial of Powertech's Application would mitigate or eliminate her alleged injuries, then she would have satisfied the redressability requirement.

4. Standing of Organizations

While an individual may establish standing by satisfying the foregoing criteria, an organization, such as an environmental group, state or local government, or Indian Tribe, must satisfy one of two additional criteria. It must demonstrate either "organizational" standing or "representational" standing.[49] Organizational standing involves an alleged harm to the organization itself, whereas representational standing is based on an alleged harm to an organization's members.

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[45] *Lujan,* 504 U.S. at 560 (citing *Simon v. Eastern Kentucky Welfare Rights Organization,* 426 U.S. 26, 41-42 (1976)).

[46] *See USEC,* CLI-05-11, 61 NRC at 311-12 ("Where there is no 'obvious' potential for [offsite] harm, [the petitioner must] show a 'specific and plausible means' of how the challenged action may harm him or her." (internal citations omitted)).

[47] *Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 (1994). *See also Crow Butte Resources, Inc.* (*Crow Butte II*) (In Situ Leach Facility, Crawford, Nebraska), CLI-09-9, 69 NRC 331, 345 (2009).

[48] *Sequoyah Fuels Corp.* (Gore, Oklahoma Site Decommissioning), CLI-01-2, 53 NRC 9, 13-14 (2001); *Westinghouse Electric Corp.* (Nuclear Fuel Export License for Czech Republic — Temelin Nuclear Power Plants), CLI-94-7, 39 NRC 322, 331 (1994).

[49] *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 115 (1995) ("An organization may base its standing on either immediate or threatened injury to its organizational interests, or to the interests of identified members. To derive standing from a member, the organization must demonstrate that the individual member has standing to participate, and has authorized the organization to represent his or her interests." (internal citations omitted)).

a. Organizational Standing

To establish organizational standing under 10 C.F.R. § 2.309(d)(1), an organization must demonstrate that (1) the action at issue will cause an injury-in-fact to the organization's interests and (2) the injury is within the zone of interests protected by NEPA or the AEA.[50] To assert an appropriate injury for organizational standing, an organization must demonstrate a palpable injury in fact to its organizational interests.[51] The Supreme Court in *Sierra Club v. Morton,*[52] explained that the injury-in-fact necessary to establish organizational standing must be more than "a mere 'interest in a problem,' no matter how longstanding the interest and no matter how qualified the organization is in evaluating the problem . . . ."[53] Instead, an organization must go beyond asserting an injury to a broad, generalized interest — i.e., an interest in protecting the environment, an interest in preserving national parks — and establish that it is suffering, or will suffer, from a specific, concrete harm caused by a third party.

b. Representational Standing

Alternatively, an organization can show standing by asserting "representational" standing, i.e., that it seeks to participate in the proceeding as the authorized representative of one or more of its individual members who themselves have standing. An organization asserting "representational" standing must (1) demonstrate that the interest of at least one of its members will be harmed; (2) demonstrate that the member would have standing in his or her own right; (3) identify that member by name and address; and (4) demonstrate that the organization is authorized to request a hearing on behalf of that member.[54] Representational standing is based on an alleged harm to an organization's members, whereas organizational standing involves an alleged harm to the organization itself.

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[50] *See Sierra Club v. Morton,* 405 U.S. 727, 739 (1972); *Georgia Tech,* CLI-95-12, 42 NRC at 115; *Yankee Atomic,* CLI-98-21, 48 NRC at 194-95; *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), ALAB-952, 33 NRC 521, 530 (1991).

[51] *Turkey Point,* ALAB-952, 33 NRC at 530. *See also Hydro Resources, Inc.* (*HRI*) (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 269 (1998), *rev'd on other grounds,* CLI-98-16, 48 NRC 119 (1998).

[52] 405 U.S. 727.

[53] *Id.* at 739.

[54] *See GPU Nuclear, Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-6, 51 NRC 193, 194 (2000); *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), CLI-00-20, 52 NRC 151, 163 (2000).

affected by the proceeding.[93] The organization must identify that member, and it must show that the member has authorized the organization to represent him or her and request a hearing on his or her behalf.[94] In this proceeding, as the Board has found, Mr. Frankel has established standing. Mr. Frankel has also authorized ARM to represent his interests in this proceeding.[95] Thus, ARM may participate in a representational standing capacity. Similarly, the Board has granted standing to Ms. Henderson and she has authorized CWA to represent her in this proceeding;[96] thus, CWA may participate because it has representational standing.[97]

We note, however, that an individual petitioner may not request to intervene in his or her own right while simultaneously authorizing other petitioners to represent his or her interests in the proceeding. The Commission has stated that such multiple representation might lead to confusion as to whether the individual or the organization was speaking for the petitioner.[98] Therefore, the Board directs Mr. Frankel and Ms. Henderson to elect whether they wish to proceed as individual parties to this proceeding or to have their interests represented by ARM and/or CWA. Such election must be made within ten (10) days of the issuance of this Order and served on all parties and the Board.

2. The Oglala Sioux Tribe

The Oglala Sioux Tribe is a federally recognized Indian tribe[99] and may therefore seek to participate in this proceeding as provided in 10 C.F.R. § 2.309(d)(2). However, because the proposed Powertech facility will not be located within the Tribe's boundaries, the Tribe must meet the standing requirements imposed by 10 C.F.R. § 2.309(d)(1) by showing "a concrete and particularized injury that

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[93] *Consumers Energy Co.* (Palisades Nuclear Plant), CLI-07-18, 65 NRC 399, 408-09 (2007); *Vermont Yankee,* CLI-00-20, 52 NRC at 163.

[94] *Palisades,* CLI-07-18, 65 NRC at 409; *Vermont Yankee,* CLI-00-20, 52 NRC at 163.

[95] Affidavit of David Frankel, Legal Director of Aligning for Responsible Mining ¶ 2 (Mar. 8, 2010).

[96] Affidavit of Susan Henderson ¶ 2 (Mar. 5, 2010).

[97] Although the Board has not granted personal standing to Mr. Ebert, Dr. Jones Jarding, and Mr. Heckenliable, we note that they are members of ARM or CWA and therefore their interests will be represented by these entities at the hearing to be held in this proceeding.

[98] *Big Rock,* CLI-07-19, 65 NRC at 426 (citing *Northern States Power Co.* (Pathfinder Atomic Plant), LBP-89-30, 30 NRC 311, 316 (1989) ("[A petitioner] can have her interest protected by participating as an individual or by having [an organization] represent her interest. It would be detrimental to the process to have a person appear in the proceeding individually and to be represented by an organization. . . .")).

[99] Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs, 73 Fed. Reg. 18,553, 18,555 (Apr. 4, 2008).

is . . . fairly traceable to the challenged action and [is] likely to be redressed by a favorable decision."[100]

The Tribe's central standing claim is its interest in protecting cultural and historical resources that have been or might be found on the Powertech site, which the Tribe claims is within the aboriginal territory of the Oglala Sioux Tribe under the 1868 Fort Laramie Treaty.[101] The Commission found in *Crow Butte II* that the Oglala Sioux Tribe has "a current, concrete interest in protecting the artifacts on the site"[102] and accordingly had standing to intervene. The Tribe makes the same claims in the present proceeding and supports its claims with affidavits from Wilmer Mesteth,[103] the Oglala Sioux Tribal Historic Preservation Officer, and Denise Mesteth,[104] Director of the Oglala Sioux Tribal Land Office. The Tribe also claims a procedural interest under section 106 of the NHPA[105] in "identifying, evaluating, and establishing protections for historic and cultural resources."[106] The Tribe additionally bases its claim of standing on possible groundwater contamination from the proposed Dewey-Burdock project.[107]

Powertech opposes the Tribe's claims of standing on the ground that there is not a plausible pathway "through which contaminants from the proposed Dewey-Burdock ISL site potentially could reach areas where [the Tribe] could suffer some concrete, particularized injury-in-fact."[108] Further, Powertech claims that the Tribe has failed to demonstrate a concrete injury-in-fact with regard to the cultural and historic resources found or yet to be identified on the Dewey-Burdock site.[109] Based on the Commission's ruling in *Crow Butte II, supra,* the NRC Staff does not oppose the Tribe's standing "to the extent it is based on potential harm to cultural artifacts that may yet be found at the Dewey-Burdock site."[110]

The preservation of Native American cultural traditions is a protected interest under federal law.[111] If this interest is endangered or harmed, it qualifies as a

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[100] *See, e.g., Yankee Atomic,* CLI-98-21, 48 NRC at 195; *Georgia Tech,* CLI-95-12, 42 NRC at 115; *Perry,* CLI-93-21, 38 NRC at 92 (citing *Lujan,* 504 U.S. at 561).

[101] Tribe Petition at 8-9.

[102] CLI-09-9, 69 NRC at 338.

[103] *See* Affidavit of Wilmer Mesteth (Apr. 1, 2010).

[104] *See* Affidavit of Denise Mesteth (Apr. 1, 2010).

[105] 16 U.S.C. § 470f.

[106] Tribe Petition at 9.

[107] *Id.* at 11.

[108] Powertech Answer to Tribe at 28.

[109] *Id.* at 29.

[110] Staff Answer to Tribe at 12.

[111] *See Havasupai Tribe v. United States,* 752 F. Supp. 1471 (D. Ariz. 1990); *United States ex rel. Chunie v. Ringrose,* 788 F.2d 638 (9th Cir. 1986); *United States v. Pend Oreille County Public Utility District No. 1,* 585 F. Supp. 606 (D. Wash. 1984); *Ute Indians v. United States,* 28 Fed. *(Continued)*

cognizable injury for AEA standing purposes under *Crow Butte II*.[112] In the case before us, the Powertech mining site is within the boundaries of the 1868 Fort Laramie Treaty and was occupied by the Lakota people. Moreover, the Tribe ascribes cultural and religious significance to this land and represents that it is likely that artifacts are to be found there.[113] In fact, Powertech has identified a small number of sites in the mining area that it states are eligible for inclusion in the National Register of Historic Places and many more sites that remain unevaluated.[114]

In the NHPA, Congress declared that this Nation's historical heritage "is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans."[115] Section 106 of the Act, *inter alia,* requires a federal agency, prior to the issuance of any license, to "take into account" the effect of the federal action on any area eligible for inclusion in the National Register of Historic Places.[116]

Detailed regulations, developed to give substance to the requirements of section 106, provide a complex consultative process that federal agencies must follow to comply with the NHPA.[117] As part of this process, a tribe may become a consulting party if its property, potentially affected by a federal undertaking, has religious or cultural significance.[118] A consulting tribe is entitled to a reasonable opportunity to identify its concerns about historic properties, to advise on the identification and evaluation of historic properties (including those of traditional religious and cultural importance), to articulate its views on the undertaking's effects on such

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Cl. 768 (1993). *See also* Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. §§ 3001-13 (1990) (providing notification and inventory procedures so that Indian cultural objects and burial remains found on federal lands will be repatriated to the appropriate Tribe); National Historic Preservation Act (NHPA), 16 U.S.C. § 470 to 470x-6 (providing notification and consultation procedures federal agencies must follow prior to a federal "undertaking" to consider the undertaking's effect on historic properties); Archaeological Resources Protection Act (ARPA), 16 U.S.C. § 470aa-470mm (providing criteria and procedures pursuant to which a federal land manager may issue excavation permits for federal lands; and providing for notification to Indian Tribe if permits may result in harm to cultural or religious sites).

[112] *But see Crow Creek Sioux Tribe v. Brownlee,* 331 F.3d 912, 916 (D.C. Cir. 2003) ("Tribe does not have standing merely because it has statutory rights in burial remains and cultural artifacts. Rather, to establish standing, the Tribe must show . . . some actual or imminent injury.").

[113] Tribe Petition at 9.

[114] *Id.*

[115] 16 U.S.C. § 470(b)(4).

[116] *Id.* § 470f; *see also id.* § 470a(a) (National Register Guidelines).

[117] 36 C.F.R. Part 800; *see* Advisory Council on Historic Preservation, 65 Fed. Reg. 77,698 (Dec. 12, 2000).

[118] *See* 36 C.F.R. § 800.2(c)(2)(ii).

properties, and to participate in the resolution of adverse effects.[119] Moreover, the regulations under NHPA provide that the federal agency "should be sensitive to the special concerns of Indian tribes in historic preservation issues, which often extend beyond Indian lands to other historic properties," and should "invite the governing body of the responsible tribe to be a consulting party and to concur in any agreement."[120]

In short, section 106 of the NHPA provides the Tribe with a procedural right to protect its interests in cultural resources. The Supreme Court has held that a party claiming violations of this procedural right is to be accorded a special status when it comes to standing: "The person who has been accorded a procedural right to protect his concrete interests can assert that right without meeting all the normal standards for redressability and immediacy."[121] To establish an injury-in-fact, a party merely has to show "some threatened concrete interest personal" to the party that NHPA was designed to protect.[122] Here, the Tribe's concrete interest is clear: there are cultural resources on the Powertech site that have not been properly identified and may be harmed as a result of mining activities. Without consultation with the Tribe, culturally significant resources will go unidentified and unprotected. As a result, development or use of the land might cause damage to these cultural resources, thereby injuring the protected interests of the Tribe.

Federal law not only recognizes that Native American tribes have a protected interest in cultural resources found on their aboriginal land, but as well has imposed on federal agencies a consultation requirement under the NHPA to ensure the protection of tribal interests in cultural resources. The Tribe's threatened injury is therefore within the zone of interests protected by the NHPA. The Tribe thus is accorded standing here.[123]

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[119] *See id.* § 800.2(c)(2)(ii)(A).

[120] *See id.* § 800.1(c)(2)(iii).

[121] *Lujan,* 504 U.S. at 572 n.7.

[122] *Nulankeyutmonen Nkihtaqmikon v. Impson,* 503 F.3d 18 (1st Cir. 2007) (citing *Lujan,* 504 U.S. at 572-73 nn.7-8).

[123] The cases that have addressed procedural violations of the NHPA have uniformly granted standing to tribes under this relaxed standard and have proceeded directly to the merits of the NHPA claim. *See, e.g., Naragansett Indian Tribe v. Warwick Sewer Authority,* 334 F.3d 161 (1st Cir. 2003); *Muckleshoot Indian Tribe v. United States Forest Service,* 177 F.3d 800 (9th Cir. 1999); *Snoqualmie Indian Tribe v. Federal Energy Regulatory Commission,* 45 F.3d 1207 (9th Cir. 2008). *See also Duncan's Point Lot Owners Ass'n, Inc. v. Federal Energy Regulatory Commission,* 522 F.3d 371 (D.D.C. 2008).

V. CONTENTIONS PROPOSED BY CONSOLIDATED PETITIONERS AND THE OGLALA SIOUX TRIBE

A. Standards for Admissibility of Contentions

In order to participate as a party in a proceeding before the Board, a petitioner must not only establish standing, but must also proffer at least one admissible contention that meets the requirements of 10 C.F.R. § 2.309(f)(1).[124] An admissible contention must: (i) provide a specific statement of the legal or factual issue sought to be raised; (ii) provide a brief explanation of the basis for the contention; (iii) demonstrate that the issue raised is within the scope of the proceeding; (iv) demonstrate that the issue raised is material to the findings the NRC must make to support the action that is involved in the proceeding; (v) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents, that support the petitioner's position and upon which the petitioner intends to rely at the hearing; and (vi) provide sufficient information to show that a genuine dispute exists in regard to a material issue of law or fact, including references to specific portions of the application that the petitioner disputes, or, in the case when the application is alleged to be deficient, the identification of such deficiencies and supporting reasons for this belief.[125]

The purpose of these section 2.309(f)(1) requirements is to "focus litigation on concrete issues and result in a clearer and more focused record for decision."[126] The Commission has stated that "the hearing process [is intended only for] issues that are 'appropriate for, and susceptible to, resolution in an NRC hearing.'"[127] Furthermore, "[w]hile a board may view a petitioner's supporting information in a light favorable to the petitioner . . . the petitioner (not the board) [is required] to supply all of the required elements for a valid intervention petition."[128] The rules on contention admissibility are "strict by design."[129] Further, absent a waiver, contentions challenging applicable statutory requirements or Commission

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[124] *See* 10 C.F.R. § 2.309(a).

[125] *Id.* § 2.309(f)(1).

[126] Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004).

[127] *Id.*

[128] *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 260 (2009).

[129] *See, e.g., Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 213 (2003); *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 NRC 349, 358-59 (2001); *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 334-35 (1999).

regulations are not admissible in agency adjudications.[130] Failure to comply with any of these requirements is grounds for not admitting a contention.[131]

Several of the contentions we address below are alleged to be contentions of omission. A contention of omission claims that "the application fails to contain information on a relevant matter as required by law . . . and [provides] the supporting reasons for the petitioner's belief."[132] To satisfy section 2.309(f)(1)(i)-(ii), the contention of omission must describe the information that should have been included in the ER and provide the legal basis that requires the omitted information to be included. The petitioner must also demonstrate that the contention is within the scope of the proceeding.[133]

Section 2.309(f)(1)(v) requires the petitioner to provide a concise statement of the alleged facts that support its position and upon which the petitioner intends to rely at the hearing. However, "the pleading requirements of 10 C.F.R. § 2.309(f)(1)(v), calling for a recitation of facts or expert opinion supporting the issue raised, are inapplicable to a contention of omission beyond identifying the legally required missing information."[134] Thus, for a contention of omission, the petitioner's burden is only to show the facts necessary to establish that the application omits information that should have been included. The facts relied on need not show that the facility cannot be safely operated, but only that the application is incomplete. If an applicant cures the omission, the contention will become moot.[135]

Finally, if the contention makes a *prima facie* allegation that the application omits information required by law, "it necessarily presents a genuine dispute with the Applicant on a material issue in compliance with 10 C.F.R. § 2.309(f)(1)(vi) [and] . . . raises an issue plainly material to an essential finding of regulatory compliance needed for license issuance"[136] in accordance with section 2.309(f)(1)(iv).

B. Board Rulings on Consolidated Petitioners' Proposed Contentions

1. Consolidated Petitioners' Contentions A and B

Consolidated Petitioners state in Contention A:

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[130] 10 C.F.R. § 2.335(a).

[131] *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-04-36, 60 NRC 631, 636 (2004).

[132] 10 C.F.R. § 2.309(f)(1)(vi).

[133] *Id.* § 2.309(f)(1)(iii).

[134] *Virginia Electric and Power Co.* (North Anna Power Station, Unit 3), LBP-08-15, 68 NRC 294, 317 (2008) (quoting *Pa'ina Hawaii, LLC,* LBP-06-12, 63 NRC 403, 414 (2006)).

[135] *North Anna,* LBP-08-15, 68 NRC at 317; *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 383 (2002).

[136] *Pa'ina,* LBP-06-12, 63 NRC at 414.

C. Board Rulings on the Oglala Sioux Tribe's Proposed Contentions

1. The Tribe's Contention 1

The Oglala Sioux states in Contention 1:

> Failure to meet applicable legal requirements regarding protection of historical and cultural resources, and failure to involve or consult the Oglala Sioux Tribe as required by Federal law.[280]

The Oglala Sioux claims that Powertech has failed to comply with federal law and NRC regulations because it has not consulted with the Oglala Sioux regarding historical and cultural sites that have been identified by Powertech in its Application.[281] The Oglala Sioux also states that it is concerned that the number of sites that might be impacted by Powertech's project may be higher than the number reported in the Application due to Powertech's failure to consult with the Oglala Sioux.[282] The Oglala Sioux cites a number of federal regulations, such as the NHPA, NEPA,[283] and an Executive Order,[284] that require consultation with those Indian Tribes "that attach[ ] religious and cultural significance" to cultural and historical sites. The Tribe asserts that these regulations require consultation as soon as possible in the application process, and that Powertech has been dilatory in satisfying this requirement.[285]

Furthermore, the Oglala Sioux points to NRC regulations and guidance that it claims require the Applicant to consult with it regarding these cultural sites. The Tribe argues that 10 C.F.R. § 51.45(b) and NUREG-1569 implement the requirements of NEPA and the NHPA, thereby requiring Powertech to consult with the Tribe.[286] The Oglala Sioux distinguishes the circumstances currently before the Board from those in the *Crow Butte II* proceeding, where the Commission determined that the Tribe's contention regarding compliance with the consultation requirements was not ripe.[287] The Oglala Sioux argues that here, "the

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[280] Tribe Petition at 12.

[281] *Id.*

[282] *Id.* The Oglala Sioux provides the affidavit of Wilmer Mesteth as support for this contention. *See* Affidavit of Wilmer Mesteth (Apr. 1, 2010).

[283] 42 U.S.C. § 4321.

[284] Presidential Executive Order 13,007, Indian Sacred Sites, 61 Fed. Reg. 22,951 (May 24, 1996); Tribe Petition at 16.

[285] Tribe Petition at 16.

[286] *Id.* at 12-13.

[287] *Id.* at 16. *See also Crow Butte II,* CLI-09-9, 69 NRC at 348-51.

NHPA requires consultation under Section 106 to begin as early as possible in the consideration of an undertaking."[288]

Both Powertech and the NRC Staff oppose admission of Contention 1. Powertech makes two arguments in attempting to refute the admissibility of Contention 1. First, Powertech claims that 10 C.F.R. § 51.45(b)-(d) does not require it to consult with the Tribe, as the Tribe argues, but instead "only describe[s] the categories of potential impacts, to the extent relevant, that a license applicant should address in an environmental report."[289] Because Powertech's Application analyzes the cultural and historic resources involved, Powertech asserts that Part 51 has not been violated because it does not impose an adequacy requirement on Powertech.[290]

Powertech's second argument deals with its duty to satisfy the consultation requirements under NEPA and the NHPA. Powertech argues that the duty to consult with the Oglala Sioux Tribe under these two Acts is the duty of the NRC Staff and not the duty of the applicant.[291] NEPA and the NHPA, according to Powertech, impose the duty to consult on a federal agency, and not a licensee.[292] Furthermore, Powertech submits that Contention 1 is not ripe for the Board's consideration at this time, because, under the Commission's ruling in *Crow Butte II,*[293] the Oglala Sioux Tribe cannot claim that the NRC Staff has failed to comply with its duty when the NEPA review process has only just begun.[294]

The NRC Staff argues that the Tribe fails to support its claim that Powertech insufficiently evaluated historic and cultural resources at its proposed ISL site.[295] The Staff claims that the affidavit of Mr. Mesteth, on which the Oglala Sioux relies for many of its assertions, rests on statements that are either unsupported or are misreadings of Powertech's Application.[296] For this reason, the Staff argues that Contention 1 fails to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and fails to raise a genuine dispute with Powertech's Application in contravention of 10 C.F.R. § 2.309(f)(1)(vi). Like Powertech, the Staff also argues that Contention 1 is not ripe for review by this Board under the Commission's ruling in *Crow Butte II.*[297]

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[288] Tribe Petition at 17.
[289] Powertech Answer to Tribe at 39.
[290] *Id.* at 39.
[291] *Id.*
[292] *Id.*
[293] *Crow Butte II,* CLI-09-9, 69 NRC at 348-51.
[294] Powertech Answer to Tribe at 39-40.
[295] Staff Answer to Tribe at 16.
[296] *Id.*
[297] *Id.* at 20. *See also Crow Butte II,* CLI-09-9, 69 NRC at 348-51.

In its Reply, the Oglala Sioux maintains that the declaration of Mr. Mesteth does challenge the adequacy of Powertech's cultural resources information, contrary to what Powertech and the NRC Staff assert.[298] The Tribe asserts that this contention is ripe because the violations to the NHPA and NEPA are ongoing and should not be relegated to the later part of the proceedings before being redressed.[299] Finally, the Oglala Sioux claims that the NRC Staff is inappropriately arguing the merits of Contention 1, and that this contention meets all the requirements necessary at this stage of the proceeding.[300]

Insofar as Contention 1 challenges the adequacy of the cultural resource information in Powertech's Application, the Board determines that Contention 1 is admissible for the same reasons we concluded that Consolidated Petitioners' Contention K was admissible. The Tribe provides the opinion of Mr. Mesteth to support its assertion that the cultural resource information in Powertech's Application is inadequate to meet the requirements of 10 C.F.R. §§ 51.45 and 51.60. Moreover, this information is adequate, as far as this Board is concerned, to raise a genuine dispute with Powertech's application. Accordingly, contrary to the arguments of Powertech and the NRC Staff, the Board concludes that the Tribe's Contention 1 does in fact meet the admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and (vi).

In Contention 1, the Tribe also alleges that Powertech has failed to consult with the Tribe regarding identified and potential cultural and historic resources found on the proposed mining site. As far as this issue is concerned, the Board is obligated under existing Commission precedent to deny this portion of Contention 1. In *Crow Butte II,* the Commission denied a similar contention submitted by the Oglala Sioux Tribe because it found the matter to be unripe at the contention admissibility stage of the proceeding.[301] At oral argument, counsel for the Tribe attempted to distinguish the present proceeding from the Commission's decision in *Crow Butte II* by arguing that NEPA and the NHPA require consultation to begin as early as possible in the licensing process and that there is an ongoing violation of federal law since this process has yet to begin here.[302]

As the Commission made clear in *Crow Butte II,* it is not the duty of an applicant to consult with a Tribe regarding cultural resources at a proposed site, but instead is the duty of the agency to initiate and follow through with the consultation

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[298] Tribe Reply at 22.
[299] *Id.* at 23.
[300] *Id.* at 21.
[301] *Crow Butte II,* CLI-09-9, 69 NRC at 350-51.
[302] Tr. at 129-31.

process.[303] The alleged failure to consult in this proceeding, therefore, cannot be the fault of Powertech. And, because the NRC Staff has not completed its environmental review of the Dewey-Burdock proposed project, this Board cannot find that they have been dilatory in their duty to consult with the Tribe.[304] As noted by the Commission in its *Crow Butte II* ruling, the Tribe is free to file a contention later on in this proceeding if, after the Staff releases its environmental documents, the Tribe believes that the Staff has failed to satisfy its obligations under NEPA and the NHPA.[305]

In sum, the Board concludes that the component of Contention 1 that deals with the inadequacy of the historic and cultural resource information in Powertech's Application is *admissible.* However, the Board will not consider at this time[306] the issue of the alleged failure to consult with the Tribe regarding cultural and historic resources on Powertech's proposed Dewey-Burdock site. Consultation with the Tribe is material and within the scope of this proceeding. However, this portion of Contention 1 is not ripe. The Tribe must wait until the draft supplemental environmental impact statement (SEIS) is issued by the NRC Staff to interpose the issue of the adequacy of the agency's consultation efforts.[307] Whether and how the Staff fulfills its NHPA and NEPA obligations are issues that could form the basis of a new contention.[308]

At this time we determine that the portion of Contention 1 that deals with a failure to consult *inadmissible.* Contention 1 is *admitted* as follows:

> Powertech's Application is deficient because it fails to address adequately protection of historical and cultural resources.

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[303] 36 C.F.R. § 800.2(c)(2)(ii)(D) (stating that "[w]hen Indian tribes . . . attach religious and cultural significance to historic properties off tribal lands, section 101(d)(6)(B) of the act requires *Federal agencies* to consult with such Indian tribes . . ." (emphasis added)).

[304] Tr. at 132-33.

[305] *Crow Butte II,* CLI-09-9, 69 NRC at 351.

[306] *Id.*

[307] The Staff has indicated that it will issue an SEIS to supplement the analysis in its generic EIS for ISL facilities. *See* Staff Answer to Tribe at 4; NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities — Draft Report for Comment," Vol. 1 (July 28, 2008) (ADAMS Accession No. ML0914802440).

[308] *See* 10 C.F.R. § 2.309(f)(2) (providing that, with respect to issues arising under NEPA, the petitioner may file new contentions "if there are data or conclusions in the NRC draft or final environmental impact statement . . . that differ significantly from the data or conclusions in the applicant's documents"). Such a contention is usually considered timely if filed within thirty (30) days of publication of the draft environmental impact statement. *See, e.g., Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 NRC 1, 6 (2008).

2. The Tribe's Contention 2

The Oglala Sioux states in Contention 2:

> Failure to include necessary information for adequate determination of baseline ground water quality.[309]

The Oglala Sioux argues that Powertech's Application violates 10 C.F.R. § 51.45, Appendix A to Part 40 and NEPA by failing to "provide an adequate baseline groundwater characterization or demonstrate that groundwater samples were collected in a scientifically defensible manner, using proper sample methodologies."[310] The Tribe provides the expert opinion of Dr. Robert Moran to support Contention 2. Dr. Moran alleges analytical deficiencies in the groundwater baseline characterization (e.g., there is no "statistically sound data set for *all* Baseline Water Quality data,"[311] the historic water quality data is not statistically summarized in one place for the reader, and it is unclear whether Powertech has baseline data for non-ore zone regions),[312] deficiencies with regard to characterization of non-ore zone regions, and deficiencies regarding the integrity of the baseline water quality data obtained by Powertech.[313]

Both Powertech and the NRC Staff oppose admission of Contention 2. Powertech argues that the pertinent regulation, 10 C.F.R. § 40.32(e), does not require detailed groundwater baseline information at this stage of the licensing process.[314] Also, Powertech identifies specific areas in the Application that contain the information the Tribe claims was omitted.[315] Finally, Powertech claims that Contention 2 "does not offer any information demonstrating a significant link between its allegations and a specific potential health and safety or environmental impact."[316]

The NRC Staff attempts to refute each of Dr. Moran's assertions in Contention 2.[317] The Staff argues that Dr. Moran fails to dispute the baseline data provided in Powertech's Application and fails to cite requirements that Powertech include more information in the Application.[318] The NRC Staff submits that Contention 2

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[309] Tribe Petition at 17.
[310] *Id.*
[311] *Id.* at 19.
[312] *Id.* at 18-19.
[313] *Id.*
[314] Powertech Answer to Tribe at 40.
[315] *Id.* at 40-41.
[316] *Id.* at 41.
[317] Staff Answer to Tribe at 21-24.
[318] *Id.* at 22, 23, 24.

cannot be admitted because it fails to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and (vi).[319]

In its Reply, the Oglala Sioux argues that the NRC Staff and Powertech are again arguing the merits of Contention 2 in their answers and that Contention 2 is properly pled under 10 C.F.R. § 2.309(f)(1).[320]

The Board determines that the Tribe's Contention 2 is admissible. Counsel for Powertech submitted at oral argument that 10 C.F.R. § 40.32(e) prohibits it from gathering complete information on baseline water quality.[321] The Board disagrees with this interpretation of the regulation. The last sentence of 10 C.F.R. § 40.32(e) explicitly exempts "preconstruction monitoring and testing to establish background information" from the prohibition on commencement of construction. We believe that such preconstruction monitoring includes adequate assessments of baseline water quality. This interpretation is supported by the requirement in Criterion 7 of Appendix A to Part 40, which states that an applicant must provide "complete baseline data on a milling site and its environs." We acknowledge that, as discussed *infra,* Appendix A to Part 40 does not always apply to ISL facilities. However, at oral argument, the Staff conceded that the first sentence of Criterion 7, which requires complete baseline data, applies to Powertech in this case.[322] Furthermore, the NRC Staff has refused to take a position on whether Powertech has provided the complete and necessary baseline water quality data in its Application because its review is ongoing.[323]

We conclude that the Tribe has raised a genuine dispute as to the adequacy and completeness of the information Powertech provided in its Application. We also conclude that the Tribe identifies an issue that is within the scope of this proceeding and material to the findings the NRC must make in evaluating Powertech's Application. Further, the Tribe raises a genuine dispute with Powertech's Application, namely whether Powertech has provided sufficient detail and scientifically defensible methodology for its baseline water quality data. The Oglala Sioux, with the expert opinion of Dr. Moran, provides support for its assertions. We therefore conclude that the Oglala Sioux has met the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1) and *admit* Contention 2.

3. The Tribe's Contention 3

The Oglala Sioux states in Contention 3:

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[319] *Id.* at 25.
[320] Tribe Reply at 25.
[321] Tr. at 163.
[322] *Id.* at 158.
[323] *Id.*

> Failure to include adequate hydrogeological information to demonstrate ability to contain fluid migration.[324]

The Oglala Sioux argue that Powertech fails to meet the requirements of 10 C.F.R. §§ 40.31(f), 51.45, 51.60, Appendix A to Part 40, NEPA, and NUREG-1569[325] by neglecting "to provide sufficient information regarding the geological setting of the area . . . ."[326] The Oglala Sioux submits that adequate information is necessary "to adequately characterize the site and off-site hydrogeology to ensure confinement of the extraction fluids."[327] If the hydrogeology is not properly characterized, the Oglala Sioux contends, the effects of Powertech's proposed project on surface and ground waters cannot be properly evaluated.[328] The Tribe provides the expert opinion of Dr. Moran, who supports the Tribe's arguments that Powertech's Application includes "unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones and failure to account for natural and man-made hydraulic conductivity through natural breccias pipe formations and the historic drilling of literally thousands of drill holes in the aquifers and ore-bearing zones in question, which were not properly abandoned."[329] The Oglala Sioux also cite an EPA document that criticizes the Commission's environmental review process for ISL mining.[330]

Both Powertech and the NRC Staff oppose admission of Contention 3. First, Powertech asserts that the Commission "only requires generalized information regarding pre-operational baseline water quality in the proposed recovery zone and at prospective monitor well locations on a regional basis and does not require detailed site-specific information until the 'post-licensing.'"[331] Powertech then goes on to attempt to discredit specific statements made by Dr. Moran in support of Contention 3. With regard to each statement, Powertech asserts that the Oglala Sioux has failed to offer any genuine dispute on a material issue of fact because Contention 3 does not challenge the information provided in Powertech's Application, as 10 C.F.R. § 2.309(f)(1)(vi) requires.[332]

The NRC Staff argues that Contention 3 should be dismissed by the Board because it fails to meet the contention admissibility requirements of 10 C.F.R.

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[324] Tribe Petition at 21.

[325] NUREG-1569 is the NRC Staff's Standard Review Plan for In-Situ Leach Uranium Extraction License Applications (ADAMS Accession No. ML032250177).

[326] *Id.*

[327] *Id.* at 22.

[328] *Id.*

[329] *Id.*

[330] *Id.*

[331] Powertech Answer to Tribe at 42.

[332] *See id.* at 42, 43, 44, 45.

§ 2.309(f)(1)(v) and (vi).[333] The NRC Staff asserts that Dr. Moran's statements in support of Contention 3 fail to take into account sections of Powertech's Application that address regional hydrogeology, mine data, and other site-specific data.[334] Moreover, the NRC Staff claims that Dr. Moran's statements are based on a misreading of Powertech's Application or are unsupported assertions.[335]

In its Reply, the Oglala Sioux maintains that Dr. Moran's statements, as a whole, support the admission of Contention 3, and that the NRC Staff's and Powertech's practice of attacking his statements in isolation is "spurious, akin to setting up a straw man."[336] Further, the Oglala Sioux asserts that it did in fact take issue with specific analyses and data in Powertech's Application, and cites portions of the Application it felt were inadequate, thereby raising a genuine dispute with the Application.[337]

The Board determines that the Tribe's Contention 3 is admissible. The Tribe identifies an issue that is within the scope of this proceeding and material to the findings the NRC must make in evaluating Powertech's Application. Further, the Tribe raise a genuine dispute with Powertech's Application, namely with respect to the adequacy of information needed to characterize the site and offsite hydrogeology to ensure confinement of the extraction fluids. The Oglala Sioux provides the expert opinion of Dr. Moran to support its assertions. We therefore conclude that the Oglala Sioux has met the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1) and *admit* Contention 3.

4. The Tribe's Contention 4

The Oglala Sioux states in Contention 4:

> Inadequate analysis of Ground Water Quantity Impacts.[338]

The Oglala Sioux argues that Powertech's Application violates 10 C.F.R. §§ 40.32(c), (d), and 51.45 by failing to analyze the impacts of groundwater consumption on public health and safety and property.[339] The Oglala Sioux also submits that Powertech's Application presents conflicting groundwater consumption information, thereby making this information impossible to evaluate

[333] Staff Answer to Tribe at 26.
[334] *Id.* at 26, 27, 28, 29, 30.
[335] *Id.* at 26.
[336] Tribe Reply at 26-27.
[337] *Id.* at 27-28.
[338] Tribe Petition at 25.
[339] *Id.*

accurately.[340] To support Contention 4, the Oglala Sioux provides the declaration of Dr. Moran.[341]

Both Powertech and the NRC Staff oppose admission of Contention 4. Again, Powertech makes the argument that 10 C.F.R. § 51.45 does not impose an adequacy requirement on Powertech and that its inclusion of information on groundwater consumption in the Application is sufficient to comply with that regulation.[342] Indeed, Powertech asserts that the Application addresses groundwater consumption impacts and that neither the Oglala Sioux nor Dr. Moran provides information that contradicts Powertech's data or analyses.[343] Therefore, Powertech claims that Contention 4 should be denied because it fails to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi).

The NRC Staff argues that Contention 4 should be dismissed because Powertech does, in fact, provide an analysis of groundwater impacts in its Application.[344] Furthermore, NRC Staff submits that Dr. Moran's statements that Powertech's estimates of water usage are inconsistent are not supported and fail to establish a genuine issue with Powertech's Application, thereby failing to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and (vi).[345]

In its Reply, the Oglala Sioux once more accuses the NRC Staff and Powertech of arguing against the admission of Contention 4 based on a merits analysis.[346] In addition, the Oglala Sioux maintains that, contrary to Staff's and Powertech's assertions, the Tribe Petition does reference portions of the Application that it determined were relevant to the issues raised in Contention 4.[347]

The Board determines that the Tribe's Contention 4 meets the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1). The issue raised is within the scope of this licensing proceeding and is material to the findings the NRC must make. The Tribe supports its assertions with the expert opinion of Dr. Moran, who, according to Tribe counsel, opines that "there is no credible project water balance that investigates the potential impact on local groundwater levels."[348] In that regard, Dr. Moran describes the project area as semi-arid with an average yearly precipitation of about 12 to 13 inches. Yearly evapotranspiration (ET) estimates are roughly 70 inches per year, or about five times the yearly precipita-

[340] *Id.*
[341] *Id.* at 26.
[342] Powertech Answer to Tribe at 46.
[343] *Id.*
[344] Staff Answer to Tribe at 33.
[345] *Id.* at 34.
[346] Tribe Reply at 30.
[347] *Id.*
[348] Tr. at 215.

tion.[349] Dr. Moran states that with the project expected to operate between 7 and 20 years, it will require the use of tremendous volumes of local groundwater and, without a credible project water balance, it is not possible to more seriously investigate the potential that such large-volume water use might impact local/regional groundwater levels.[350]

Though there seems to be some confusion as to exactly how much water will be used during operations, the Tribe has still established a genuine material dispute with Powertech's Application. At oral argument, counsel for the Tribe stated that "the [environmental] impacts associated with . . . drawdown have not been disclosed and reviewed in the application materials."[351] Powertech and NRC Staff disagree with this assertion, but it is not for the Board to decide at this point in the proceeding which party is correct. The adequacy of the information provided in Powertech's Application will be evaluated by the Board as part of a merits analysis. Because of the time cycle of uranium mining and reclamation operations, water use patterns vary and some confusion was involved with review of the information in the Application. The basic requirement needed to satisfy this contention is a detailed description of sources and amounts of groundwater used and the effects of the use and consumption of the groundwater in the mining operations, including restoration and waste water disposal.

For the foregoing reasons, the Board concludes that the Tribe's Contention 4 is *admissible.*

5. The Tribe's Contention 5

The Oglala Sioux states in Contention 5:

> Failure to adequately calculate bond for decommissioning.[352]

The Oglala Sioux claims that, in contravention of the requirements of Appendix A to Part 40, Powertech has failed to provide a sufficient financial assurance cost estimate "to assure the availability of sufficient funds to complete the reclamation plan and the activities in the application by an independent contractor."[353] The Oglala Sioux takes issue with Powertech's decommissioning cost estimates in the Application, which are based on the assumption that there will be full production of the mine in 2011, only minor production in 2012, and no production beyond 2012. Because the Application states that operation of the mill will continue for 7

[349] *See* Environmental Report at 3-176, -177, Figure 3.6-27.
[350] Declaration of Robert E. Moran at 9 (Apr. 4, 2010).
[351] Tr. at 212.
[352] Tribe Petition at 27.
[353] *Id.*

to 20 years,[354] the Oglala Sioux submits that these estimates are insufficient for the assurance of adequate funding.[355] Furthermore, the Oglala Sioux points out that the Application indicates that restoration times for the mine may be longer than anticipated, yet the financial surety calculations do not reflect longer restoration time.[356] This Contention is supported by a declaration by Dr. Moran.

Both Powertech and the NRC Staff oppose admission of Contention 5. Powertech claims that Contention 5 should be dismissed because it is not required by law to "submit financial cost estimates for any site activities beyond the initial stages of site construction and development."[357] Powertech argues that admitting Contention 5 would require it to calculate the financial assurance for the entire Dewey-Burdock project.[358] Finally, Powertech contends that Contention 5 is essentially moot because the Commission requires Powertech "to provide updated NRC-approved financial assurance every year that accounts for the status of activities at the site . . . ."[359] Therefore, the cost calculations the Oglala Sioux is asking Powertech to furnish now will in fact be furnished over the life of the project.[360] As a result, Powertech states that Contention 5 is inadmissible because it does not raise a genuine dispute with the Application, in contravention of 10 C.F.R. § 2.309(f)(1)(vi).

NRC Staff asserts that Contention 5 should be dismissed because the Oglala Sioux failed to explain why Powertech needs to provide additional cost estimates to those already presented in their Application.[361] Additionally, the NRC Staff argues that, because the Oglala Sioux does not challenge the methodology Powertech used to calculate total decommissioning costs, Contention 5 does not raise a genuine dispute with the Application and therefore does not meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi).[362] Finally, the NRC Staff claims that NRC procedures "will be sufficient to ensure that funds are available to carry out decommissioning of the Dewey-Burdock facility by an independent contractor."[363]

In its Reply, the Oglala Sioux counters NRC Staff's argument that Powertech has provided sufficient decommissioning information by stating that the NRC issued a request for additional information (RAI) regarding decommissioning,

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[354] *Id.*
[355] *Id.*
[356] *Id.*
[357] Powertech Answer to Tribe at 47-48.
[358] *Id.*
[359] *Id.* at 48.
[360] *Id.*
[361] Staff Answer to Tribe at 35.
[362] *Id.*
[363] *Id.* at 36.

suggesting that the NRC Staff does not believe that the information provided by Powertech is sufficient.[364]

Criterion 9 in Appendix A to 10 C.F.R. Part 40 requires an applicant to establish a surety arrangement that ensures sufficient funds will be available for decommissioning and decontamination of an NRC-licensed source materials site.[365] Criterion 9 provides little instruction regarding how calculations should be made, and addresses decommissioning and decontamination matters very generally. Where regulatory authority is lacking, the Commission has indicated that turning to NRC Staff guidance documents can be useful.[366] In NUREG-1569, surety bond calculations are to be estimated "[t]o the extent possible," and based on the applicant's "experience with generally accepted industry practices."[367]

The Board determines that the Tribe has not identified any specific inadequacies with Powertech's surety bond calculations as set forth in its Application. Nor has the Tribe cited any specific regulations that would require Powertech to include more information in its Application than was already included. In fact, the Tribe argues that Powertech's estimate should be higher than what it was, but does not account for the fact that these estimates are not final and will need to be updated before the license is issued.[368] As the Commission has noted, "[s]urety arrangements are matters appropriately addressed after issuance of the license, and even after completion of a hearing. Criterion 9 [of 10 C.F.R. Part 40, Appendix A] makes clear that a surety arrangement is necessary as a prerequisite to *operating,* not as a prerequisite to *licensing*."[369] As such, the Board concludes that the Tribe has not met the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and (vi), and its Contention 5 is accordingly *not admitted.*

6. The Tribe's Contention 6

The Oglala Sioux states in Contention 6:

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[364] Tribe Reply at 31.

[365] *See* 10 C.F.R. Part 40, App. A, Criterion 9; *see also Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), LBP-04-3, 59 NRC 84, 88 (2004).

[366] *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-04-33, 60 NRC 581, 596 (2004) (Commission acknowledges that Staff guidance documents are not legally binding, yet recognizes the usefulness in instances where legal authority is lacking).

[367] NUREG-1569 at 6-24.

[368] *See* Tr. at 318-19.

[369] *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-00-8, 51 NRC 227, 240 n.15 (2000).

> Inadequate technical sufficiency of the application and failure to present information to enable effective public review resulting in denial of due process.[370]

In Contention 6, which is similar to portions of Consolidated Petitioners' Contention D, the Oglala Sioux claims that NEPA, Reg. Guide 3.46, and NUREG-1569 are being violated because Powertech fails to present information in its Application in a concise, easily understandable manner.[371] Dr. Moran, whose declaration supports admission of this Contention, states that the information in the Application is "so disorganized and technically-deficient that it does not comply with the terms of NUREG-1569 . . . and should be revised."[372]

Both Powertech and the NRC Staff oppose admission of Contention 6. Powertech claims that it complied with all NRC guidance in its preparation of the Application, and that the Commission would not have accepted the Application for review if it were disorganized and technically inadequate.[373] Further, Powertech submits that many of Dr. Moran's claimed omissions are actually present in the Application, thereby rendering Contention 6 inadmissible because it fails to raise a material dispute with the Application, in contravention of 10 C.F.R. § 2.309(f)(1)(vi).[374]

The NRC Staff argues that Contention 6 should be denied because the Oglala Sioux does not present a genuine dispute with the Application and fails to support its arguments, thereby failing to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(v) and (vi).[375] Simply put, the NRC Staff's position is that the Oglala Sioux fails to support its claim that Powertech's Application violates NEPA or NUREG-1569 by being disorganized.[376] Indeed, the Staff maintains that the five examples of disorganization provided by Dr. Moran are not indicative of the readability of a 6000-plus-page document.[377]

As in Contention 5, the Oglala Sioux seeks to rebut the Staff's and Powertech's arguments against admissibility of Contention 6 by citing the fact that an RAI was issued by the Staff asking Powertech to furnish basic technical information that was lacking from the Application.[378] The Oglala Sioux maintains that this RAI is

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[370] Tribe Petition at 28.
[371] *Id.*
[372] *Id.* at 29.
[373] Powertech Answer to Tribe at 49.
[374] *Id.* at 50.
[375] Staff Answer to Tribe at 37.
[376] *Id.*
[377] *Id.* at 38.
[378] Tribe Reply at 33-34.

evidence of the fact that the Application did not present sufficient information to the public in a way that is understandable.[379]

The Board determines that the Tribe's Contention 6 inadmissible. The Tribe's argument that Powertech's Application is disorganized and, therefore, technically deficient, is not adequately supported, as the Tribe identifies only five instances in the entire Application where it claims disorganization presented an obstacle to their expert. The Board is also unaware of any legal precedent or any NRC regulations that require an application to meet any organizational criteria or else risk being classified as technically inadequate. Though the Tribe cites to the NEPA requirement that environmental documents "be written in plain language . . . so that decision-makers and the public can readily understand them,"[380] the Tribe has not shown how this requirement applies to the Applicant, as NEPA itself is binding only on the agency.[381]

Furthermore, as we noted relative to Consolidated Petitioners' Contention D above, issues of disorganization in an application cannot be said to be germane to this licensing proceeding. According to the Board in *HRI,* "[a]ny area of concern is germane if it is relevant to whether the license should be denied or conditioned."[382] The organization or coherence of an application was not considered by that Board to be germane because it was not an objection to the licensing action at issue in the proceeding.[383] In this contention, the Tribe has not raised a dispute with a specific portion of the Application that would lead this Board to question whether the license should be denied or conditioned. A general complaint about how the information is presented is not sufficient to raise a genuine dispute with the Application that is germane to the purpose of this licensing proceeding. Accordingly, the Tribe's Contention 6 is *not admitted.*

7. The Tribe's Contention 7

The Oglala Sioux states in Contention 7:

> Failure to include in the Application a reviewable plan for disposal of 11e2 Byproduct Material.[384]

The Oglala Sioux argues that Powertech's Application is deficient because plans for disposal of mill tailings "merely state that permanent disposal will occur"

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[379] *Id.* at 32-33.
[380] Tribe Petition at 29. *See also* 40 C.F.R. § 1502.8.
[381] 36 C.F.R. § 800.2(c)(2)(ii)(D).
[382] LBP-98-9, 47 NRC at 280.
[383] *Id.*
[384] Tribe Petition at 31.

and do not provide specifications for disposal, as is required by 10 C.F.R. Part 40, Appendix A.[385] The Oglala Sioux asserts that Powertech's Application should be rejected completely, without further inquiry, for this omission, as it allegedly violates NRC regulations and NEPA.[386] Under NEPA, the Oglala Sioux argues, an examination of all direct, indirect, and cumulative impacts of the proposed action must be executed.[387] According to the Oglala Sioux, Powertech's failure to identify the disposal facility or provide specifications for its disposal plans avoids this required examination, and the Application must therefore be rejected.[388]

Both Powertech and the NRC Staff oppose admission of Contention 7. Powertech argues that the Oglala Sioux mischaracterizes the requirements for a license application, and claims that Appendix A to Part 40 requires disposal of mill tailings at a licensed facility and does not require the information the Oglala Sioux is demanding.[389] Furthermore, Powertech asserts that the Application does provide a detailed discussion of offsite disposal of 11e(2) byproduct material, despite what the Oglala Sioux claims. Therefore, Powertech opposes admission of Contention 7 because it fails to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi).

The NRC Staff argues that Contention 7 fails to meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(iv) because the Oglala Sioux fails to identify an issue material to the findings the NRC must make in this licensing action.[390] The Staff maintains that 10 C.F.R. § 40.31(h) and Criterion 1 in Appendix A to Part 40, both cited by the Oglala Sioux in its Petition, do not require Powertech to provide more information than it has already provided in its Application.[391] Furthermore, the Staff asserts that NEPA does not require Powertech to be more specific about its disposal practices, mandating only "that the Staff consider the reasonably foreseeable environmental effects of the actions Powertech has proposed."[392] Therefore, according to the Staff, Contention 7 should be denied by the Board.

In its Reply, the Oglala Sioux argues that Powertech's and the NRC Staff's responses to Contention 7 are "contrary to facts known to Staff and Powertech and [are] contrary to established interpretations of NRC regulations."[393] The Oglala Sioux cites the issuance of an RAI by the NRC Staff as evidence that the

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[385] *Id.*
[386] *Id.*
[387] *Id.* at 33.
[388] *Id.*
[389] Powertech Answer to Tribe at 50-52.
[390] Staff Answer to Tribe at 39.
[391] *Id.* at 39-40.
[392] *Id.* at 40.
[393] Tribe Reply at 34.

information Powertech provided on 11e(2) byproduct material was incomplete to conduct the relevant analyses.[394] Further, the Oglala Sioux argues that the responses of Powertech and the NRC Staff establish that there is a genuine and material legal dispute with the Application because the Oglala Sioux disagrees with the NRC Staff's interpretation of 10 C.F.R. § 40.31(h) as not applying to in-situ facilities.[395] Finally, the Oglala Sioux argues that Powertech's and the NRC Staff's responses to Contention 7 address the merits of the contention and do not successfully dispute its admissibility in this proceeding.[396]

While we agree with the Tribe that the disposal of 11e(2) byproduct material is an issue that should be addressed more fully before a license is issued to Powertech, we do not agree the Tribe has shown that Powertech has, at this point in the proceeding, failed to comply with NRC or federal regulations. The Tribe points to 10 C.F.R. § 40.31(h) and Criterion 1 in Appendix A to Part 40 as support for its assertion that Powertech is required to include a specific plan for disposal of 11e(2) byproduct material in its Application. However, Commission precedent makes clear that 10 C.F.R. § 40.31(h) applies to uranium mills, and not to ISL facilities.[397] In fact, the Commission has held that, while Part 40 generally applies to ISL mining, Appendix A to Part 40, including Criterion 1, was "designed to address the problems related to mill tailings and not problems related to injection mining."[398] There are, however, certain safety provisions in Appendix A, such as Criterion 2, that are relevant and do apply to ISL mining.[399] Criterion 2, for instance, requires that "byproduct material from in situ extraction operations . . . must be disposed of at existing large mill tailings disposal sites . . . ."[400] Besides referring the Board to Appendix A, the Tribe has not identified a regulation that requires a disposal plan be included in an application. The Presiding Officer in *HRI* concluded that the principal regulatory standards for ISL applications are 10 C.F.R. § 40.32(c) and (d), "which mandate protection of public health and safety";[401] an exceedingly general requirement.

With regard to Part 40's applicability to ISL facilities, the NRC Staff often relies on guidance documents and license conditions when regulatory specificity

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[394] *Id.* at 34-35.

[395] *Id.* at 35.

[396] *Id.* at 36.

[397] *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 8 (1999) (*HRI*).

[398] *Id.* (citing *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-99-1, 49 NRC 29, 33 (1999)).

[399] *Id.*

[400] 10 C.F.R. Part 40, App. A, Criterion 2.

[401] *HRI,* CLI-99-22, 50 NRC at 9.

is lacking.[402] At oral argument, the NRC Staff stated that it is standard practice, and consistent with NUREG-1569, to require the applicant either to supply a specific disposal plan or to implement a license condition that deals with waste disposal.[403] Because the Tribe has not pointed to any regulation that requires this plan to be in the Application itself, the Board finds it is appropriate to look to NRC guidance to determine how Powertech is to proceed. Because the NRC guidance allows Powertech to deal with the issue of waste disposal in one of two ways (i.e., in its Application or as a license condition), the fact that the information is not in the Application is not fatal to the Application, as the Tribe contends. Accordingly, the Tribe fails to raise a genuine dispute with the Application, in contravention of 10 C.F.R. § 2.309(f)(1)(vi).

The Tribe also argues that a specific disposal plan must be included in Powertech's Application in order to comply with NEPA. We do not agree. It is settled law that an applicant is not bound by NEPA, but by NRC regulations in Part 51.[404] The NRC Staff, however, is bound by NEPA. At oral argument, the Staff recognized this obligation and conceded that NEPA "would require possibly an analysis by the Staff"[405] regarding waste disposal. If, at the time the Staff issues its environmental documents, the SEIS does not include an analysis of waste disposal, or if the Tribe feels the analysis is inadequate, the Tribe may file a contention at that time under 10 C.F.R. § 2.309(f)(2). Contention 7 is *inadmissible*.

The Board does recognize, however, the importance of planning for waste disposal at any NRC-regulated facility, and we are concerned that this issue need not be addressed until the license is issued. At that point, of course, if a condition dealing with 11e(2) byproduct material is not included in the license, the Tribe has no recourse because it cannot challenge the license at that time. Due to these concerns, the Board recommends that this issue be considered by the Commission (or Board) when it conducts the mandatory review and hearing that must be held in this case.[406]

8. The Tribe's Contention 8

The Oglala Sioux states in Contention 8:

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[402] *Id.*

[403] Tr. at 242.

[404] *Levy County,* CLI-10-2, 71 NRC at 34.

[405] Tr. at 240.

[406] 10 C.F.R. § 51.107(a). *See also Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-09-10, 70 NRC 51, 112 (2009).

Requiring the Tribe to formulate contentions before an EIS is released violates NEPA.[407]

The Oglala Sioux contends that the NRC procedures requiring the Oglala Sioux to formulate contentions before the Staff's NEPA document, the SEIS, is complete violate the "public participation and informed decision-making mandates of NEPA."[408] The Oglala Sioux claims that it is being denied the benefit of a complete NEPA analysis under present NRC procedures and that the NRC's allowance of additional contentions to be filed after the SEIS is issued[409] wastes resources and denies the public the opportunity to participate in the agency's decisionmaking process.[410]

Both Powertech and the NRC Staff oppose admission of Contention 8. Powertech asserts that Contention 8 is an impermissible attack on NRC regulations, in violation of 10 C.F.R. § 2.335 and is therefore not a proper contention for this proceeding.[411] Furthermore, Powertech submits that the Oglala Sioux will have an opportunity to participate in the environmental review process by submitting comments when the NRC Staff issues the draft SEIS.[412] In sum, Powertech claims that the Oglala Sioux's Contention 8 is inadmissible as an impermissible attack on NRC regulations and that Oglala Sioux's claims of an exclusion from the environmental review process are unfounded.[413]

Like Powertech, the NRC Staff argues that Contention 8 is inadmissible as an impermissible attack on NRC regulations, in violation of 10 C.F.R. § 2.335.[414] Also, the Staff argues that the NRC's hearing procedures "provide substantial opportunities for public involvement *apart from* the hearing process," such as participating in the public comment period.[415]

In its Reply, the Oglala Sioux maintains that Contention 8 is not an attack on NRC regulations, as argued by Powertech and the NRC Staff.[416] Instead, the Oglala Sioux argues that the present proceeding fails to comply with the CEQ regulations, which they assert the NRC is bound to follow.[417] Further, the Oglala Sioux takes issue with the fact that the "NRC Staff has recommended that

[407] Tribe Petition at 34.
[408] *Id.* at 35.
[409] 10 C.F.R. § 2.309(f)(2).
[410] Tribe Petition at 36.
[411] Powertech Answer to Tribe at 54.
[412] *Id.* at 55.
[413] *Id.*
[414] Staff Answer to Tribe at 42.
[415] *Id.* (emphasis in original).
[416] Tribe Reply at 42.
[417] *Id.* at 43.

the Board make final rulings that prohibit admission of the Tribe's contentions, without the benefit of the required NEPA analysis."[418]

We agree with Powertech and the NRC Staff that Contention 8 is inadmissible. To begin, we note that the Oglala Sioux's main concern in this contention is that the NRC is not complying with CEQ regulations, which require that the NEPA process begin "at the earliest possible time."[419] As we understand it, the Tribe takes issue with the Commission's practice of requiring petitioners to file NEPA-based contentions contesting an applicant's ER, because the Staff's SEIS, the product of its NEPA review, is not ready at this stage of the proceeding. The Tribe argues that the NEPA review process is not conducted early enough in the proceeding to allow petitioners to file contentions on the completed SEIS, which is in violation of CEQ regulations. There are a number of reasons why the Board cannot accept this argument as the basis for an admissible contention.

First, while this agency gives substantial deference to CEQ regulations, it is not bound to follow them.[420] As an independent agency, the NRC has the authority to promulgate its own regulations implementing NEPA and is only bound by CEQ regulations when the NRC expressly adopts them.[421] The NRC has recognized its obligation to comply with NEPA, however, and has promulgated the regulations in Part 51, which govern "the consideration of the environmental impact of the licensing and regulatory actions of the agency."[422]

Secondly, Contention 8 constitutes an impermissible attack on NRC regulations, in contravention of 10 C.F.R. § 2.335. At oral argument, counsel for the Tribe stated that he was concerned with the way NRC's NEPA procedures were being used in the present proceeding, but conceded that he understood the Staff's NEPA review procedures are "not unique to this case."[423] Indeed, the regulations clearly state that a petitioner must file a NEPA contention challenging an applicant's ER *at the time the petitioner requests a hearing*.[424] Any challenge by the Tribe to this regulation is not litigable in this proceeding, and cannot be

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[418] *Id.* at 47.

[419] Tr. at 246.

[420] *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), LBP-06-19, 64 NRC 53, 62 n.3 (2006) (citing *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348 n.22 (2002)); *see also supra* note 275.

[421] *Louisiana Energy Services, L.P.* (National Enrichment Facility), LBP-06-8, 63 NRC 241, 257 n.14 (2006); *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), LBP-05-19, 62 NRC 134, 154 (2005).

[422] *Limerick Ecology Action, Inc. v. NRC,* 869 F.2d 719, 725 (3d Cir. 1989).

[423] Tr. at 246.

[424] 10 C.F.R. § 2.309(f)(2) ("On issues arising under the National Environmental Policy Act, the petitioner shall file contentions based on the applicant's environmental report.").

admitted as a contention under 10 C.F.R. § 2.335.[425] Absent a showing of "special circumstances" under 10 C.F.R. § 2.335(b), which the Tribe has not made, this matter must be addressed through Commission rulemaking.[426]

Finally, we do not agree with the Tribe that current NRC procedures for filing NEPA-related contentions violate "public participation and informed decision-making mandates of NEPA."[427] NRC regulations provide opportunities for public involvement in the NEPA review process. For example, in this case the NRC Staff has stated that a draft SEIS will be issued, and will be circulated for public comment before the final SEIS is issued.[428] Additionally, the regulations allow for new or amended contentions to be filed by the Tribe in the event that "there are data or conclusions in the NRC draft or final environmental impact statement . . . that differ significantly from the data or conclusions in the applicant's documents."[429] These new or amended contentions are not required to meet a higher standard than original contentions filed under 10 C.F.R. § 2.309(f)(1), as long as the new or amended contentions are founded on data or conclusions in the EIS that are new and significantly different from those in the ER and are timely filed.[430]

For the foregoing reasons, the Board concludes that the Tribe's Contention 8 is *inadmissible*.

9. The Tribe's Contention 9

The Oglala Sioux states in Contention 9:

> Failure to consider connected actions.[431]

The Oglala Sioux states that Powertech's proposed ISL project is being considered by multiple federal agencies besides the NRC.[432] For example, according to the Oglala Sioux, Powertech has applied to the Environmental Protection Agency

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[425] *See also Progress Energy Carolinas, Inc.* (Shearon Harris Nuclear Power Plant, Units 2 and 3), CLI-10-9, 71 NRC 245, 272 (2010); *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 129 (2004).

[426] *North Anna,* LBP-04-18, 60 NRC at 270.

[427] Tribe Petition at 35.

[428] Staff Answer to Tribe at 42; Tr. at 248.

[429] 10 C.F.R. § 2.309(f)(2).

[430] The Board takes this opportunity to remind the NRC Staff of its increased notification commitments to Native American tribes as spelled out in the "U.S. Nuclear Regulatory Commission's Strategy for Outreach and Communication with Indian Tribes Potentially Affected by Uranium Recovery Sites" (ADAMS Accession No. ML092110101), especially as it pertains to environmental review.

[431] Tribe Petition at 36.

[432] *Id.*

(EPA) for a Class V deep injection well permit for injection of hazardous materials.[433] The Oglala Sioux argues that the NRC has failed to consider the actions that will be taken by other agencies in its review of Powertech's Application, in violation of NEPA.[434] The Oglala Sioux submits that the Class V permit process is a "connected action" and needs to be considered by the NRC under NEPA.[435] In the alternative, the Oglala Sioux argues that the Class V permit process must still be analyzed in the NRC's cumulative impact analysis.[436]

Both Powertech and the NRC Staff oppose admission of Contention 9. Powertech argues that the Oglala Sioux has failed to cite any regulations in 10 C.F.R. Part 51 that require the NRC Staff to coordinate its NEPA review of Powertech's Application with any other regulatory agency, such as the EPA.[437] Further, Powertech argues that the issue of underground injection of hazardous waste is wholly independent of NRC's review of Powertech's Application, because whether the EPA grants Powertech a Class V permit or not has no bearing on NRC Staff's s review.[438] Finally, Powertech asserts that Contention 9 is not ripe for consideration by the Board at this time because the NRC has only just begun to solicit EPA's input on the licensing of ISL facilities.[439]

Like Powertech, the NRC Staff argues that Contention 9 is not ripe for the Board's review at this time because the NRC Staff has not yet issued a draft or final SEIS for Powertech's proposed ISL facility.[440] According to the NRC Staff, because the Oglala Sioux is challenging NRC's ongoing NEPA review, Contention 9 must be rejected because it fails to comply with 10 C.F.R. § 2.309(f)(1)(vi).[441] Finally, the NRC Staff asserts that it will in fact be consulting with other agencies regarding Powertech's proposed action.[442]

In its Reply, the Oglala Sioux alleges that Powertech and the NRC Staff have provided no authority to rebut Contention 9.[443] The Oglala Sioux cites 10 C.F.R. § 51.10(b)(2) as requiring the participation of other agencies as cooperating agencies in the NEPA process.[444] As for ripeness, the Oglala Sioux argues that NEPA regulations require contentions to be pled at the earliest stages of a

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[433] *Id.* at 37.
[434] *Id.*
[435] *Id.*
[436] *Id.*
[437] Powertech Answer to Tribe at 56.
[438] *Id.* at 57.
[439] *Id.*
[440] Staff Answer to Tribe at 42.
[441] *Id.* at 43.
[442] *Id.*
[443] Tribe Reply at 47.
[444] *Id.*

proceeding, and the NRC Staff's SEIS will not be issued until the latter end of these proceedings, in violation of NEPA regulations.[445] Finally, the Oglala Sioux argues that Powertech is mistaken in its assertion that other agencies must request cooperating status from the NRC.[446] On the contrary, according to the Oglala Sioux, as lead agency the NRC must request participation at the earliest possible time in the review process.[447]

The Board agrees with Powertech and the NRC Staff that Contention 9 is inadmissible. We conclude that Contention 9 presents the same issues of prematurity found in the Tribe's Contention 1. In the context of the NEPA review process, the duty of the lead agency to consider the actions of other federal agencies involved in a licensing action, is the responsibility of the NRC and not of the applicant.[448] Accordingly, the issue raised in Contention 9 will not ripen until the NRC Staff has completed its NEPA review.[449] The Tribe, as well as the public, will be given an opportunity to comment on the NRC Staff's draft SEIS. Additionally, after the NRC Staff has issued its draft or final SEIS, the Tribe will have the opportunity to file new or amended contentions under 10 C.F.R. § 2.309(f)(2) if it believes the Staff has not properly carried out its consultation responsibility.[450] Accordingly, Contention 9 is *inadmissible.*

10. The Tribe's Contention 10

The Oglala Sioux states in Contention 10:

> The Environmental Report does not examine impacts of a direct tornado strike.[451]

The Oglala Sioux argues that CEQ guidelines require agencies in their NEPA analysis to "consider low-probability environmental impacts with catastrophic consequences, if those impacts are reasonably foreseeable."[452] The Oglala Sioux claims that tornado strikes are relatively common in the Black Hills region of South Dakota, but that Powertech has failed to consider the impact of these strikes in its Application.[453] The Oglala Sioux claims that an analysis of the impacts of a

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[445] *Id.* at 48.
[446] *Id.*
[447] *Id.*
[448] *Levy County,* CLI-10-2, 71 NRC at 34.
[449] *See, e.g., Crow Butte I,* CLI-09-12, 69 NRC at 566; *Crow Butte II,* CLI-09-9, 69 NRC at 351.
[450] *Crow Butte II,* CLI-09-9, 69 NRC at 351; Tr. at 254.
[451] Tribe Petition at 38.
[452] *Id.* (internal citations omitted).
[453] *Id.*

tornado strike must be considered by Powertech and the NRC Staff in its NEPA analysis in order to comply with federal regulations.[454]

Both Powertech and the NRC Staff oppose admission of Contention 10. First, Powertech points out that the CEQ guidelines are not binding on the NRC and that the Oglala Sioux has failed to identify any NRC regulations that would support its argument that Powertech's Application is inadequate.[455] Powertech also asserts that its Application does in fact include information on tornado strikes and concludes "that no design or operational changes would be required for an ISL facility, but that chemical storage tanks should be located far enough apart to prevent contact during a potential tornado."[456] Finally, Powertech argues that the Oglala Sioux's data regarding tornado strikes in the Black Hills area is irrelevant because the data actually refer to tornado strikes in Oklahoma.[457]

The NRC Staff argues that Contention 10 does not meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi) because Powertech's Application includes an analysis of tornado strikes and the Oglala Sioux does not challenge Powertech's analysis.[458] Further, the NRC Staff argues that Powertech is not required by law to address tornado strikes. It claims that the Oglala Sioux has not cited any NRC regulations that would require Powertech to include this type of analysis and argues that tornado strikes are not reasonably foreseeable, and therefore not required to be considered under NEPA.[459]

In its Reply, the Oglala Sioux rebuts the NRC Staff's claim that the threat of a tornado strike is "low" by stating that no fewer than nine tornadoes have struck Custer County and twenty-eight have struck Fall River County since 1950.[460] Moreover, the Oglala Sioux maintains that it did not rely on Oklahoma-based information for Contention 10, but merely cited Oklahoma tornado statistics to show that the Fansteel plant had been affected by a tornado, thereby making tornado strikes on facilities foreseeable.[461] Finally, the Oglala Sioux argues that Powertech's statement that the tornado-related information already in the Application is "good enough" provides evidence of a genuine dispute with the Application and supports admission of Contention 10.[462]

The Board determines that Contention 10 is inadmissible. Powertech has cited portions of its Application in which it discusses the possibility of a tornado strike

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[454] *Id.* at 39.
[455] Powertech Answer to Tribe at 58.
[456] *Id.*
[457] *Id.* at 59.
[458] Staff Answer to Tribe at 44.
[459] *Id.* at 44-45.
[460] Tribe Reply at 49.
[461] *Id.* at 50.
[462] *Id.*

and determined that no operational design changes would be necessary should such a strike occur.[463] The Tribe does not dispute this determination in Contention 10, stating merely that tornado strikes are reasonably foreseeable and not considered by Powertech in its Application. Because the Tribe does not challenge the analyses of tornado strikes that do appear in Powertech's Application, the Tribe does not meet the contention admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi). Accordingly, the Board *denies* admission of Contention 10.

VI. SELECTION OF HEARING PROCEDURES

A. Legal Standards

As required by 10 C.F.R. § 2.310(a), upon admission of a contention in a licensing proceeding, the Board must identify the specific hearing procedures to be used to settle the contention. NRC regulations provide for a number of different hearing procedures, two of which are relevant here.[464] First, there is Subpart G,[465] which is mandated for certain proceedings,[466] and establishes NRC "Rules for Formal Adjudications," in which parties are permitted to "propound interrogatories, take depositions, and cross-examine witnesses without leave of the Board."[467] Second, there is Subpart L[468] which provides for more "informal" proceedings in which discovery is generally prohibited (except for (1) specified mandatory disclosures under 10 C.F.R. § 2.336(f), (a), and (b); and (2) the mandatory production of the hearing file under 10 C.F.R. § 2.1203(a)).[469] Under Subpart L, the Board has the primary responsibility for questioning the witnesses at any evidentiary hearing.[470]

B. Ruling

The Board concludes that, at this juncture, the Subpart L hearing procedures

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[463] Tr. at 272.

[464] If the hearing on a contention is "expected to take no more than two (2) days to complete," 10 C.F.R. § 2.310(h)(1), the Board can impose the Subpart N procedures for "Expedited Proceedings with Oral Hearings" specified at 10 C.F.R. § 2.1400-1407. These procedures are highly truncated, but may prove appropriate for certain contentions at a later stage.

[465] 10 C.F.R. Part 2.

[466] *See, e.g., id.* § 2.310(d).

[467] *Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), LBP-06-20, 64 NRC 131, 201-02 (2006).

[468] 10 C.F.R. Part 2.

[469] *Id.* § 2.1203(d).

[470] *Id.* § 2.1207(b)(6).

will be used to adjudicate each of the contentions we have admitted. We reach this result as follows. First, we conclude that there has been no showing under 10 C.F.R. § 2.310(d) that the Subpart G procedures are *mandated* for any of the admitted contentions. Second, exercising our discretion under 10 C.F.R. § 2.310(a), we have seen no reason or need to apply the Subpart G procedures to any of the admitted contentions. We therefore rule that, for the time being, the procedures of Subpart L will be used for the adjudication of each of the admitted contentions.[471] This determination is, of course, subject to reconsideration should there be reason to do so at a later date.

VII. CONCLUSION

Based on the foregoing, it is hereby ORDERED as follows:

A. Consolidated Petitioners Susan Henderson, Dayton Hyde, David Frankel, CWA, and ARM are admitted as parties in this proceeding, and a Subpart L hearing is granted with respect to the following contentions, as limited and reworded by the Licensing Board:

> Contention D — Powertech's presentation and analysis of baseline water quality data in its Application is inadequate. Further, Powertech's analysis of aquifer confinement fails to include an analysis of how artesian and horizontal flow could impact surrounding aquifers and surface waters.
>
> Contentions E (merged with J) — The lack of adequate confinement of the host Inyan Kara aquifer makes the proposed operation inimical to public health and safety in violation of section 40.31(d). Further, Applicant's failure to describe faults and fractures between aquifers, through which the groundwater can spread uranium, thorium, radium 226 and 228, arsenic, and other heavy metals, violates section 51.45(c) and (e).
>
> Contention K — The Application is not in conformance with 10 C.F.R. § 40.9 and 10 C.F.R. § 51.45 because the Application does not provide analyses that are adequate, accurate, and complete in all material respects to demonstrate that cultural and historic resources . . . are identified and protected pursuant to section 106 of the National Historic Preservation Act. As a result, the Application fails to comply with Section 51.60 . . . .

[471] The selection of hearing procedures for contentions at the outset of a proceeding is not immutable because, *inter alia,* the availability of Subpart G procedures under 10 C.F.R. § 2.310(d) depends critically on whether the credibility of eyewitnesses is important in resolving a contention, and witnesses relevant to each contention are not identified, under 10 C.F.R. § 2.336(a)(1), until *after* contentions are admitted. *See Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), LBP-07-15, 66 NRC 261, 272 (2007); *see also* 10 C.F.R. § 2.1402(b).

B. Consolidated Petitioners Gary Heckenlaible, Lilias Jones Jarding, and Theodore Ebert are denied party status in this proceeding. Further, the Board finds inadmissible the following contentions set forth by Consolidated Petitioners: Contentions A, B, C, F G, H, and I.

C. The Oglala Sioux Tribe is admitted as a party in this proceeding, and a Subpart L hearing is granted with respect to the following contentions, as limited and reworded by the Licensing Board:

> Contention 1 — Powertech's Application is deficient because it fails to address adequately protection of historical and cultural resources.
>
> Contention 2 — Failure to include necessary information for adequate determination of baseline ground water quality.
>
> Contention 3 — Failure to include adequate hydrogeological information to demonstrate ability to contain fluid migration.
>
> Contention 4 — Inadequate analysis of Ground Water Quantity Impacts.

D. The Board finds inadmissible the following contentions set forth by the Oglala Sioux Tribe: Contentions 5, 6, 7, 8, 9, and 10.

E. Within ten (10) days of the issuance of this Order, Petitioners David Frankel and Susan Henderson must elect to participate in this proceeding as individuals or to have their interests represented by CWA or ARM.

F. The Licensing Board will hold a telephone conference with the parties in which we will discuss a schedule of further proceedings in this matter.

G. This Order is subject to appeal to the Commission in accordance with the provisions of 10 C.F.R. § 2.311. Any petitions for review meeting applicable

requirements set forth in that section must be filed within ten (10) days of service of this Memorandum and Order.

THE ATOMIC SAFETY AND
LICENSING BOARD[472]

William J. Froehlich, Chairman
ADMINISTRATIVE JUDGE

Dr. Richard F. Cole
ADMINISTRATIVE JUDGE

Dr. Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
August 5, 2010

[472] Copies of this Memorandum and Order were sent this date by the agency's E-Filing system to the counsel/representatives for (1) Powertech USA, Inc.; (2) Consolidated Petitioners; (3) the Oglala Sioux Tribe; and (4) NRC Staff.

APPENDIX A
Contention I — Basis-by-Basis Analysis

Basis	Subparts of 10 C.F.R. § 2.309(f)(1) not met	Element(s) not met
Basis 1	(v), (vi)	Failure to provide support and no genuine dispute
Basis 2	(vi)	No genuine dispute
Basis 3	(v), (vi)	Failure to provide support and no genuine dispute
Basis 4	(v), (vi)	Failure to provide support and no genuine dispute
Basis 5	(v), (vi)	Failure to provide support and no genuine dispute
Basis 6	(v)	Failure to provide support
Basis 7	(v), (vi)	Failure to provide support and no genuine dispute
Basis 8	(v), (vi)	Failure to provide support and no genuine dispute
Basis 9	(v), (vi)	Failure to provide support and no genuine dispute
Basis 10	(v)	Failure to provide support
Basis 11	(v), (vi)	Failure to provide support and no genuine dispute
Basis 12	(iv), (v), (vi)	Not shown as material, failure to provide support, and no genuine dispute
Basis 13	(v), (vi)	Failure to provide support and no genuine dispute
Basis 14	(v), (vi)	No genuine dispute and failure to provide support
Basis 15	(iii), (v), (vi)	Outside the scope of the proceeding, failure to provide support, and no genuine dispute
Basis 16	(v), (vi)	Failure to provide support and no genuine dispute
Basis 17	(v), (vi)	Failure to provide support and no genuine dispute
Basis 18	(v), (vi)	Failure to provide support and no genuine dispute

Basis	Subparts of 10 C.F.R. § 2.309(f)(1) not met	Element(s) not met
Basis 19	(v), (vi)	Failure to provide support and no genuine dispute
Basis 20	(v), (vi)	Failure to provide support and no genuine dispute
Basis 21	(iv), (v), (vi)	Not shown as material, failure to provide support, and no genuine dispute
Basis 22	(iv), (v), (vi)	Not shown as material, failure to provide support and no genuine dispute
Basis 23	(v), (vi)	Failure to provide support and no genuine dispute
Basis 24	(v), (vi)	Failure to provide support and no genuine dispute
Basis 25	(v), (vi)	Failure to provide support and no genuine dispute
Basis 26	(v), (vi)	Failure to provide support and no genuine dispute
Basis 27	(v), (vi)	Failure to provide support and no genuine dispute
Basis 28	(v), (vi)	Failure to provide support and no genuine dispute
Basis 29	(v), (vi)	Failure to provide support and no genuine dispute
Basis 30	(v), (vi)	Failure to provide support and no genuine dispute
Basis 31	(v), (vi)	Failure to provide support and no genuine dispute
Basis 32	(v), (vi)	Failure to provide support and no genuine dispute
Basis 33	(vi)	No genuine dispute
Basis 34	(vi)	No genuine dispute
Basis 35	(iv), (v), (vi)	Not shown to be material, failure to provide support, and no genuine dispute
Basis 36	(v), (vi)	Failure to provide support and no genuine dispute
Basis 37	(v), (vi)	Failure to provide support and no genuine dispute
Basis 38	(v), (vi)	Failure to provide support and no genuine dispute

Basis	Subparts of 10 C.F.R. § 2.309(f)(1) not met	Element(s) not met
Basis 39	(v), (vi)	Failure to provide support and no genuine dispute
Basis 40	(v), (vi)	Failure to provide support and no genuine dispute
Basis 41	(v), (vi)	Failure to provide support and no genuine dispute
Basis 42	(v), (vi)	Failure to provide support and no genuine dispute
Basis 43	(v), (vi)	Failure to provide support and no genuine dispute
Basis 44	(v), (vi)	Failure to provide support and no genuine dispute
Basis 45	(v), (vi)	Failure to provide support and no genuine dispute
Basis 46	(v), (vi)	Failure to provide support and no genuine dispute
Basis 47	(v), (vi)	Failure to provide support and no genuine dispute
Basis 48	(v), (vi)	Failure to provide support and no genuine dispute
Basis 49	(v)	Failure to provide support
Basis 50	(i), (iv), (v), (vi)	Not shown to be material, failure to provide support, no genuine dispute, and failure to raise an issue of law or fact
Basis 51	(v), (vi)	Failure to provide support and no genuine dispute
Basis 52	(v), (vi)	Failure to provide support and no genuine dispute
Basis 53	(v), (vi)	Failure to provide support and no genuine dispute
Basis 54	(v), (vi)	Failure to provide support and no genuine dispute
Basis 55	(v), (vi)	Failure to provide support and no genuine dispute
Basis 56	(v), (vi)	Failure to provide support and no genuine dispute
Basis 57	(v), (vi)	Failure to provide support and no genuine dispute

Basis	Subparts of 10 C.F.R. § 2.309(f)(1) not met	Element(s) not met
Basis 58	(iii), (v), (vi)	Not within the scope of the proceeding, failure to provide support, and no genuine dispute
Basis 59	(v)	Failure to provide support
Basis 60	(v), (vi)	Failure to provide support and no genuine dispute
Basis 61	(v)	Failure to provide support
Basis 62	(v)	Failure to provide support
Basis 63	(v)	Failure to provide support
Basis 64	(v)	Failure to provide support
Basis 65	(v), (vi)	Failure to provide support and no genuine dispute
Basis 66	(v)	Failure to provide support
Basis 67	(iv), (v), (vi)	Not shown to be material, failure to provide support, and no genuine dispute
Basis 68	(v), (vi)	Failure to provide support and no genuine dispute
Basis 69	(v), (vi)	Failure to provide support and no genuine dispute
Basis 70	(v), (vi)	Failure to provide support and no genuine dispute
Basis 71	(vi)	No genuine dispute
Basis 72	(iv), (v), (vi)	Not shown to be material, failure to provide support, and no genuine dispute
Basis 73	(v), (vi)	Failure to provide support and no genuine dispute
Basis 74	(v)	Fail to provide support
Basis 75	(v), (vi)	Failure to provide support and no genuine dispute
Basis 76	(v)	Failure to provide support
Basis 77	(v)	Failure to provide support
Basis 78	(v), (vi)	Failure to provide support and no genuine dispute
Basis 79	(v), (vi)	Failure to provide support and no genuine dispute
Basis 80	(v), (vi)	Failure to provide support and no genuine dispute
Basis 81	(v)	Failure to provide support

Basis	Subparts of 10 C.F.R. § 2.309(f)(1) not met	Element(s) not met
Basis 82	(v), (vi)	Failure to provide support and no genuine dispute
Basis 83	(v), (vi)	Failure to provide support and no genuine dispute
Basis 84	(v), (vi)	Failure to provide support and no genuine dispute
Basis 85	(v), (vi)	Failure to provide support and no genuine dispute
Basis 86	(v), (vi)	Failure to provide support and no genuine dispute
Basis 87	(v), (vi)	Failure to provide support and no genuine dispute
Basis 88	(iv), (v), (vi)	Not shown to be material, failure to provide support, and no genuine dispute
Basis 89	(v), (vi)	Failure to provide support and no genuine dispute
Basis 90	(v), (vi)	Failure to provide support and no genuine dispute
Basis 91	(v)	Failure to provide support
Basis 92	(iv), (v)	Not shown to be material and failure to provide support
Basis 93	(v), (vi)	Failure to provide support and no genuine dispute
Basis 94	(v), (vi)	Failure to provide support and no genuine dispute
Basis 95	(iv), (v), (vi)	Not shown to be material, failure to provide support, and no genuine dispute
Basis 96	(v), (vi)	Failure to provide support and no genuine dispute
Basis 97	(v), (vi)	Failure to provide support and no genuine dispute
Basis 98	(v), (vi)	Failure to provide support and no genuine dispute
Basis 99	(v), (vi)	Failure to provide support and no genuine dispute
Basis 100	(v), (vi)	Failure to provide support and no genuine dispute

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Richard F. Cole
Dr. Mark O. Barnett

In the Matter of **Docket No. 40-9075-MLA**
(ASLBP No. 10-898-02-MLA-BD01)

POWERTECH USA, INC.
(Dewey-Burdock In Situ Uranium Recovery Facility)

July 22, 2013

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; ADMISSIBILITY)

To be admissible, like a contention that is submitted with an initial hearing request, a post-hearing petition contention, i.e., a new or amended contention, also must satisfy the substantive contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1).

RULES OF PRACTICE: CONTENTIONS (NEPA MIGRATION TENET)

Admitted contentions challenging an applicant's Environmental Report may, in appropriate circumstances, function as challenges to similar portions of the Staff's Environmental Impact Statement. This "migration tenet" applies when "the information in the DEIS is sufficiently similar to the information in the ER." *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-11-1, 73 NRC 19, 26 (2011). In this circumstance, a party need not file

consequence, the intervenors can only file their contentions when the information appears in or is omitted from the DSEIS. It would be patently unreasonable to require an intervenor, or a potential intervenor, to divine what use the information collected by the NRC Staff will or will not serve in the DSEIS.

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; TIMELINESS)

Intervenors and potential intervenors have a period of time to file new or amended contentions in response to a DSEIS. They are not required to file their contentions on information or studies that are published in the period between the date for initial contentions and the date the DSEIS is published.

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; TIMELINESS)

Intervenors cannot be expected to raise a claim each time a document is created relating to a proceeding, especially if that document is a mere part of a larger, arguably incomplete, process. The Board does not expect intervenors to raise a concern regarding each portion of the process, but instead notes that intervenors need not file a contention until all relevant parts of a process are completed.

NEPA: ENVIRONMENTAL IMPACT STATEMENT (RECIRCULATION FOR COMMENTS)

The NRC Staff need not recirculate a supplemental NEPA document every time new information becomes available. Recirculation is required only when the information presents a "seriously different picture of the environmental impacts." *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 14 (1999).

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MEMORANDUM AND ORDER

(Ruling on Proposed Contentions Related to the Draft Supplemental Environmental Impact Statement)

I. INTRODUCTION

On August 5, 2010, the Board in the above-captioned matter ruled on two petitions to intervene and requests for hearing.[1] The Board admitted the Oglala Sioux Tribe and the then-designated Consolidated Petitioners[2] as intervenors in this proceeding challenging the application of Powertech (USA), Inc. ("Powertech" or "Applicant") to construct and operate an in-situ leach uranium recovery (ISR) facility in Custer and Fall River Counties, South Dakota.[3] The Board also admitted a total of seven contentions proposed by the Oglala Sioux Tribe and the Consolidated Intervenors.[4]

On November 15, 2012, the Nuclear Regulatory Commission Staff (NRC Staff) notified the Board of the public availability of its Draft Supplemental

[1] LBP-10-16, 72 NRC 361 (2010).

[2] Although originally called the Consolidated Petitioners, the Board now refers to Susan Henderson, Dayton Hyde, and Aligning for Responsible Mining (ARM) as the Consolidated Intervenors.

[3] LBP-10-16, 72 NRC at 380-93.

[4] *Id.* at 443-44.

Environmental Impact Statement (DSEIS) prepared pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332, and the agency's implementing regulations, 10 C.F.R. Part 51.[5] On January 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors filed proposed contentions relating to the DSEIS.[6] On March 7, 2013, NRC Staff filed its response to the proposed contentions,[7] followed on March 11, 2013, by the Powertech response.[8] On March 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors submitted replies in support of their respective motions for new contentions.[9]

In this Memorandum and Order, the Board concludes that three new contentions proposed in response to the DSEIS are admissible, seven contentions are admissible because of the migration tenet, and the balance of the proposed contentions are inadmissible.

II. BACKGROUND

The background of this case has been set forth in detail in the Board's August 5, 2010, opinion.[10] In that opinion and order, the Board first determined that the Oglala Sioux Tribe and the Consolidated Intervenors had standing to pursue their claims.[11] Additionally, the Board considered whether ten proposed contentions from the Oglala Sioux Tribe and nine proposed contentions from the Consolidated Intervenors met the contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1). In so doing, the Board admitted seven contentions, four proffered by the Oglala Sioux Tribe and three proffered by the Consolidated Intervenors.

As outlined in the Board's 2010 decision, the previously admitted contentions are as follows:

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[5] Letter to Administrative Judges Froehlich, Cole, and Barnett, from Patricia Jehle, Counsel for NRC Staff (Nov. 15, 2012) (ADAMS Accession No. ML12320A623); *see* Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, NUREG-1910 (Supp. 4, Nov. 2012) (ADAMS Accession No. ML12312A040) [hereinafter DSEIS].

[6] *See* List of Contentions of the Oglala Sioux Tribe Based on the [DSEIS] (Jan. 25, 2013) [hereinafter Oglala Sioux Tribe's Proposed Contentions]; Consolidated Intervenors' New Contentions Based on DSEIS (Jan. 25, 2013) [hereinafter Consolidated Intervenors' Proposed Contentions].

[7] NRC Staff's Answer to Contentions on [DSEIS] (Mar. 7, 2013) [hereinafter Staff's Answer].

[8] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Mar. 11, 2013) [hereinafter Powertech's Response].

[9] Consolidated Intervenors' Consolidated Reply Re: DSEIS (Mar. 25, 2013) [hereinafter Consolidated Intervenors' Reply]; Consolidated Reply of the Oglala Sioux Tribe (Mar. 25, 2013) [hereinafter Oglala Sioux Tribe's Reply].

[10] *See* LBP-10-16, 72 NRC at 376-80.

[11] *Id.* at 380-93.

For the Oglala Sioux Tribe —

Contention 1 — Powertech's Application is deficient because it fails to address adequately protection of historical and cultural resources.

Contention 2 — Failure to include necessary information for adequate determination of baseline ground water quality.

Contention 3 — Failure to include adequate hydrogeological information to demonstrate ability to contain fluid migration.

Contention 4 — Inadequate analysis of Ground Water Quantity Impacts.

For the Consolidated Intervenors —

Contention D — Powertech's presentation and analysis of baseline water quality data in its Application is inadequate. Further, Powertech's analysis of aquifer confinement fails to include an analysis of how artesian and horizontal flow could impact surrounding aquifers and surface waters.

Contention E (merged with J) — The lack of adequate confinement of the host Inyan Kara aquifer makes the proposed operation inimical to public health and safety in violation of section 40.31(d). Further, Applicant's failure to describe faults and fractures between aquifers, through which the groundwater can spread uranium, thorium, radium 226 and 228, arsenic, and other heavy metals, violates section 51.45(c) and (e).

Contention K — The Application is not in conformance with 10 C.F.R. § 40.9 and 10 C.F.R. § 51.45 because the Application does not provide analyses that are adequate, accurate, and complete in all material respects to demonstrate that cultural and historic resources . . . are identified and protected pursuant to section 106 of the National Historic Preservation Act. As a result, the Application fails to comply with Section 51.60 . . . .[12]

In its analysis of contention admissibility, the Board denied several of the Oglala Sioux Tribe's and the Consolidated Intervenors' proposed contentions for their failure to meet the contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1).[13] The Board rejected some of the proposed contentions because they

[12] *Id.* at 443-44.

[13] *See infra* Part III.A for the contention admissibility standards.

were unsupported,[14] some because they were premature,[15] and some because they were outside the scope of the licensing proceeding.[16]

After the issuance of the Board's 2010 decision, which neither Powertech nor the NRC Staff challenged on appeal before the Commission, the Board held two prehearing conference calls with the parties regarding administrative matters.[17] As stated, the DSEIS was made public in November 2012 and both the Oglala Sioux Tribe and Consolidated Intervenors filed proposed new contentions based on the DSEIS. Now before the Board is the question of the admissibility of these parties' proposed new contentions.

III. LEGAL STANDARDS

A. New and Amended Contentions

To be admissible, like a contention that is submitted with an initial hearing request, a post-hearing petition contention, i.e., a new or amended contention, also must satisfy the substantive contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1), namely the contention must

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
>
> (ii) Provide a brief explanation of the basis for the contention;
>
> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
>
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
>
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue . . . ; [and]
>
> (vi) . . . [P]rovide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.[18]

Additionally, pursuant to 10 C.F.R. § 2.309(c),[19] if a party submits a proposed

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[14] *See* LBP-10-16, 72 NRC at 395-400, 407-08, 409-11, 440-42 (rejecting Consolidated Intervenors' Contentions A, B, C, F, H, and Oglala Sioux Tribe's Contention 10).

[15] *See id.* at 419-22, 438-40 (discussing Oglala Sioux Tribe's Contention 9 and a portion of Oglala Sioux Tribe's Contention 1).

[16] *See id.* at 408-09, 428-38 (discussing Consolidated Intervenors' Contention G and Oglala Sioux Tribe's Contentions 5, 6, 7, and 8).

[17] *See* Tr. at 410, 478.

[18] 10 C.F.R. § 2.309(f)(1).

[19] The current section 2.309(c) was established by 77 Fed. Reg. 46,561 and officially enacted on September 4, 2012. *See* 77 Fed. Reg. 46,561 (Aug. 3, 2012). In its October 16, 2012, *(Continued)*

contention after the initial filing deadline announced in the applicable *Federal Register* notice for submitting a hearing petition, it "will not be entertained absent a determination by the presiding officer that a participant has demonstrated good cause."[20] Good cause exists when "(i) [t]he information upon which the filing is based was not previously available; (ii) [t]he information upon which the filing is based is materially different from information previously available; and (iii) [t]he filing has been submitted in a timely fashion based on the availability of the subsequent information."[21]

If the reason a motion to admit a new or amended contention was filed after the deadline does not relate to the substance of the filing itself, the standard contained in 10 C.F.R. § 2.307 applies in determining whether the motion can be considered timely.[22] Section 2.307 provides that a filing deadline "may be extended or shortened either by the Commission or the presiding officer for good cause, or by stipulation approved by the Commission or the presiding officer."[23] Good cause in this section is not explicitly defined.[24] Therefore, to be admissible at this stage, a contention must not only meet contention admissibility standards of section 2.309(f)(1), but must also satisfy the timeliness requirements of section 2.309(c) or section 2.307.

B. Migration Tenet

Admitted contentions challenging an applicant's Environmental Report (ER) may, in appropriate circumstances, function as challenges to similar portions of the Staff's Environmental Impact Statement.[25] This "migration tenet" applies when "the information in the DEIS is sufficiently similar to the information in the

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Order memorializing the Board's October 4, 2012, conference call with the parties and establishing a supplemental initial scheduling order, the Board determined that the standards set forth in the now-current section 2.309(c) would apply to new or amended contentions submitted after the applicable deadline although this section's current language was not in place at the start of this proceeding. Licensing Board Order (Second Prehearing Conference Call Summary and Supplemental Initial Scheduling Order) at 4 (Oct. 16, 2012).

[20] 10 C.F.R. § 2.309(c).

[21] *Id.*

[22] 10 C.F.R. § 2.309(c)(2).

[23] 10 C.F.R. § 2.307(a).

[24] 77 Fed. Reg. at 46,571 ("The NRC notes that 'good cause' in § 2.307 does not share the same definition that is used for 'good cause' in final § 2.309(c) . . . ."). The *Federal Register* notice provides health issues or an unexpected weather event as examples of reasons that might constitute good cause for purposes of requesting an extension under section 2.307. *Id.*

[25] *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-23, 54 NRC 163, 172 n.3 (2001); *see Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 84 (1998).

ER."[26] In this circumstance, a party need not file a new or amended contention; the previously admitted contention will simply be viewed as applying to the relevant portion of the DEIS.[27] This is appropriate, however, only so long as the DEIS analysis or discussion at issue is essentially *in para materia* with the ER analysis or discussion that is the focus of the contention. Alternatively, an intervenor attempting to litigate an issue based on expressed concerns about the DEIS may need to amend the admitted contention or submit a new contention if the information in the DEIS is sufficiently different from the information in the ER that supported the original contention's admission.[28] A new or amended contention related to portions of the DEIS that differ from the ER must be timely filed under section 2.309(c), and meet the contention admissibility standards of section 2.309(f)(1) to be admitted.[29]

C. Contentions of Omission or Adequacy

There are two primary types of contentions — contentions of omission and contentions of adequacy.[30] "A contention of omission is one that alleges an application suffers from an improper omission, whereas a contention of adequacy raises a specific substantive challenge to how particular information or issues have been discussed in the application."[31] Based on its language, a contention can

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[26] *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-11-1, 73 NRC 19, 26 (2011); *accord Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-08-2, 67 NRC 54, 63-64 (2008).

[27] *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-12-23, 76 NRC 445, 470-71 (2012) ("The Board may construe an admitted contention contesting the ER as a challenge to a subsequently issued DEIS or FEIS without the necessity for Intervenors to file a new or amended contention.").

[28] *Vogtle ESP Site,* LBP-08-2, 67 NRC at 63-64.

[29] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 382 (2002) ("While a contention contesting an applicant's environmental report generally may be viewed as a challenge to the NRC Staff's subsequent draft EIS, *new* claims must be raised in a new or amended contention."); *Vogtle ESP Site,* LBP-08-2, 67 NRC at 64 (explaining that, if the portion of the ER that an admitted contention challenges is not sufficiently similar to the DEIS, "an intervenor attempting to litigate an issue based on expressed concerns about the DEIS may need to amend the admitted contention or, if the information in the DEIS is sufficiently different from that in the ER that supported the contention's admission, submit a new contention").

[30] *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 6 and 7), LBP-11-6, 73 NRC 149, 200 (2011); *see, e.g., Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-11-11, 74 NRC 427, 442 (2011) (discussing whether a contention should properly be characterized as a contention of omission or a contention of adequacy and the ramifications of such a designation with regard to contention admissibility).

[31] *Turkey Point,* LBP-11-6, 73 NRC at 200 n.53; *accord McGuire/Catawba,* CLI-02-28, 56 NRC at 382-83 ("There is, in short, a difference between contentions that merely allege an 'omission' of

(Continued)

be characterized as a contention of omission, a contention of adequacy, or both.[32] An admitted contention of omission may be rendered moot by subsequent license-related documents filed by the NRC Staff that address the alleged omission.[33] In this circumstance, the party that filed the original contention of omission must file a new or amended contention if it wishes to challenge the adequacy or sufficiency of the NRC Staff's treatment of the relevant issue.[34] That new or amended contention must be timely filed and must meet the contention admissibility standards. Generalized grievances with the sufficiency of the NRC Staff's analysis or the adequacy of included documentation are not enough to raise a proposed contention to the level of admissibility.[35]

IV. DISCUSSION

A. The Oglala Sioux Tribe's Proposed Contention 1: "Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources, and Failure to Involve or Consult the Oglala Sioux Tribe as Required by Federal Law"

1. Positions of the Parties

The Oglala Sioux Tribe's proposed new Contention 1 is nearly identical to Consolidated Intervenors' proposed new Contention A. Contention 1 alleges the DSEIS's "failure to meet applicable legal requirements regarding protection of historical and cultural resources, and failure to involve or consult the Oglala Sioux Tribe as required by federal law."[36] The Oglala Sioux Tribe contends that the proposed site has not yet been adequately surveyed with regard to its potential cultural resources, which renders premature the DSEIS's determination

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information and those that challenge substantively and specifically how particular information has been discussed in a license application.").

[32] *McGuire/Catawba,* CLI-02-28, 56 NRC at 383 n.45; *see Turkey Point,* LBP-11-6, 73 NRC at 199-200.

[33] *McGuire/Catawba,* CLI-02-28, 56 NRC at 383 ("Where a contention alleges the omission of particular information or an issue from an application, and the information is later supplied by the applicant or considered by the Staff in a draft EIS, the contention is moot.").

[34] *Id.*

[35] *PPL Susquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 23 (2007); *Shieldalloy Metallurgical Corp.* (Amendment Request for Decommissioning of the Newfield, New Jersey Facility), LBP-07-5, 65 NRC 341, 352 (2007) ("'[T]he contention rule is strict by design' and does 'not permit the filing of a vague, unparticularized contention, unsupported by affidavit, expert, or documentary support.'" (footnotes omitted)); *PPL Susquehanna, LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-4, 65 NRC 281, 303-04 (2007).

[36] Oglala Sioux Tribe's Proposed Contentions at 4.

that impacts resulting from the site's operation are "small."[37] Additionally, the Oglala Sioux Tribe contends that the NRC Staff has not engaged in the required National Historic Preservation Act (NHPA) consultation process with a number of tribes that have an interest in the proposed site.[38]

In response to this contention, the NRC Staff asserts that the contention is not based on any new or materially different information and is, therefore, not timely pursuant to 10 C.F.R. § 2.309(c). Additionally, the NRC Staff notes that the results of an additional survey being conducted by the NRC Staff may be challenged at a later date, if appropriate.[39]

Powertech takes the same stance as the NRC Staff in its response to the Oglala Sioux Tribe's contention. It argues that the contention does not satisfy the requirements for new and amended contentions set out in secction 2.309(c).[40] It maintains that, to be considered timely, the contention should have been filed well before January 25, 2013.[41] Additionally, Powertech contends that the portion of the Oglala Sioux Tribe's contention alleging inadequate surveying related to cultural resources is not yet ripe because the section 106 process, which provides a federally recognized Indian tribe with a procedural right to protect its interest in cultural resources,[42] is not yet complete.[43] When that process is complete, Powertech states that the Oglala Sioux Tribe may submit a new or amended contention, if appropriate.[44]

In its reply to the NRC Staff's and Powertech's arguments, the Oglala Sioux Tribe points out that the Board, in its August 5, 2010, Order that granted the petitions to intervene and requests for hearing, found that the Oglala Sioux Tribe's NHPA and NEPA contentions were not ripe because it is the duty of the Staff, not the applicant, to consult with interested tribes concerning the proposed site.[45] The Oglala Sioux Tribe now argues that the contention is admissible because the DSEIS, which should reflect those Staff obligations, has been issued.[46]

The Oglala Sioux Tribe also rejects the arguments that it should wait to file contentions related to cultural surveys until future planned surveys have been completed. It asserts that the Staff "should not be able to pre-emptively 'moot'

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[37] *Id.* at 5.
[38] *Id.* at 5-6.
[39] Staff's Answer at 12-13.
[40] Powertech's Response at 12.
[41] *Id.* at 12.
[42] National Historic Preservation Act § 106, 16 U.S.C. § 470.
[43] Powertech's Response at 13.
[44] *Id.*
[45] Oglala Sioux Tribe's Reply at 4.
[46] *Id.*

an otherwise admissible contention based on actions that it has not yet taken."[47] Further, it contends that the Staff's arguments inappropriately focus on the merits of the Oglala Sioux Tribe's contentions, rather than their admissibility pursuant to the standards set forth in 10 C.F.R. § 2.309(f)(1).[48]

Finally, the Oglala Sioux Tribe argues that its Contention 1 should not be found inadmissible for failing to be based on new or materially different information.[49] The Oglala Sioux Tribe declares that it raised an admissible contention in relation to the application that is similar to the one it currently proposes and no subsequent research or information has been released that alters the basis of its previously admitted contention.[50] Accordingly, the Oglala Sioux Tribe reasons that "the same sufficient information that formed the basis of Powertech's inadequate application materials now forms an inadequate basis for the NRC Staff's analysis in the DSEIS."[51]

2. Board Ruling

The Oglala Sioux Tribe's proposed Contention 1 is nearly identical to Consolidated Intervenors' proposed Contention A. Both allege a failure to protect historical and cultural resources and a failure to involve or consult with affected Native American tribes.

These concerns (protection of cultural and historical resources and adequacy of consultation) have already been addressed in this proceeding. The Board in LBP-10-16 admitted two contentions that question the adequacy of the protection of historic and cultural resources.[52] With the issuance of the DSEIS, these concerns about the protection of historic and cultural resources have "migrated" because this previously admitted issue now appears in relation to information in the DSEIS. Strictly speaking, the Oglala Sioux Tribe and the Consolidated Intervenors did not need to refile their respective Contentions 1 and A after the issuance of the DSEIS because no further information addressing the expressed concerns of the Oglala Sioux Tribe or the Consolidated Intervenors about the adequacy of the existing cultural resources surveys has been generated by the Staff. Moreover, in accordance with its authority to consolidate party contentions and presentations under section 2.316, the Board will combine these four iterations (two filed in response to the ER and two filed in response to the DSEIS) into a single contention

[47] *Id.* at 5.
[48] *Id.* at 6.
[49] *Id.*
[50] *Id.*
[51] *Id.*
[52] LBP-10-16, 72 NRC at 419-22.

addressing the protection of historic and cultural resources, the terms of which are set forth in Appendix A to this opinion.[53]

The issue of the adequacy of the consultation process with interested tribes was also addressed in 2010 in LBP-10-16. There the Board held that "the issue of the alleged failure to consult with the Tribe . . . is material and within the scope of this proceeding."[54] The Board further found that this portion of the contention was not yet ripe and directed the Oglala Sioux Tribe "to wait until the [DSEIS] is issued by the NRC Staff to interpose the issue of the adequacy of the agency's consultation efforts."[55] Both the Oglala Sioux Tribe and Consolidated Intervenors have now timely raised the lingering issue of the adequacy of the NRC's consultation process with the Native American tribes.

Although the NRC Staff notes that it "continues to work to resolve any remaining disagreements among the consulting parties," such actions do not moot this contention. It is apparent that, notwithstanding the issuance of the DSEIS, this process has not been completed and the intervenors are alleging only that the scope of the ongoing consultation process is inadequate.

As a consequence, the prior ripeness issue is no longer a bar to this contention. Additionally, the contention is supported by a showing sufficient to meet the contention admissibility requirements of section 2.309(f)(1), and it is timely in accord with section 2.309(c)(2). Consequently, pursuant to the Board's authority under section 2.316, the consultation portions of Contention 1 and Contention A questioning the adequacy of the Staff's consultation efforts with Native American tribes as required by 36 C.F.R. § 800.2(c)(2)(ii)(D) are admitted and are consolidated into one issue statement, Contention 1B.

B. The Oglala Sioux Tribe's Proposed Contention 2: "The DSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality"

1. Positions of the Parties

The Oglala Sioux Tribe's proposed Contention 2 is identical to Consolidated Intervenors' proposed Contention B — "The DSEIS fails to include neces-

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[53] A contention alleging a failure to protect historic and cultural resources was similarly admitted in the pending Crow Butte Marsland and Crow Butte Renewal proceedings. *See Crow Butte Resources, Inc.* (Marsland Expansion Area), LBP-13-6, 77 NRC 253, 286-88 (2013); *Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), LBP-08-24, 68 NRC 691, 719-24 (2008).

[54] LBP-10-16, 72 NRC at 422; *see Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), CLI-09-9, 69 NRC 331, 350-51 (2009) (discussing the Board's ruling that tribal consultation is within the scope of the proceeding).

[55] LBP-10-16, 72 NRC at 422.

sary information for adequate determination of baseline groundwater quality."[56] Like Consolidated Intervenors, the Oglala Sioux Tribe contends that the DSEIS contravenes NRC regulations, NUREG provisions providing Staff regulatory guidance, and NEPA because "it fails to provide an adequate baseline groundwater characterization or demonstrate that ground water samples were collected in a scientifically defensible manner, using proper sample methodologies."[57] The Oglala Sioux Tribe argues that baseline conditions are mandated by statute and regulation, and that the DSEIS is inadequate because it fails to include a proper analysis of the required baselines with respect to groundwater quality.[58]

To support this contention, the Oglala Sioux Tribe relies on the supplemental declaration of Dr. Robert Moran as well as a memorandum from Dr. Richard Abitz.[59] It also points to specific areas in the DSEIS that it claims "admit[ ] that substantial water quality data collection will only be conducted after license issuance."[60] In addition, the Oglala Sioux Tribe asserts these portions of the DSEIS lack a scientific basis because they "rely on Powertech's decision to only consider, review, and proposed [sic] monitoring (both quality and quantity) for groundwater wells within 2 [kilometer] of the proposed mining area."[61] The 2-kilometer figure, the Oglala Sioux Tribe notes, is from NRC Regulatory Guide 4.14, which "was drafted over 30 years ago, in 1980 — and not updated since."[62] Because of its age and because it "applies exclusively to conventional uranium mills — and contains no analysis or guidance premised upon any review of in-situ leach uranium mining activities," the Oglala Sioux Tribe argues that the DSEIS's reliance on Regulatory Guide 4.14 is "not justified."[63] For these reasons, the Oglala Sioux Tribe argues that Contention 2 should be admitted.

In responding to these assertions by the Oglala Sioux Tribe, the NRC Staff makes essentially the same arguments for inadmissibility as it does in response to the arguments of Consolidated Intervenors in support of their Contention B. Specifically, the NRC Staff declares that the contention is not based on any new or materially different information and, therefore, does not conform to the standards for new or amended contentions set forth in 10 C.F.R. § 2.309(c).[64] It also argues

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[56] Oglala Sioux Tribe's Proposed Contentions at 10.

[57] *Id.* at 10-11.

[58] *Id.* at 12 (citing *Half Moon Bay Fisherman's Marketing Association v. Carlucci,* 857 F.2d 505, 510 (9th Cir. 1988)) ("The establishment of baseline conditions of the affected environment is a fundamental requirement of the NEPA process.").

[59] *Id.* at 11, 13.

[60] *Id.* at 14 (citing DSEIS at 2-16, 7-8, 7-14, 7-17).

[61] *Id.* at 14 (citing DSEIS at xxxiv, xxxv, 3-6, 4-54, 4-57, 4-59, 5-31, 7-4).

[62] *Id.* at 14.

[63] *Id.*

[64] Staff's Answer at 15.

that, like the Consolidated Intervenors, the Oglala Sioux Tribe misinterprets the DSEIS, citing portions of it to support its contention that relate to the operation of the Project, not establishing baseline conditions.[65] Further, the NRC Staff seeks to discredit the Oglala Sioux Tribe's reliance on Dr. Abitz's memorandum, asserting that the memorandum was created in 2009 and does not reference the DSEIS.[66]

Powertech, too, argues that the Oglala Sioux Tribe's Contention 2 is inadmissible for failure to meet the standards for new or amended contentions.[67] To support this, Powertech asserts the Oglala Sioux Tribe's allegations were addressed in documents that have been available for some time, namely the first draft license issued in July 2012 and responses to RAIs submitted in June 2011.[68] Therefore, Powertech argues, the Board should reject Contention 2 for failing to meet the timeliness standards set forth in 10 C.F.R. § 2.309(c).

In its reply to the NRC Staff's and Powertech's arguments, the Oglala Sioux Tribe argues that the lack of any baseline groundwater analysis is an omission that has been "carried forward from the application to the DSEIS."[69] The Oglala Sioux Tribe notes that the Board stated in its August 5, 2010, Order that violations of NEPA were not ripe as alleged against an applicant because it is the agency, not an applicant, that bears the burden of satisfying the statute.[70] Thus, the Oglala Sioux Tribe contends, "this NEPA contention ripened with the publication of the DSEIS and the newly available contention is timely filed."[71]

The Oglala Sioux Tribe refutes the argument that it did not properly identify the portions of the DSEIS that it claims are not in accordance with NEPA and NRC regulations by pointing to its filing and the affidavit of Dr. Moran.[72] In these documents, the Oglala Sioux Tribe contends, specific references are made to the problematic sections of the DSEIS.[73] Moreover, the Oglala Sioux Tribe argues that the nature of contentions of omission makes it "irrational for the Oglala Sioux Tribe to be able to identify those portions of the DSEIS where missing necessary data is *not* presented."[74]

Finally, the Oglala Sioux Tribe challenges the argument that it should have raised its NEPA contentions when Powertech's response to NRC Staff's RAIs were submitted. The Oglala Sioux Tribe contends that it "had already successfully

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[65] *Id.* at 17.
[66] *Id.* at 16.
[67] Powertech's Response at 12.
[68] *Id.* at 13.
[69] Oglala Sioux Tribe's Reply at 8.
[70] *Id.*
[71] *Id.*
[72] *Id.*
[73] *Id.*
[74] *Id.*

alleged that the Powertech information was inadequate" and that the additional information in the RAI responses is not a basis to find NEPA contentions based on the DSEIS inadmissible.[75] The Oglala Sioux Tribe again highlights the Board's assertion that NEPA challenges are only appropriate as applied to NRC Staff-prepared documents, and it is the agency that is responsible for complying with NEPA, not the Applicant.[76] For these reasons, the Oglala Sioux Tribe maintains that Contention 2 is admissible.

2. Board Ruling

The Oglala Sioux Tribe's proposed Contention 2 and Consolidated Intervenors' proposed Contention B are identical to the Oglala Sioux Tribe's original Contention 2 and the first part of the Consolidated Intervenors' original Contention D.[77] The Oglala Sioux Tribe argues that the analysis of the baseline conditions is mandated by statute and regulation, and that the DSEIS is inadequate because, like the ER, it fails to include a proper analysis of the required baselines with respect to groundwater quality.[78] As such, the migration tenet applies and this issue migrates from a criticism of the Powertech ER to a criticism of the NRC Staff's DSEIS. Moreover, as it did with Oglala Sioux Tribe Contention 1 and Consolidated Intervenors' Contention A, in accordance with section 2.316 the Board will combine the multiple iterations of these issue statements into a single contention as set forth in Appendix A to this decision.[79]

In making this ruling, the Board notes that it finds unpersuasive Powertech's assertion that this contention is untimely because there were document exchanges between Powertech and the NRC Staff that took place after the application was filed and before the DEIS issued. The key issue in Contention 2 is the adequacy of the DSEIS. Until the DSEIS is issued, the intervenors have no way to know in what form or manner, if any, the NRC Staff will use information from an RAI response. As a consequence, the intervenors could only file their contentions when the information appeared (or was omitted) from the DSEIS.[80] It would be patently unreasonable to require an intervenor, or a potential intervenor, to divine what use the information collected by the NRC Staff will or will not serve in the

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[75] *Id.* at 9.

[76] *Id.*

[77] LBP-10-16, 72 NRC at 400-01.

[78] Oglala Sioux Tribe's Proposed Contentions at 10.

[79] A similar contention was admitted in the Strata Energy proceeding. *See Strata Energy, Inc.* (Ross In Situ Recovery Uranium Project), LBP-12-3, 75 NRC 164, 192-95 (2012).

[80] *See Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-82-79, 16 NRC 1116, 1118 (1982) (noting that a late-filed contention lacks good cause when it is based on a draft EIS that contains no new information relevant to the contention).

DSEIS. Therefore, the Board finds that this contention is timely and the issues therein have migrated from their original form challenging the ER to their current form challenging the DSEIS.

C. The Oglala Sioux Tribe's Proposed Contention 3: "The DSEIS Fails to Include an Adequate Hydrogeological Analysis to Assess Potential Impacts to Groundwater"

1. Positions of the Parties

The Oglala Sioux Tribe's proposed Contention 3 is identical to the Consolidated Intervenors' proposed Contention C — "the DSEIS fails to include an adequate hydrogeological analysis to assess potential impacts to groundwater."[81] As a result of this failure, the Oglala Sioux Tribe argues that the DSEIS also does not "provide sufficient information to establish potential effects of the project on the adjacent surface and ground-water resources."[82] These inadequacies, the Oglala Sioux Tribe contends, are in contravention of 10 C.F.R. §§ 51.10, 51.70, 51.71 and NEPA.[83]

To support this contention, which is labeled a "contention of omission," the Oglala Sioux Tribe cites to Dr. Moran's supplemental declaration and points to NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications."[84] The Oglala Sioux Tribe argues that NUREG-1569 specifies the level of detail required of an application with respect to the hydrogeology of the site at issue.[85] According to the Oglala Sioux Tribe, "At minimum, the applicant must develop an acceptable conceptual model of site hydrology adequately supported by the data presented in the site characterization,"[86] which, the Oglala Sioux Tribe asserts, is not done in the DSEIS. The specific omissions the Oglala Sioux Tribe highlights include "unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones and failure to account for natural and man-made hydraulic conductivity through natural breccias pipe formations."[87] The Oglala Sioux Tribe maintains that the DSEIS's assurances of future tests and

[81] Oglala Sioux Tribe's Proposed Contentions at 15.
[82] *Id.*
[83] *Id.*
[84] *See id.*
[85] *Id.*
[86] *Id.* at 16 (citing Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG-1569, at 2-21 to 2-22 (June 2003) (ADAMS Accession No. ML031550302)).
[87] *Id.* at 16.

actions do not make up for these deficiencies.[88] Accordingly, the Oglala Sioux Tribe argues that this contention should be admitted.

In response to this contention, the NRC Staff states that the Oglala Sioux Tribe did not demonstrate that its contention is based on new or materially different information from that in the application.[89] Therefore, the NRC Staff contends that the contention is inadmissible because it does not meet the standards for new and amended contentions contained in 10 C.F.R. § 2.309(c).[90]

Additionally, the NRC Staff states that Dr. Moran's declaration, on which the Oglala Sioux Tribe relies to support its contention, overlooks relevant information that was contained in the Applicant's 2011 RAI response.[91] As a result, the NRC Staff maintains that, to the extent the Oglala Sioux Tribe disputed the information contained in the RAI response, the Oglala Sioux Tribe was obligated to file a new contention within 30 days of the issuance of that document in order to be timely under the regulations.[92] The NRC Staff also points to areas of the DSEIS that purportedly contain the information Dr. Moran claims is missing.[93] Therefore, the NRC Staff states that "the Board must reject the Intervenors' arguments because they fail to specifically address the DSEIS."[94]

The NRC Staff also states that the future actions upon which the DSEIS purports to rely in its analysis of impacts constitute a license condition, the use of which is permitted in NEPA documents.[95] The NRC Staff argues further that the regulatory arguments the Oglala Sioux Tribe makes are inapplicable because the regulations the Oglala Sioux Tribe cite pertain to safety criteria dealing with conventional milling, not to ISR activities, and are relevant to the applicant, not to the agency's NEPA review.[96]

Powertech echoes the NRC Staff's response and argues that the contention does not meet the standards for new and amended contentions.[97] The information addressed in the Oglala Sioux Tribe's Contention 3, Powertech contends, has been previously presented in the RAI responses, the first draft license, and other

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[88] *Id.* at 17.

[89] Staff's Answer at 18.

[90] *Id.*

[91] *Id.*

[92] *Id.* at 18-19.

[93] *Id.* at 19-20 (citing DSEIS §§ 3.4.3, 4.5.2.1.1.2.2, 3.5.3.1, 3.5.3.2, 3.5.3.3).

[94] *Id.* at 20 (citing *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station), CLI-01-24, 54 NRC 349, 358 (2001)).

[95] *Id.* (citing *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 17 (1999)).

[96] *Id.*

[97] Powertech's Response at 12.

areas of the record previously made available.[98] Accordingly, the contention is not based on new or materially different information and cannot be admitted.[99]

In support of its contention and in reply to the NRC Staff and Powertech, the Oglala Sioux Tribe argues that this is a "contention of omission" that "carries forward a contention admitted previously based on the same inadequate information contained in the application materials."[100] The Oglala Sioux Tribe also takes issue with the NRC Staff's argument that portions of the DSEIS contain the information the Oglala Sioux Tribe contends is missing.[101] In contrast to the case law the NRC Staff cites, the Oglala Sioux Tribe asserts that it has "include[d] citations and discussion of the applicable statutory and regulatory requirements, followed by detailed discussion of the aspects of the DSEIS . . . where the NRC Staff's NEPA document fails to meet those standards."[102] The detail and specific references to the DSEIS, the Oglala Sioux Tribe claims, distinguish it from the case law the NRC Staff cites to refute the contention.[103] Moreover, the Oglala Sioux Tribe asserts that the NRC Staff's "merits arguments is irrelevant and inappropriate at the admissibility stage."[104] Therefore, the Oglala Sioux Tribe maintains that Contention 3 is admissible.

2. Board Ruling

The Oglala Sioux Tribe's Contention 3 and Consolidated Intervenors' Contention C are the same as Oglala Sioux Tribe's original Contention 3 and portions of Consolidated Intervenors' original Contentions D and E.[105] As such, the migration tenet applies and this issue migrates from a criticism of the Powertech ER to a criticism of the NRC Staff's DSEIS.

The Consolidated Intervenors and the Oglala Sioux Tribe are presenting the same concern that was raised regarding Powertech's ER (and that was admitted as a contention) as a concern regarding the DSEIS. Thus it is not necessary to raise a new or amended contention because, as the Board has explained, if the "new" contention raises the same concern admitted at the initial stage of the proceeding, its admissibility need not be relitigated and redecided at each step

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[98] *Id.* at 13.
[99] *Id.*
[100] Oglala Sioux Tribe's Reply at 10.
[101] *Id.*
[102] *Id.* at 11.
[103] *Id.*
[104] *Id.*
[105] *See* LBP-10-16, 72 NRC at 400-07, 424-26. Consolidated Intervenors' Contention E, as originally admitted, was a combination of Consolidated Intervenors' original Contentions E and J. LBP-10-16, 72 NRC at 404-07.

of the NEPA process, namely the issuances of the DSEIS and the FSEIS. This contention is not new; it is merely the continuation of an admitted concern with the application. To the extent the intervenors have concerns with the adequacy of the hydrogeologic analysis necessary to show adequate confinement and potential impacts to groundwater, this is already an issue set for hearing. Once again, in accord with section 2.316, for efficiency and to clarify this concern, the Board combines the multiple iterations of this contention into a single contention for hearing as set forth in Appendix A to this order.[106]

D. The Oglala Sioux Tribe's Proposed Contention 4: "The DSEIS Fails to Adequately Analyze Ground Water Quantity Impacts"

1. Positions of the Parties

The Oglala Sioux Tribe's Contention 4 — "the DSEIS fails to adequately analyze ground water quantity impacts" — is identical to Consolidated Intervenors' Contention D.[107] The Oglala Sioux Tribe asserts that "the DSEIS presents conflicting information on ground water consumption such that the water consumption impacts of the project cannot be accurately evaluated."[108] This, the Oglala Sioux Tribe argues, violates 10 C.F.R. §§ 51.10, 51.70, 57.71, and NEPA.[109]

To support this contention of omission, the Oglala Sioux Tribe cites to Dr. Moran's declaration.[110] Like Consolidated Intervenors, the Oglala Sioux Tribe highlights Dr. Moran's concerns that "no data are provided for the volumes of ground water required for [nonconstruction] phases, throughout the life of the project," and that the DSEIS fails to explore the impacts on local and regional water sources of the projected large-volume water use at the site.[111]

The NRC Staff argues that the contention does not meet the standards for new and amended contentions because the Oglala Sioux Tribe has not demonstrated in what ways the contention is based on new or materially different information.[112] It also argues that the Oglala Sioux Tribe's claims "rest on an incomplete or inaccurate reading of the DSEIS" in part because Dr. Moran cites portions of the DSEIS that do not support his opinions and simultaneously overlooks portions of

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[106] A similar contention was admitted in the Strata Energy proceeding. *Strata Energy, Inc.*, LBP-12-3, 75 NRC at 195-98.

[107] Oglala Sioux Tribe's Proposed Contentions at 18.

[108] *Id.*

[109] *Id.*

[110] *Id.*

[111] *Id.* at 19-20.

[112] *Id.* at 21.

the DSEIS that contain the information the Oglala Sioux Tribe alleges has been omitted.[113]

Similarly, Powertech challenges the admission of Contention 4 by asserting that the Oglala Sioux Tribe has not demonstrated that its contention is based on any new or materially different information in contravention of 10 C.F.R. § 2.309(c).[114] The information on which this contention is based, it asserts, has been previously made available and the time to challenge such information has since lapsed.[115] Accordingly, both the NRC Staff and Applicant argue that the Oglala Sioux Tribe's Contention 4 is inadmissible.

In reply, the Oglala Sioux Tribe argues that its contention specifically points to areas in the DSEIS that it claims violate NEPA and applicable regulations.[116] Additionally, the Oglala Sioux Tribe maintains that, because the NEPA issues "are based, in part, on the same information upon which the Oglala Sioux Tribe's contention regarding inadequate ground water quantity analysis in the application," it should be admitted.[117] It argues that "NRC Staff cannot release NEPA documents that blindly parallel the applicant's information and omissions and then be allowed to argue the applicant's omissions prevent filing of new contentions concerning the newly released NEPA [document]."[118]

Finally, the Oglala Sioux Tribe argues that the NRC Staff's assertion that the contention is inadmissible because certain portions of the DSEIS address the omissions the Oglala Sioux Tribe contends exist amounts to an argument on the merits and is, therefore, irrelevant at the contention admissibility stage.[119] Therefore, the Oglala Sioux Tribe maintains that Contention 4 is admissible.

2. Board Ruling

As noted, the Oglala Sioux Tribe's Contention 4 — "the DSEIS fails to adequately analyze ground water quantity impacts" — is identical to Consolidated Intervenors' Contention D. Both of these contentions raise the same concern as the Oglala Sioux Tribe's previously admitted Contention 4 and parts of Consolidated Intervenors' Contention F, which was not admitted.[120]

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[113] *Id.* at 21-22.

[114] Powertech's Response at 12.

[115] *Id.* at 13.

[116] Oglala Sioux Tribe's Reply at 11.

[117] *Id.*

[118] *Id.* at 12 (citing *Citizens Against Burlington, Inc. v. Busey,* 938 F.2d 190, 209 (D.C. Cir. 1991)).

[119] *Id.* at 12.

[120] *See* LBP-10-16, 72 NRC at 400-07, 426-28. The Board rejected Consolidated Intervenors' original Contention F on a similar topic. *See id.* at 407-08.

The Oglala Sioux Tribe and the Consolidated Intervenors now present the same concern that was raised by the Oglala Sioux Tribe in the initial pleading stage (and that was admitted as a contention) as a concern regarding the DSEIS. It is, therefore, unnecessary to raise a new or amended contention. To the extent the "new" contention raises the same concern admitted at the initial stage of the proceeding, it need not be repeated to remain a viable contention. Accordingly, the Oglala Sioux Tribe's concerns with the adequacy of the analysis of groundwater quantity impacts is already an issue set for hearing. As before, pursuant to section 2.316 for efficiency and to clarify this scope of this concern, the Board combines the multiple iterations of this contention into a single contention for hearing as set forth in Appendix A to this decision.

The NRC Staff argues that, although Powertech's supplemental information might have served as the basis for a late-filed contention, the contention would have been due within 30 days after the information became available.[121] The Staff, relying on *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1049 (1983) and *Power Authority of the State of New York* (James A. FitzPatrick Nuclear Power Plant; Indian Point, Unit 3), LBP-01-4, 53 NRC 121, 127 (2001), further contends that the Intervenors were not permitted to wait until that information reappeared in the DSEIS to file their contentions. The Board does not agree. The scheduling order,[122] as well as Commission regulation,[123] provide that intervenors and potential intervenors have a period of time to file new or amended contentions in response to a DSEIS. They are not required to file their contentions on information or studies that are published in the period between the date for initial contentions and the date the DSEIS is published. The gravamen of this contention is not that an RAI response contained new information, but that the DSEIS ignored it. There is no way for an intervenor to know what use, if any, the NRC Staff may make of a response to a request for additional information (RAI) or a study in the DSEIS. An intervenor is entitled to see the DSEIS and then file any new or amended contentions based on what appears in the DSEIS. To do otherwise would place an impossible burden on the intervenor and an unreasonable requirement that the intervenor divine what use, if any, the NRC Staff will make of that information in the DSEIS. As noted above, the Board combines the multiple iterations of this contention into a single contention for hearing as set forth in Appendix A to this decision.

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[121] Staff's Answer at 21.

[122] *See* Order (Second Prehearing Conference Call Summary and Supplemental Initial Scheduling Order) (Oct. 16, 2012) at 3-4 (unpublished); Order (Supplementing Initial Scheduling Order) (Nov. 2, 2010) at 5-6 (unpublished).

[123] 10 C.F.R. § 2.309(b).

F. The Oglala Sioux Tribe's Proposed Contention 6: "Failure to Adequately Describe or Analyze Proposed Mitigation Measures"

1. Positions of the Parties

In Contention 6, the Oglala Sioux Tribe claims that the DSEIS violates 10 C.F.R. §§ 51.10, 51.70, and 51.71, and the National Environmental Policy Act and implementing regulations and "fail[s] to adequately describe or analyze proposed mitigation measures."[159] The Oglala Sioux Tribe states that NEPA requires the DSEIS to include and discuss means to mitigate adverse environmental impacts.[160] The DSEIS, it claims, does not contain the requisite detailed analysis regarding mitigation measures, nor does it evaluate the effectiveness of any of the mitigation measures it proposes.[161] For example, the Oglala Sioux Tribe states that the DSEIS relies on Powertech's "commitment to restore groundwater back to its pre-mining condition," without evaluating how effective the restoration efforts will be.[162] The Oglala Sioux Tribe then cites data supporting the fact that restoring groundwater to premining conditions is difficult and seldom entirely successful.[163] The DSEIS, the Oglala Sioux Tribe contends, fails to address "the ISL industry's historic and ongoing inability to control aquifer contamination and restore groundwater" and does not detail how the Applicant will succeed in its own efforts to protect and restore groundwater.[164]

In response to this contention, the NRC Staff argues that Powertech's plans with respect to groundwater restoration were discussed in the ER and Technical Report.[165] Therefore, the NRC Staff maintains, the Oglala Sioux Tribe should have raised this argument at a previous time.[166] The NRC Staff recognizes that the Oglala Sioux Tribe raised this argument as part of admitted Contention 2, but notes that it does "not point to any information in the DSEIS concerning mitigation measures that is significantly different from the information in the [ER]."[167]

Additionally, the NRC Staff argues that the Oglala Sioux Tribe failed to

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[159] Oglala Sioux Tribe's Proposed Contentions at 23.

[160] *Id.* at 23 (citing 40 C.F.R. § 1502.16(h)).

[161] *Id.* at 23-24. The Oglala Sioux Tribe states that "[t]he current mitigation measure discussion consists of a multi-page chart which simply lists a series of proposed mitigation measure[s], with no elaboration or other analysis of how the operator expects to accomplish these items, or the expected effectiveness/limitations of each measure, as required by NEPA." *Id.* at 27.

[162] *Id.* at 24.

[163] *Id.*

[164] *Id.*

[165] Staff's Answer at 25.

[166] *Id.* at 25.

[167] *Id.*

address a portion of the Generic Environmental Impact Statement (GEIS) that concerns the effectiveness of ISR projects in restoring groundwater to baseline conditions.[168] GEIS § 2.11.5, the NRC Staff argues, provides the data the Oglala Sioux Tribe contends are omitted.[169] Moreover, the NRC Staff asserts that the Oglala Sioux Tribe "misidentifies the proposed mitigation measure at issue"[170] as "restoration to baseline conditions," when in fact all that is required is "groundwater restoration."[171]

Finally, the NRC Staff states that, in accordance with Commission precedent, the DSEIS need not contain more information on mitigation measures than it already contains, specifically with regard to the description of the mitigation measures on which the NRC relies and the explanation of the limiting effect of the mitigation measures on environmental impacts.[172]

Powertech responds to Contention 6 by arguing that it is not based on any new or materially different information in contravention of 10 C.F.R. § 2.309(c)(1)(ii).[173] Additionally, Powertech argues that the DSEIS accounts for mitigation measures in a way that is "consistent with standard NRC practice across the board and does not result in the need for a re-evaluation of the mitigation measures and re-issuance of the DSEIS."[174] Powertech further contends that the Oglala Sioux Tribe's arguments should be construed as an "impermissible collateral attack on NRC regulations" because NUREG-1910 and several other documents "demonstrate that the [Oglala Sioux] Tribe's statements regarding ISR groundwater restoration are erroneous" because groundwater need not be restored to baseline levels.[175]

In reply, the Oglala Sioux Tribe argues that the NRC Staff's and Powertech's responses are merits arguments that are inappropriate at the contention admissibility stage.[176] Additionally, the Oglala Sioux Tribe disputes that its contention is not based on new or materially different information, asserting that "the DSEIS proposes several mitigation measures that were listed in the DSEIS as newly proposed by NRC Staff to mitigate ground water impacts."[177] The Oglala Sioux

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[168] *Id.*

[169] *Id.*

[170] *Id.* at 26.

[171] *Id.*

[172] *Id.* (citing *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, NM 87313), CLI-06-29, 64 NRC 417, 427 (2006)).

[173] Powertech's Response at 16. Applicant specifically argues that "[t]he Tribe's Contention is nothing more than an allegation that the DSEIS is deficient without any attempt to distinguish any information as new or materially/significantly different." *Id.*

[174] *Id.* at 16.

[175] *Id.* at 17.

[176] Oglala Sioux Tribe's Reply at 15.

[177] *Id.* (citing DSEIS at 6-13 to 6-14).

Tribe asserts that its contention is based on this new information, and, therefore, should be admitted.[178]

2. Board Ruling

The NRC Staff and Powertech raise four principal objections to this contention. They argue that (1) the Oglala Sioux Tribe failed to identify anything new and materially different in the DSEIS; (2) the Oglala Sioux Tribe did not identify or challenge relevant sections of the GEIS; (3) the Oglala Sioux Tribe misidentified the proposed mitigation measure standard at issue; and (4) the mitigation measures listed in the DSEIS are adequate.

The first objection — that the Oglala Sioux Tribe has not identified anything new and materially different in the DSEIS — is factually incorrect. The DSEIS explicitly states, "Based on the potential impacts identified in Chapter 4 of this draft SEIS, the NRC staff ha[s] identified additional potential mitigation measures for the proposed Dewey-Burdock ISR Project. These mitigation measures are summarized in Section 6.3."[179] In particular, "[t]he NRC staff ha[s] reviewed the mitigation measures the applicant proposed and ha[s] identified additional mitigation measures that could potentially reduce impacts (Table 6.3-1)."[180] Table 6.3-1 is a multipage table that lists additional mitigation measures. It contains the new and significant information that makes any part of this contention based on those additional mitigation measures timely under 10 C.F.R. § 2.309(c).

The second objection raised by the NRC Staff and Powertech is that the contention does not cite relevant sections of the GEIS that demonstrate the alleged omission and inadequacies. This objection is unsupported. First, the GEIS section referenced by the NRC Staff in its response — Section 2.11.5 "Aquifer Restoration" — is merely a recitation of historical aquifer restoration results; it is not a discussion of mitigation plans (the subject of the contention). Second, it is not clear NRC Staff relied upon this section of the GEIS when preparing the DSEIS, as it was not incorporated by reference or mentioned in any other manner. By contrast, the DSEIS explicitly incorporates by reference other sections of the GEIS — for example, the DSEIS explains that "NRC determinations of potential environmental impacts and the discussion of which GEIS impact conclusions were incorporated by reference are discussed in SEIS Chapter 4."[181]

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[178] *Id.*

[179] DSEIS at 6-1 (emphasis added).

[180] *Id.* at 6-12.

[181] *Id.* at 1-5. "The doctrine of *expressio unis est exclusio alterius* 'instructs that where a law expressly describes a particular situation to which it shall apply, what was omitted or excluded was intended to be omitted or excluded.'" *Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, *(Continued)*

The third objection raised by the NRC Staff and Powertech is that the contention misidentifies the proposed groundwater mitigation standard, namely whether groundwater must be restored to baseline conditions. On this objection, the NRC Staff and Powertech are correct. As noted in the DSEIS, Powertech will "be required to restore groundwater parameters affected by ISR operations to levels that are protective of human health and safety,"[182] though not necessarily to background levels if, for example, alternate concentration limits are identified as protective of human health.[183] In Contention 6, the Oglala Sioux Tribe correctly noted the "protective of human health and safety" standard, but incorrectly conflated it with requiring the aquifers to be restored to background conditions.

In Contention 6, the Oglala Sioux Tribe cites groundwater restoration as *one example* of an inadequate mitigation measure. However, the Oglala Sioux Tribe contends that "this lack of analysis of proposed mitigation measures is expansive, and not limited to ground water mitigation."[184] Specifically, in Contention 6 the Oglala Sioux Tribe contends "[t]he current mitigation measure discussion consists of a multipage chart which simply lists a series of proposed mitigation measure [sic], with no elaboration or other analysis of how the operator expects to accomplish these items, or the expected effectiveness/limitations of each measure, as required by NEPA."[185]

The fourth objection by the NRC Staff and Powertech — that the mitigation measures in the DSEIS are satisfactory — is essentially a merits challenge. Both the NRC Staff and Powertech cite case law that states that "[t]he DSEIS need not contain 'a complete mitigation plan' or 'a detailed explanation of specific [mitigation] measures which will be employed.'"[186] However, the Oglala Sioux Tribe also cites to case law stating that "[a] reasonably complete discussion of possible mitigation measures" should be included in the DSEIS rather than "broad generalizations and vague references to mitigation measures."[187] Thus, the Oglala Sioux Tribe has demonstrated that a genuine dispute exists with respect to material issues of law and fact, a standard that must be met for purposes of contention admissibility.[188]

Additionally, this contention meets the other contention admissibility standards because the Oglala Sioux Tribe has provided a specific statement of the issue, has

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Nebraska), LBP-08-24, 68 NRC 691, 759 (2008) (citing *Reyes-Gaona v. North Carolina Growers Association,* 250 F.3d 851, 865 (4th Cir. 2001)).

[182] DSEIS at 2-69.

[183] *Id.* at 4-64.

[184] Oglala Sioux Tribe's Proposed Contentions at 26-27.

[185] *Id.* at 27.

[186] Staff's Answer at 26; Powertech's Response at 16.

[187] Oglala Sioux Tribe's Proposed Contentions at 24.

[188] 10 C.F.R. § 2.309(f)(1)(vi).

briefly explained the basis of the contention, has demonstrated that the issue is within the scope of this proceeding, has shown that the issue is material, and has proffered a concise statement of the facts supporting the contention.[189] Further, as noted, this contention is timely pursuant to the good cause standards set forth in section 2.309(c) for the admission of new and amended contentions. Accordingly, whether or not the list of mitigation measures in the DSEIS is satisfactory is a valid basis for a contention.[190] Therefore, the Board admits the Oglala Sioux Tribe's Contention 6.

G. The Oglala Sioux Tribe's Proposed Contention 7: "The DSEIS Fails to Include a Reviewable Plan for Disposal of 11e.(2) Byproduct Material"

1. Positions of the Parties

In Contention 7, the Oglala Sioux Tribe alleges that "the DSEIS Fails to Include a Reviewable Plan for Disposal of 11e.(2) Byproduct Material."[191] The Oglala Sioux Tribe notes that the DSEIS "indicates that Powertech may or may not use the White Mesa Uranium Mill in Utah, or some other unidentified facility, for disposal of the 11e.(2) byproduct generated at the proposed ISL Facility."[192] Thus, the Oglala Sioux Tribe argues that the DSEIS lacks "a meaningful review of impacts" in violation of NEPA and 10 C.F.R. §§ 51.10, 51.70, 51.71, which require the DSEIS to analyze impacts associated with permanent waste disposal.[193] The Oglala Sioux Tribe asserts that the discussion in the DSEIS of the permanent waste disposal plan and its impacts is deficient in several respects. First, the Oglala Sioux Tribe alleges that the DSEIS does not establish that the NRC Staff has fully evaluated the permanent waste disposal plan and its impacts. Second, the Oglala Sioux Tribe alleges that the DSEIS does not provide the public, intervenors, and other entities with sufficient information regarding the permanent waste disposal plan and its impacts to enable such interested parties to analyze fully the impacts associated with the application.[194] Additionally, the Oglala Sioux Tribe asserts that "the policies set forth by NEPA prevent the NRC [S]taff from segmenting the disposal issues from the inquiry into whether applicant will be allowed to create

[189] *Id.* § 2.309(f)(1)(i)-(v).

[190] *See* 10 C.F.R. § 51.103(a)(4) (requiring the record of decision to summarize any license conditions and monitoring programs adopted in connection with mitigation measures).

[191] Oglala Sioux Tribe's Proposed Contentions at 27.

[192] *Id.*

[193] *Id.*

[194] *Id.* at 28.

11e.(2) Byproduct material in the first instance."[195] Finally, the Oglala Sioux Tribe contends that the DSEIS's failure to analyze a disposal facility results in its failure to examine all the impacts of the proposal as required by NEPA.[196] For all these reasons the Oglala Sioux Tribe asserts this contention should be admitted.

In response, the NRC Staff notes that the draft licenses issued to Powertech contain a license condition requiring Powertech to have a disposal plan in place before operation begins.[197] The NRC Staff also states that it has "considered impacts related to the disposal of byproduct material," and that these considerations appear in the DSEIS and the GEIS.[198] The Staff argues that because the Oglala Sioux Tribe does not take issue with these specific sections of the DSEIS and GEIS, its contention is inadmissible.[199]

Furthermore, the NRC Staff states that the contention must be rejected because it is not based on new or materially different information and, therefore, is untimely.[200] Specifically, NRC Staff asserts that the Oglala Sioux Tribe is making the same arguments it made with respect to the ER.[201] Finally, the NRC Staff argues that Contention 7 "lacks a legal basis" because the standards the Oglala Sioux Tribe cites to support its contention do not apply to ISL facilities.[202]

Powertech, too, argues that the Board should reject Contention 7 because it is not based on any new or materially different information.[203] Specifically, Powertech points to the license condition in its application and First Draft License prohibiting Powertech from operating its facility until a waste disposal plan is in place.[204] Powertech also argues that Contention 7 should have been raised in response to the information contained in the First Draft License, which was issued on July 31, 2012.[205]

The Oglala Sioux Tribe claims in its reply that the Board should reject the NRC Staff's and Powertech's arguments because the Board, in ruling on its intervention petition, found that a similar contention proposed by the Oglala Sioux Tribe that challenged the application was not ripe. According to the Oglala Sioux Tribe,

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[195] *Id.* at 28-29 (citing *Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 NRC 1, 13 (2008)).

[196] *Id.* at 29.

[197] *Id.* at 27.

[198] Staff's Answer at 26-27 (citing DSEIS §§ 1.4.4, 1.4.5, 4.14, 4.3.1.1.2, 4.3.1.2.2; GEIS §§ 4.2.12, 4.2.12.2, 4.4.12.4).

[199] *Id.* at 27 (citing *Millstone,* CLI-01-24, 54 NRC at 358); *see id.* at 29.

[200] *Id.* at 27; *see* 10 C.F.R. § 2.309(c).

[201] Staff's Answer at 27.

[202] *Id.* at 27-28 (citing LBP-10-16, 72 NRC at 434).

[203] Powertech's Response at 18.

[204] *Id.*

[205] *Id.* at 18-19.

the Board explained there that only the NRC Staff is bound by NEPA, not the Applicant, and, therefore, the Oglala Sioux Tribe could refile its contention if the DSEIS did not contain an analysis of waste disposal that the Oglala Sioux Tribe found adequate.[206] Now, the Oglala Sioux Tribe argues, "the binding requirements of NEPA are squarely at issue as a result of the publication of the DSEIS," and, therefore, the contention is timely and admissible.

The Oglala Sioux Tribe further asserts that, contrary to the NRC Staff's argument, it did set forth legal bases for its contention by citing 10 C.F.R. §§ 51.10, 51.70, and 51.71 as well as 40 C.F.R. Part 40, Appendix A, CEQ regulations, and various case law.[207] Finally, the Oglala Sioux Tribe asserts that the NRC Staff's argument that its analysis is adequate under NEPA should fail because it is a merits argument that is not appropriately made at the contention admissibility stage.[208]

2. Board Ruling

This contention mirrors the Oglala Sioux Tribe's original Contention 7, which this Board found inadmissible in LBP-10-16.[209] In that Order, although the Board agreed with the Oglala Sioux Tribe that the disposal issue should be addressed more fully than it was in the application before a license is issued to Powertech, the Board nevertheless rejected the contention on ripeness grounds.[210] In proposing the contention once again in response to the DSEIS, the Oglala Sioux Tribe states that it is a contention of omission.[211] As discussed earlier, a contention of omission is mooted if the relevant document contains the allegedly omitted information.[212] The NRC Staff correctly notes that it addresses impacts related to disposal of byproduct material in the DSEIS.[213] The Staff also addresses these impacts in the GEIS, specifically in sections 4.2.12, 4.2.12.2, and 4.4.12.4. In addition, the draft licenses the NRC Staff has issued to Powertech include a license condition requiring that Powertech establish a disposal plan for byproduct material before beginning operations.[214] Therefore, this contention of omission is moot. Moreover, because the Oglala Sioux Tribe neither substantively disputes

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[206] Oglala Sioux Tribe's Reply at 16.

[207] *Id.*

[208] *Id.*

[209] LBP-10-16, 72 NRC at 432-35.

[210] *Id.* at 434.

[211] Oglala Sioux Tribe's Proposed Contentions at 28.

[212] *McGuire/Catawba,* CLI-02-28, 56 NRC at 383.

[213] *See* DSEIS §§ 1.4.4, 1.4.5, 4.14, 4.3.1.1.2, 4.3.1.2.2.

[214] *See* Draft License SUA-1600 for Powertech (USA), Inc. (July 31, 2012) at 5, 12 (ADAMS Accession No. ML12207A480) (License Conditions 9.9 and 12.6).

the analysis of impacts related to disposal of byproduct material in relevant sections of the DSEIS and the GEIS, nor addresses the license condition related to disposal of byproduct material, the Board rejects this contention as failing to comply with the admissibility dictates of 10 C.F.R. § 2.309(f)(1)(vi).[215]

H. The Oglala Sioux Tribe's Proposed Contention 8: "Requiring the Tribe to Formulate Contentions Before a Final EIS Is Released and Failing to Follow Scoping Process Violates NEPA"

1. Positions of the Parties

The Oglala Sioux Tribe alleges that Applicant "requir[ed] the tribe to formulate contentions before a final EIS [was] released and fail[ed] to follow [the] scoping process" in violation of NEPA, specifically NEPA's public participation and informed decisionmaking mandates.[216] The Oglala Sioux Tribe contends that it has been denied the benefit of a final NEPA analysis because it was required to submit contentions prior to the culmination of the NEPA process.[217] This, the Oglala Sioux Tribe contends, wastes both its and the NRC Staff's resources.[218]

Additionally, the Oglala Sioux Tribe asserts that "the DSEIS was issued without the benefit of a required scoping process."[219] It claims that, pursuant to implementing regulations, certain procedures must be conducted with regard to defining the scope of the EIS in order to satisfy NEPA requirements.[220] The Oglala Sioux Tribe asserts that Powertech did not employ the mandated procedures and, thus, the Oglala Sioux Tribe was denied the opportunity, among other things, "to provide input to help define the proposed action . . . and to ensure that other environmental review and consultation requirements related to the proposed action [were] prepared concurrently and integrated with the DSEIS."[221] In connection with this, the Oglala Sioux Tribe argues that the NRC Staff failed to prepare a summary of determinations and conclusions and provide it to scoping participants as required by regulation.[222]

In response, the NRC Staff notes that the Board previously rejected this contention in ruling on the Oglala Sioux Tribe's initial hearing petition.[223] Ad-

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[215] *See Millstone,* CLI-01-24, 54 NRC at 358.
[216] Oglala Sioux Tribe's Proposed Contentions at 30.
[217] *Id.* at 31.
[218] *Id.*
[219] *Id.* at 32.
[220] *Id.*
[221] *Id.* at 32-33.
[222] *Id.* at 33 (citing 10 C.F.R. § 51.29(b)).
[223] Staff's Answer at 29.

ditionally, NRC Staff argues that the Oglala Sioux Tribe "incorrectly states that it is the Staff who is requiring the Tribe to submit contentions on the DSEIS," when this is an obligation imposed by the regulations.[224] Because "regulations are not subject to collateral attack in NRC hearings," the NRC Staff asserts the contention must be rejected.[225] Moreover, the NRC Staff argues that the Oglala Sioux Tribe will not be denied the benefit of a final NEPA analysis because the Final Supplemental Environmental Impact Statement (FSEIS) is currently being prepared and will be provided to the Oglala Sioux Tribe upon completion.[226] At that point, the Oglala Sioux Tribe may submit additional contentions challenging the FSEIS if appropriate.[227]

With regard to the Oglala Sioux Tribe's scoping arguments, the NRC Staff asserts that the regulation on which the Oglala Sioux Tribe relies to support its arguments does not apply to a supplemental EIS, but only to an initial EIS.[228] Accordingly, the NRC Staff asserts that the Oglala Sioux Tribe's Contention 8 is inadmissible because it is outside the scope of the proceeding.[229]

Powertech, too, argues that Contention 8 is inadmissible. First, Powertech argues that the Oglala Sioux Tribe's contention does not have a legal basis because NRC regulations do not require contentions to be filed in relation to a DSEIS and the Oglala Sioux Tribe could have waited for the issuance of the FSEIS before filing new or amended contentions.[230] Additionally, Powertech argues that this contention "effectively offers a collateral attack on NRC regulations associated with administrative hearings," which is impermissible.[231]

With regard to the Oglala Sioux Tribe's scoping arguments, Powertech notes that the regulations require scoping for initial EISs, not SEISs,[232] and that the DSEIS in this case states that the "GEIS scoping process [is] sufficient for the purposes of defining the scope of this SEIS."[233] Powertech additionally points out that the NRC Staff "participated in three public scoping meetings . . . and eight public meetings to solicit comments on the draft GEIS," and received public comments on the GEIS.[234]

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[224] *Id.*
[225] *Id.* at 29-30 (citing 10 C.F.R. § 2.335(a)).
[226] *Id.* at 30.
[227] *Id.*
[228] *Id.*
[229] *Id.* (citing 10 C.F.R. § 2.309(f)(1)(iii)).
[230] Powertech's Response at 19.
[231] *Id.* at 19.
[232] *Id.* at 20 (citing 10 C.F.R. §§ 51.26(d), 51.92(d)).
[233] *Id.*
[234] *Id.*

In reply, the Oglala Sioux Tribe takes issue with both the NRC Staff's and Powertech's assertions that the Oglala Sioux Tribe will be able to propose contentions related to the FSEIS, stating that both parties have "repeated[ly] and vociferous[ly]" opposed each contention the Oglala Sioux Tribe has proposed.[235] Additionally, the Oglala Sioux Tribe relies on the Board's assertion in its August 5, 2010, ruling on its hearing petition, which stated that the Oglala Sioux Tribe would have the opportunity to file new or amended contentions in response to the draft or final SEIS.[236]

With regard to scoping, the Oglala Sioux Tribe states that "a close read of 10 C.F.R. [§§] 51.92(d) demonstrates that it does not support NRC Staff's and Powertech's position."[237] The regulation, the Oglala Sioux Tribe explains, is meant to guide NRC Staff's supplemental analysis of EISs.[238] The Oglala Sioux Tribe asserts that the different interpretations of this regulation as it pertains to the NRC Staff's NEPA review warrants a resolution and thus supports the admission of this dispute as framing a legal contention.[239]

2. Board Ruling

Contention 8 is similar to the Oglala Sioux Tribe's original Contention 8 proposed in relation to the application — "[r]equiring the [Oglala Sioux] Tribe to formulate contentions before an EIS is released violates NEPA."[240] The Board determined that the previously proposed Contention 8 was inadmissible in part because it could be properly characterized as "an impermissible attack on NRC regulations, in contravention of 10 C.F.R. § 2.335."[241] Further, the Board disagreed with the Oglala Sioux Tribe that the NRC's procedures concerning NEPA-related contentions violated the public participation and informed decisionmaking mandates of NEPA.[242] The Board rejects the portions of proposed Contention 8 that are identical to original Contention 8 for the same reasons.

Additionally, the Board rejects the remaining portion of Contention 8 that alleges that improper scoping was conducted. The Board finds that this contention fails to meet the contention admissibility standards because the Oglala Sioux Tribe did not demonstrate that a "genuine dispute exists with the applicant/licensee on

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[235] Oglala Sioux Tribe's Reply at 17.

[236] *Id.* (citing LBP-10-16, 42 NRC at 440).

[237] *Id.*

[238] *Id.* at 17-18 ("The regulation speaks in terms of applicability to a site-specific 'action' and contains no reference to generic environmental impact statements.").

[239] *Id.* at 18.

[240] LBP-10-16, 72 NRC at 436.

[241] *Id.* at 437.

[242] *Id.* at 438.

a material issue of law or fact."[243] Specifically, as Powertech points out, 10 C.F.R. § 51.26(d) provides that when a supplement to an EIS is prepared, "NRC staff need not conduct a scoping process."[244] Because the NRC Staff was not required by regulation to engage in the scoping process for the DSEIS, the Oglala Sioux Tribe's contention lacks a legal basis. The Oglala Sioux Tribe will not be denied the benefit of a full NEPA analysis because the NRC Staff is preparing an FSEIS, and the Oglala Sioux Tribe will have an opportunity to submit contentions based on the FSEIS if appropriate.[245] The Board concludes the NRC Staff was not required by regulation to engage in the scoping process for the SEIS, and therefore the Oglala Sioux Tribe's contention lacks a legal basis. The NRC Staff prepared the DSEIS in compliance with 10 C.F.R. § 51.92, "Supplement to the Final Environmental Impact Statement." Under this regulation, "a scoping process need not be used" for a supplemental EIS.[246]

Further, the NRC Staff states that it participated in three public scoping meetings (one in Casper, Wyoming) and eight public meetings to solicit comments on the draft GEIS, including one in Spearfish, South Dakota, which is within the region identified in the GEIS as being home to the proposed Dewey-Burdock project. The NRC Staff states it received and considered hundreds of public comments on the GEIS. The scoping process for the GEIS, which is applicable to Powertech and the Dewey-Burdock project as noted in the DSEIS,[247] satisfies the very scoping requirement about which the Oglala Sioux Tribe complains was disregarded. For this and the above-mentioned reasons, Contention 8 is inadmissible.

I. The Oglala Sioux Tribe's Proposed Contention 9: "The DSEIS Fails to Consider Connected Actions"

1. Positions of the Parties

The Oglala Sioux Tribe's Contention 9 asserts that "the DSEIS fails to consider connected actions" in contravention of 10 C.F.R. §§ 51.10, 51.70, 51.71, and NEPA.[248] Specifically, it contends that the NRC has failed to engage other federal agencies that are considering Powertech's proposal and, therefore, "has failed to comply with the 'action-forcing' mandate and purpose of NEPA."[249] By way of

[243] 10 C.F.R. § 2.309(f)(1)(vi).
[244] *Id.* § 51.26(d); *see also* Applicant's Response at 20.
[245] *Id.* § 2.309(f)(2).
[246] *Id.* § 51.92(d).
[247] DSEIS at 1-5.
[248] Oglala Sioux Tribe's Proposed Contentions at 33.
[249] *Id.*

O. Consolidated Intervenors' Proposed DSEIS Contention A: "Failure to Meet Applicable Legal Requirements Regarding Protection of Cultural Resources, and Failure to Involve or Consult All Interested Tribes as Required by Federal Law"

1. Positions of the Parties

In proposed DSEIS Contention A, Consolidated Intervenors complain of the DSEIS's "failure to meet applicable legal requirements regarding protection of cultural resources, and failure to involve or consult all interested tribes as required by federal law."[451] Consolidated Intervenors argue that the DSEIS "lacks an adequate description of either the affected environment or the impacts of the project on archaeological, historical, and traditional cultural resources" in contravention of requirements contained in NEPA, the National Historic Preservation Act (NHPA), and the provisions of 40 C.F.R. Part 51.[452] Specifically, Consolidated Intervenors allege that, because no subsurface testing was conducted, many cultural resources have not been located so as to be properly evaluated.[453] Therefore, they maintain that the DSEIS's classification of impacts as "small" is premature.[454] Furthermore, they contend that certain tribes were not consulted in connection with the proposed Dewey-Burdock Project ISL uranium mine, which violates the NHPA's requirement that all interested tribes be contacted with regard to projects such as the one at issue.[455]

In response, the NRC Staff argues that the contention is inadmissible because it was filed after the initial hearing petition deadline and does not meet the good cause standards of section 2.309(c). Specifically, the NRC Staff argues that Consolidated Intervenors "do not point to any new and materially different information in the DSEIS as support for their contentions."[456] The NRC Staff argues that the DSEIS's analysis is based on survey results that were submitted with Powertech's application and, therefore, the information is not new.[457] However, the NRC Staff notes that, as explained in the DSEIS, the Staff is conducting a field survey of the site to gather additional information on historic properties.[458] Once this is complete and the DSEIS has been properly supplemented and circulated for comment, the NRC Staff suggests that Consolidated Intervenors may file a

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[451] Consolidated Intervenors' Proposed Contentions at 2.
[452] *Id.* at 2.
[453] *Id.* at 2-3.
[454] *Id.* at 3.
[455] *Id.* at 6-7.
[456] Staff's Answer at 12.
[457] *Id.* at 13.
[458] *Id.*

contention if they dispute the analysis contained therein.[459] Therefore, though not currently timely pursuant to the standards set out in 10 C.F.R. § 2.309(c), the NRC Staff concedes that a similar contention could meet the timeliness standards at a later date.

Additionally, with regard to the portion of the contention alleging that certain tribes have not been adequately consulted, the NRC Staff notes that, beginning in 2010, letters have been sent to tribes inviting them to be involved in the Dewey-Burdock Project consultation process.[460] These letters are public and, therefore, the Staff contends, could have been the basis of a contention at a previous time, but the time to file such a challenge has since expired.[461] Accordingly, the NRC Staff argues, there is no new or materially different information related to this portion of Consolidated Intervenors' contention that would make it timely under the regulations.

Powertech's response to Consolidated Intervenors' DSEIS Contention A echoes the response of the NRC Staff. First, Powertech asserts that the portion of DSEIS Contention A regarding the survey of cultural resources is not yet ripe for review because the NHPA § 106 process is not yet complete and will be finally resolved either as part of the NEPA process in the FSEIS or as an independent Memorandum of Agreement.[462]

Additionally, Powertech argues that the portion of DSEIS Contention A alleging that certain tribes have not been consulted does not meet the late-filed contention requirements because the list of Tribes to be consulted has been available since August 2012.[463] Therefore, the contention should have been filed prior to January 2013 to be deemed "timely" in accordance 10 C.F.R. § 2.307.[464]

In reply, Consolidated Intervenors support the timeliness of this contention by asserting it was filed on the deadline for filing challenges to the DSEIS set forth in the Board's scheduling order.[465] Consolidated Intervenors reason that, because their new proposed contentions, including Contention A, were filed before the applicable deadline, the timeliness standards established in the regulations should not preclude their admission — "Because of the exception for the DSEIS contentions in the Scheduling Orders, the usual rules concerning

[459] *Id.*
[460] *Id.*
[461] *Id.*
[462] Powertech's Response at 8.
[463] *Id.* at 9.
[464] *Id.*
[465] Consolidated Intervenors' Reply at 1.

'late-filed contentions' do not apply to the DSEIS contentions filed on January 25, 2013."[466]

Furthermore, Consolidated Intervenors challenge the NRC Staff's and Powertech's ripeness arguments by arguing that, once the DSEIS was issued, Consolidated Intervenors consulted their expert who compared the DSEIS to available research and ultimately opined that three interested tribes had not been consulted.[467] In their reply, however, Consolidated Intervenors do not address their ripeness arguments made with regard to the ongoing section 106 process relative to the additional Staff cultural resource surveys.

2. Board Ruling

Consolidated Intervenors' Proposed DSEIS Contention A bears a marked resemblance to portions of Consolidated Intervenors' original Contention K, which was admitted by the Board in LBP-10-16.[468] To the extent Consolidated Intervenors' proposed DSEIS Contention A challenges the sufficiency of the DSEIS as it pertains to the protection of cultural resources it falls within the migration tenet and is admissible. The NRC Staff states that it is working to facilitate a field survey of the Dewey-Burdock site to obtain additional information on historic properties[469] and, when that survey is complete, it "will supplement its analysis in the DSEIS and circulate the new analysis for public comment.[470] However, to the extent proposed Contention A challenges the ongoing consultation obligations undertaken by the NRC Staff as part of the Section 106 process, the contention is not ripe because the section 106 process is not yet complete. As such, this portion of the contention is premature and inadmissible.

As noted *supra,*[471] the Board will consolidate the portions of admitted contentions that meet the migration tenet. The protection of cultural and historical resources and adequacy of consultation with the Native American tribes are two issues that have already been admitted in this proceeding. The concerns about

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[466] *Id.* at 2. Consolidated Intervenors specifically point to the Staff's recognition of the Board's scheduling orders, wherein it explains: "[T]he Board has issued two scheduling orders addressing the timeliness of contentions. Under these orders the Intervenors must submit contentions within 30 days after relevant information becomes available. . . . The exception is the DSEIS, which the Intervenors were given until January 25, 2013, to challenge." *Id.* (citing Staff's Answer at 7). *See* Licensing Board Order (Second Prehearing Conference Call Summary and Supplemental Initial Scheduling Order) at 3 (Oct. 16, 2012) ("[T]he parties will have 45 days following the issuance of the DSEIS to file new or amended contentions.").

[467] Consolidated Intervenors' Reply at 4.

[468] LBP-10-16, 72 NRC at 416-18.

[469] Notice of Availability of DSEIS at 1-2 (Nov. 15, 2012) (ADAMS Accession No. ML12320A623).

[470] Staff's Answer at 13.

[471] *See supra* Part III.B.

the protection of historic and cultural resources and the adequacy of consultation with the Native American tribes have "migrated," as these previously admitted issues now appear in relation to the DSEIS. The Board finds that this contention is not time barred and is a migration of the concerns originally raised in response to the Powertech ER. For efficiency and to clarify this contention the Board will combine the multiple iterations of the Consolidated Intervenors' contention with the corresponding contention of the Oglala Sioux Tribe into a single contention for hearing, the terms of which are set forth in Appendix A to this decision.[472]

P. Consolidated Intervenors' Proposed DSEIS Contention B: "The DSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality"

1. Positions of the Parties

In Consolidated Intervenors' proposed DSEIS Contention B, Consolidated Intervenors argue that "the DSEIS fails to include necessary information for adequate determination of baseline ground water quality."[473] Consolidated Intervenors argue that NRC regulations and NEPA require the DSEIS to demonstrate the Staff's consideration of alternatives, methods and sources used in its analysis, and supportive resources and evidence.[474] They assert that NRC regulations and NEPA "require a description of the affected environment containing sufficient data to aid the Commission in its conduct of an independent analysis" as well as "complete baseline data on a milling site and its environs."[475] They also point to certain NUREG provisions that require proper assessment of groundwater with regard to the proposed site using certain methodologies.[476] Moreover, Consolidated Intervenors state that "[t]he establishment of the baseline conditions of the affected environment is a fundamental requirement of the NEPA process."[477] Based on the supplemental declaration of Dr. Robert E. Moran as support, Consolidated Intervenors argue that the DSEIS lacks "scientifically defendable-analysis . . . regarding potential impacts to ground water associated with the proposed Project."[478]

In response to this contention, the NRC Staff argues that Consolidated Inter-

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[472] 10 C.F.R. §§ 2.316, 2.333, 2.319.

[473] Consolidated Intervenors' Proposed Contentions 7.

[474] *Id.* at 7.

[475] *Id.* at 8.

[476] *Id.* at 8-9.

[477] *Id.* at 9.

[478] *Id.* at 10; *see id.* at 10-19 (discussing portions of Dr. Moran's declaration that detail the omitted analysis relevant to baseline water quality).

Intervenors' DSEIS Contention D cannot be admitted because it does not meet the requirements of section 2.309(c)(1). Further, as was the case with Consolidated Intervenors' original Contention F, this contention lacks adequate support to establish a genuine dispute exists on a material legal or factual issue so that its admission is precluded under section 2.309(f)(1)(vi) of the Commission's regulations.

The Board nonetheless notes that the Oglala Sioux Tribe raised a similar contention concerning the issue of groundwater quantity impacts in their original Contention 4 and the Board admitted it.[526] The Board has now admitted, via the migration tenet, the Oglala Sioux Tribe's Contention 4 filed in response to the publication of the DSEIS that raises essentially the same issue.[527] Therefore, the matter of adequate analysis of water quantity impacts under NEPA will be considered in the evidentiary hearing.

V. CONCLUSION

By this Order the Board combines and consolidates the contentions filed by the Oglala Sioux Tribe and the Consolidated Intervenors, which were admitted in response to the 2010 notice of opportunity for hearing (original contentions) and addressed in LBP-10-16, with the admitted contentions filed in 2013 in response to the publication of the DSEIS (DSEIS contentions). The following Table summarizes our contention admissibility holdings to date:

Table of Admitted Contentions
Dewey-Burdock In-Situ Recovery Facility

Topic[528]	Oglala Sioux Original-2010	Oglala Sioux DSEIS-2013	Consolidated Intervenors Original-2010	Consolidated Intervenors DSEIS-2013	Combined
Historical & cultural resources	1	1	K	A	1-A
Failure to consult	1	1	—	—	1-B
Groundwater quality	2	2	D	B	2

Continued

[526] *See id.* at 426-28.

[527] *See supra* Part IV.D.

[528] The statement of the admitted contention going forward is contained in the Board's Order, *infra* Part VI, and in Appendix A.

Topic	Oglala Sioux Original-2010	Oglala Sioux DSEIS-2013	Consolidated Intervenors Original-2010	Consolidated Intervenors DSEIS-2013	Combined
Hydrogeological information	3	3	E and J	C	3
Groundwater quantity impacts	4	4	F*	D*	4
Mitigation measures	—	6	—	—	6
Connected actions	—	9	—	—	9
Consultation on Endangered Species Act	—	14	—	—	14A
Sufficiency of impact analyses	—	14	—	—	14B

*These contentions were rejected by the Board, but are included here for completeness.

VI. BOARD ORDER

A. As this case proceeds toward evidentiary hearing, the Board, exercising its obligation to conduct a fair and impartial hearing and to manage the hearing to restrict duplicative or cumulative evidence and/or arguments,[529] has combined and reworded the previously admitted contentions with the migrated contentions as follows:

Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources.[530]

Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law.[531]

[529] 10 C.F.R. § 2.319(e).

[530] Contention 1A merges previously admitted Oglala Sioux Tribe Contention 1 (OST-1) and Consolidated Intervenors Contention K (CI-K) with migrated Oglala Sioux Tribe Contention 1 regarding the DSEIS (OST DSEIS-1) and Consolidated Intervenors Contention A regarding the DSEIS (CI DSEIS-A).

[531] Contention 1B merges previously admitted OST-1 with migrated OST DSEIS-1.

Contention 2: The DSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality.[532]

Contention 3: The DSEIS Fails to Include Adequate Hydrogeological Information to Demonstrate Ability to Contain Fluid Migration and Assess Potential Impacts to Groundwater.[533]

Contention 4: The DSEIS Fails to Adequately Analyze Ground Water Quantity Impacts.[534]

B. The Board further admits the following contentions submitted in response to the publication of the DSEIS:

Contention 6: The DSEIS Fails to Adequately Describe or Analyze Proposed Mitigation Measures.

Contention 9: The DSEIS Fails to Consider Connected Actions.

C. The Board admits the following portion of the Oglala Sioux Tribe's proposed Contention 14 in this proceeding:

Contention 14A: Whether an appropriate consultation was conducted pursuant to the Endangered Species Act and implementing regulations.

Contention 14B: Whether the DSEIS's impact analyses relevant to the greater sage grouse, the whooping crane, and the black-footed ferret are sufficient.

D. The Board finds inadmissible the following contentions proposed by the Oglala Sioux Tribe in response to the publication of the DSEIS: Contentions 5, 7, 8, 10, 11, 12, 13.

E. The Board finds inadmissible the following contention proposed by the Consolidated Intervenors in response to the publication of the DSEIS: Contention D.

F. The Board will hold a telephone conference with the parties to discuss administrative matters, including the designation under 10 C.F.R. § 2.316 of the lead intervenor that will be responsible for the litigation of each of the consolidated contentions, i.e., Contentions 1A, 1B, 2, and 3, and a schedule for further proceedings in this matter, including a site visit and a Limited Appearance session pursuant to 10 C.F.R. § 2.315(a).

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[532] Contention 2 merges previously admitted OST-2 and CI-D with migrated OST DSEIS-2 and CI DSEIS-B.

[533] Contention 3 merges previously admitted OST-3 and CI-E (as merged with CI-J), with migrated CI DSEIS-C and OST DSEIS-3.

[534] Contention 4 merges previously admitted OST-4 with migrated OST DSEIS-4.

G. No specific section of the Commission's regulations, including 10 C.F.R. § 2.311, permits appeals from an order ruling on the admission of new or amended contentions. Nonetheless, interlocutory review of decisions and actions of a presiding officer may be available pursuant to section 2.341(f)(2) of the Commission's regulations.[535]

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

William J. Froehlich, Chair
ADMINISTRATIVE JUDGE

Richard F. Cole
ADMINISTRATIVE JUDGE

Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
July 22, 2013

[535] The Board notes, however, that the Commission has issued an advanced notice of proposed rulemaking on April 5, 2013, entitled "Potential Changes to Interlocutory Appeals Process for Adjudicatory Decisions." *See* 78 Fed. Reg. 20,498 (2013).

APPENDIX A

Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources.

Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law.

Contention 2: The DSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality.

Contention 3: The DSEIS Fails to Include Adequate Hydrogeological Information to Demonstrate Ability to Contain Fluid Migration and Assess Potential Impacts to Groundwater.

Contention 4: The DSEIS Fails to Adequately Analyze Ground Water Quantity Impacts.

Contention 6: The DSEIS Fails to Adequately Describe or Analyze Proposed Mitigation Measures.

Contention 9: The DSEIS Fails to Consider Connected Actions.

Contention 14A: Whether an appropriate consultation was conducted pursuant to the Endangered Species Act and implementing regulations.

Contention 14B: Whether the DSEIS's impact analyses relevant to the greater sage grouse, the whooping crane, and the black-footed ferret are sufficient.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Richard F. Cole
Dr. Mark O. Barnett

In the Matter of **Docket No. 40-9075-MLA**
(ASLBP No. 10-898-02-MLA-BD01)

POWERTECH USA, INC.
(Dewey-Burdock In Situ Uranium Recovery Facility)

April 28, 2014

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; ADMISSIBILITY)

To be admissible, a new or amended contention must satisfy the substantive contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1).

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; ADMISSIBILITY)

A new or amended contention related to portions of the FSEIS that differ from the DSEIS must be timely filed under section 2.309(c) and must meet the contention admissibility standards of section 2.309(f)(1) to be admitted.

RULES OF PRACTICE: CONTENTIONS (FILED AFTER INITIAL DEADLINE)

If a party submits a proposed contention after the initial filing deadline announced in the applicable *Federal Register* notice for submitting a hearing

have been discussed in the application." *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 6 and 7), LBP-11-6, 73 NRC 149, 200 n.53 (2011). Based on its language, a contention can be characterized as a contention of omission, a contention of adequacy, or both.

RULES OF PRACTICE: CONTENTIONS (CONTENTION OF OMISSION)

A contention of omission which has been admitted may be rendered moot by subsequent license-related documents filed by the NRC Staff that address the alleged omission.

RULES OF PRACTICE: CONTENTIONS (CONTENTION OF ADEQUACY)

In the case of an admitted contention that challenges the adequacy of an environmental document, the inclusion of additional information in a subsequent environmental document may or may not moot the contention.

MEMORANDUM AND ORDER

(Ruling on Proposed Contentions Related to the Final Supplemental Environmental Impact Statement)

I. INTRODUCTION

This proceeding challenges the application of Powertech (USA), Inc. (Powertech) to construct and operate an in-situ leach uranium recovery (ISR) facility in Custer and Fall River Counties, South Dakota.[1] On August 5, 2010, the Board in the above-captioned matter ruled on two petitions to intervene and requests for hearing,[2] and admitted the Oglala Sioux Tribe and Consolidated Intervenors[3] as intervenors. The Board also admitted seven contentions proposed by the Oglala Sioux Tribe and the Consolidated Intervenors.[4] These contentions related to cultural resources (Consolidated Intervenors' Contention K and Oglala Sioux Tribe's Contention 1), baseline groundwater conditions (Consolidated Intervenors' Con-

[1] LBP-10-16, 72 NRC 361, 375-78 (2010).

[2] *Id.* at 375.

[3] Although originally designated Consolidated Petitioners, we now refer to Susan Henderson, Dayton Hyde, and Aligning for Responsible Mining as the Consolidated Intervenors.

[4] LBP-10-16, 72 NRC at 443-44.

tention D and Oglala Sioux Tribe's Contention 2), hydrogeology (Consolidated Intervenors' Contention E/J and Oglala Sioux Tribe's Contention 3), and groundwater consumption (Oglala Sioux Tribe's Contention 4).[5] The Board rejected contentions challenging, among other issues, Powertech's discussion of its plans for disposal of 11e(2) byproduct material and the analysis of actions connected to the Dewey-Burdock Project.[6]

On November 15, 2012, the Nuclear Regulatory Commission Staff (NRC Staff) issued its Draft Supplemental Environmental Impact Statement (DSEIS) prepared pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332, and the agency's implementing regulations, 10 C.F.R. Part 51.[7] On January 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors filed proposed contentions relating to the DSEIS.[8] The Board held that, under the migration tenet, a number of the proposed contentions in response to the DSEIS were *in para materia* with previously admitted contentions.[9] These contentions were combined and reworded by the Board and substituted for the original admitted contentions.[10] The Board also admitted three new contentions proposed in response to the DSEIS (Oglala Sioux Tribe's Contentions 6, 9, and 14).[11] The Board rejected Oglala Sioux Tribe's proposed Contentions 5, 7, 8, 10, 11, 12, and 13 and Consolidated Intervenors' proposed Contention D.[12]

On January 29, 2014, the NRC Staff issued the Final Supplemental Environmental Impact Statement (FSEIS).[13] On March 17, 2014, both the Oglala

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[5] *Id.*

[6] *Id.* at 432-35.

[7] Letter from Patricia Jehle, Counsel for NRC Staff, to Administrative Judges Froehlich, Cole, and Barnett (Nov. 15, 2012) (ADAMS Accession No. ML12320A623); *see also* Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Draft Report, NUREG-1910 (Supp. 4 Nov. 2012) (ADAMS Accession No. ML12312A040) [hereinafter DSEIS].

[8] *See* List of Contentions of the Oglala Sioux Tribe Based on the [DSEIS] (Jan. 25, 2013) [hereinafter Oglala Sioux Tribe's Proposed Contentions]; Consolidated Intervenors' New Contentions Based on DSEIS (Jan. 25, 2013) [hereinafter Consolidated Intervenors' Proposed DSEIS Contentions].

[9] LBP-13-9, 78 NRC 37, 113-15 (2013).

[10] *Contention 1A* merged previously admitted Oglala Sioux Tribe Contention 1 (OST-1) and Consolidated Intervenors Contention K (CI-K) with migrated Oglala Sioux Tribe Contention 1 regarding the DSEIS (OST DSEIS-1) and Consolidated Intervenors Contention A regarding the DSEIS (CI DSEIS-A); *Contention 1B* merged previously admitted OST-1 with migrated OST DSEIS-1; *Contention 2* merged previously admitted OST-2 and CI-D with migrated OST DSEIS-2 and CI DSEIS-B; *Contention 3* merged previously admitted OST-3 and CI-E (as merged with CI-J), with migrated CI DSEIS-C and OST DSEIS-3; *Contention 4* merged previously admitted OST-4 with migrated OST DSEIS-4. *See id.* at 112-13.

[11] *Id.* at 114.

[12] *Id.*

[13] Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling *(Continued)*

Sioux Tribe and the Consolidated Intervenors filed "Statements of Contentions" with proposed contentions relating to the FSEIS.[14] The Oglala Sioux Tribe filed ten contentions and the Consolidated Intervenors filed five contentions. On April 4, 2014, Powertech and the NRC Staff filed answers opposing the proposed contentions.[15] Powertech argues the Intervenors have not proffered any new or amended contentions.[16] With the exception of Contention 2 (Baseline Groundwater Conditions), the NRC Staff urges the Board to "dismiss the Intervenors' previously admitted contentions and reject the Tribe's new contentions."[17] On April 11, 2014, the Oglala Sioux Tribe and the Consolidated Intervenors filed replies to the NRC Staff and Powertech answers.[18]

Meanwhile, on April 8, 2014, the NRC Staff issued NRC Source Materials License No. SUA-1600 to Powertech.[19] The license allows Powertech to possess and use source and byproduct material in connection with the Dewey-Burdock Project.[20]

II. LEGAL STANDARDS

A. New and Amended Contentions

To be admissible, a new or amended contention must satisfy the substantive

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Facilities, Final Report, NUREG-1910 (Supp. 4 Jan. 2014) (ADAMS Accession Nos. ML14024A477 (Chapters 1-5) and ML14024A478 (Chapters 6-11 and Appendices)) [hereinafter FSEIS].

[14] Statement of Contentions of the Oglala Sioux Tribe Following Issuance of [FSEIS] (Mar. 17, 2014) [hereinafter OST Statement]; Consolidated Intervenors' Statement of Contentions (Mar. 17, 2014) [hereinafter CI Statement].

[15] Applicant Powertech (USA) Inc's Response to Consolidated Petitioners' Request for Admission of New or Amended Contentions on NUREG-1910, Supplement 4 (April 4, 2014) [hereinafter Powertech Response]; NRC Staff's Answer to Contentions on [FSEIS] (April 4, 2014) [hereinafter NRC Staff Answer].

[16] Powertech Response at 1.

[17] NRC Staff Answer at 35.

[18] Reply of the Oglala Sioux Tribe Regarding Contentions Following Issuance of [FSEIS] (Apr. 11, 2014); Consolidated Intervenors' Consolidated Reply to Applicant and NRC Staff Answers to Contentions on [FSEIS] (Apr. 11, 2014).

[19] Materials License, NRC Form 374 (Apr. 8, 2014) (ADAMS Accession No. ML14043A392). *See also* ADAMS Accession Package Number ML14043A052, which includes the license transmittal letter, the license, and the Final Safety Evaluation Report. The NRC Staff also issued its Record of Decision for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Project at ADAMS Accession No. ML14066A466. The Final Programmatic Agreement was executed April 7, 2014, and is available in ADAMS Accession Package No. ML14066A344.

[20] Intervenors have filed for a stay of this license under 10 C.F.R. § 2.1213. The Board will rule on these motions in a future order.

contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1). Namely, the contention must:

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
> (ii) Provide a brief explanation of the basis for the contention;
> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue . . . ; [and]
> (vi) . . . [P]rovide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.[21]

A failure to meet any of these criteria renders the contention inadmissible.

Additionally, pursuant to 10 C.F.R. § 2.309(c),[22] if a party submits a proposed contention after the initial filing deadline announced in the applicable *Federal Register* notice for submitting a hearing petition, it "will not be entertained absent a determination by the presiding officer that a participant has demonstrated good cause."[23] Good cause exists when:

> (i) [t]he information upon which the filing is based was not previously available;
> (ii) [t]he information upon which the filing is based is materially different from information previously available; and
> (iii) [t]he filing has been submitted in a timely fashion based on the availability of the subsequent information.[24]

If the reason a motion to admit a new or amended contention was filed after the initial deadline does not relate to the substance of the filing itself, the standard contained in 10 C.F.R. § 2.307(a) applies in determining whether the motion can be considered timely. Section 2.307(a) provides that a filing deadline "may be extended or shortened either by the Commission or the presiding officer for good cause, or by stipulation approved by the Commission or the presiding officer."

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[21] 10 C.F.R. § 2.309(f)(1).

[22] The current section 2.309(c) was promulgated on August 3, 2012. Soon after this date, the Board determined that the standards set forth in the now-current section 2.309(c) would apply to new or amended contentions. Licensing Board Order (Second Prehearing Conference Call Summary and Supplemental Initial Scheduling Order) (Oct. 16, 2012) at 4 (unpublished).

[23] 10 C.F.R. § 2.309(c).

[24] 10 C.F.R. § 2.309(c)(i)-(iii).

Good cause in this section is not explicitly defined.[25] Therefore, to be admissible at this stage, a contention must not only meet contention admissibility standards of section 2.309(f)(1), but must also satisfy the timeliness requirements of section 2.309(c) or section 2.307(a).[26]

B. Migration Tenet

As this Board explained when it admitted new contentions challenging the DSEIS, "[a]dmitted contentions challenging an applicant's Environmental Report (ER) may, in appropriate circumstances, function as challenges to similar portions of the Staff's Environmental Impact Statement."[27] This "migration tenet" also applies when the information in the FSEIS is sufficiently similar to the information in the DSEIS.[28] In this circumstance, a party need not file a new or amended contention; the previously admitted contention will simply be viewed as applying to the relevant portion of the FSEIS.[29] This is appropriate, however, only when the FSEIS analysis or discussion at issue is essentially *in para materia* with the DSEIS analysis or discussion that is the focus of the contention.[30]

Alternatively, if attempting to raise a new issue based on new information in the FSEIS, an intervenor must file a new contention. This would be necessary, for example, if the information in the FSEIS is sufficiently different from the information in the DSEIS that supported the original contention's admission.[31] A new or amended contention related to portions of the FSEIS that differ from the

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[25] 77 Fed. Reg. 46,562, 46,571 (Aug. 3, 2012) ("The NRC notes that 'good cause' in § 2.307 does not share the same definition that is used for 'good cause' in final § 2.309(c) . . . ."). The *Federal Register* notice provides as examples health issues or an unexpected weather event as reasons that might constitute good cause for purposes of requesting an extension under section 2.307.

[26] The Board issued a scheduling order on February 20, 2014, which set a deadline of March 17, 2014 for any new or amended contentions arising from the publication of the FSEIS. Memorandum (Summarizing the February 12, 2014 Teleconference) (Feb. 20, 2014) at 6 (unpublished).

[27] LBP-13-9, 78 NRC at 46 (citing *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-23, 54 NRC 163, 172 n.3 (2001)); *see also Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 84 (1998).

[28] *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-11-1, 73 NRC 19, 26 (2011); *accord Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-08-2, 67 NRC 54, 63-64 (2008).

[29] *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-12-23, 76 NRC 445, 470-71 (2012) ("The Board may construe an admitted contention contesting the ER as a challenge to a subsequently issued DEIS or FEIS without the necessity for Intervenors to file a new or amended contention.").

[30] LBP-13-9, 78 NRC at 47.

[31] *Vogtle ESP,* LBP-08-2, 67 NRC at 63-64.

DSEIS must be timely filed under section 2.309(c) and must meet the contention admissibility standards of section 2.309(f)(1) to be admitted.[32]

In this case, perhaps out of an abundance of caution, the Intervenors repleaded their previously admitted contentions. This was an unnecessary action by the Intervenors and led the NRC Staff and Powertech to rehash the objections raised when the contentions were first proffered. These answers, to the extent they attempt to reargue the admissibility of previously admitted contentions, are also unnecessary. An admitted contention remains an admitted contention until it is adjudicated by the Board or eliminated prior to the hearing by the filing of a dispositive motion. To remove an admitted contention from the proceeding a party must file, and a Board must grant, a motion for summary disposition in conformance with 10 C.F.R. § 2.1205.

C. Contentions of Omission or Adequacy

There are two primary types of contentions — contentions of omission and contentions of adequacy.[33] "A contention of omission is one that alleges an application suffers from an improper omission, whereas a contention of adequacy raises a specific substantive challenge to how particular information or issues have been discussed in the application."[34] Based on its language, a contention can be characterized as a contention of omission, a contention of adequacy, or both.[35]

A contention of omission which has been admitted may be rendered moot by subsequent license-related documents filed by the NRC Staff that address the

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[32] LBP-13-9, 78 NRC at 47 (citing *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 382 (2002) ("While a contention contesting an applicant's environmental report generally may be viewed as a challenge to the NRC Staff's subsequent draft EIS, *new* claims must be raised in a new or amended contention.")); *Vogtle ESP,* LBP-08-2, 67 NRC at 64 (explaining that, if the portion of the ER that an admitted contention challenges is not sufficiently similar to the DEIS, "an intervenor attempting to litigate an issue based on expressed concerns about the DEIS may need to amend the admitted contention or, if the information in the DEIS is sufficiently different from that in the ER that supported the contention's admission, submit a new contention").

[33] *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 6 and 7), LBP-11-6, 73 NRC 149, 200 (2011); *see, e.g., Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-11-11, 74 NRC 427, 442 (2011) (discussing whether a contention should properly be characterized as a contention of omission or a contention of adequacy and the ramifications of such a designation with regard to contention admissibility).

[34] *Turkey Point,* LBP-11-6, 73 NRC at 200 n.53; *accord McGuire/Catawba,* CLI-02-28, 56 NRC at 382-83 ("There is, in short, a difference between contentions that merely allege an 'omission' of information and those that challenge substantively and specifically how particular information has been discussed in a license application.").

[35] *McGuire/Catawba,* CLI-02-28, 56 NRC at 383 n.45; *see also Turkey Point,* LBP-11-6, 73 NRC at 199-200.

alleged omission.[36] In this circumstance, the applicant or the NRC Staff may file a motion for summary disposition or a motion to dismiss. If the motion is granted, then the party that filed the original contention of omission must file a new or amended contention if it wishes to challenge the adequacy or sufficiency of the NRC Staff's treatment of the relevant issue.[37] That new or amended contention must be timely filed and must meet the contention admissibility standards. Generalized grievances with the sufficiency of the NRC Staff's analysis or the adequacy of included documentation are not enough to raise a proposed contention to the level of admissibility.[38]

In the case of an admitted contention that challenges the adequacy of an environmental document, the inclusion of additional information in a subsequent environmental document may or may not moot the contention. If a party believes the admitted contention is mooted by the inclusion of additional information, that party may file a motion for summary disposition pursuant 10 C.F.R. § 2.1205. On the other hand, if an intervenor merely cites to additional information in the subsequent environmental document and states these are additional reasons for the intervenors' belief that the environmental document is inadequate, the contention will migrate. If intervenors make reference to new material in the FSEIS but do not address the six elements of 10 C.F.R. § 2.309(f)(1), such references to new material do not give rise to either a new or amended contention.

III. DISCUSSION

A. Contention 1A

"Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources."[39]

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[36] *McGuire/Catawba,* CLI-02-28, 56 NRC at 383 ("Where a contention alleges the omission of particular information or an issue from an application, and the information is later supplied by the applicant or considered by the Staff in a draft EIS, the contention is moot.").

[37] *Id.*

[38] *PPL Susquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 23 (2007); *Shieldalloy Metallurgical Corp.* (Amendment Request for Decommissioning of the Newfield, New Jersey Facility), LBP-07-5, 65 NRC 341, 352 (2007) ("'[T]he contention rule is strict by design' and does 'not permit the filing of a vague, unparticularized contention, unsupported by affidavit, expert, or documentary support.'" (footnotes omitted)); *PPL Susquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-4, 65 NRC 281, 303-04 (2007).

[39] OST Statement at 5.

1. Party Positions

The Oglala Sioux Tribe claims that the protection of historical and cultural resources has been inadequately addressed in the FSEIS in the same way it was inadequately addressed in the application and DSEIS stages.[40] Consolidated Intervenors also claim the FSEIS fails to properly analyze or comply with applicable legal requirements in the same way as the DSEIS.[41] In response, the NRC Staff argues that the FSEIS contains considerable new information relevant to this contention.[42] The NRC Staff also suggests that this contention should be dismissed or rejected by the Board.[43] Powertech ignores the migration tenet. It insists that in order to remain at issue in the case, Contention 1A must identify new information in the FSEIS which did not appear in the DSEIS, and that Intervenors have failed to do so.[44]

2. Board Ruling

With the issuance of the FSEIS, the concerns regarding the protection of historical and cultural resources have migrated because this previously admitted contention challenging the DSEIS now challenges the same information in the FSEIS. Intervenors did not need to file "statements" on this previously admitted contention. If Intervenors' "statements" were filed in an attempt to expand the scope of this contention, such an effort fails. The NRC Staff's attempt to dismiss this contention also fails.[45] A motion for summary disposition must be filed, with support, in order to dismiss a previously admitted contention.

Contention 1A, as previously admitted, remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

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[40] *Id.* at 6.

[41] CI Statement at 6.

[42] NRC Staff Answer at 13.

[43] *Id.* at 1, 16, 35.

[44] Powertech Response at 8.

[45] If the NRC Staff sought to dismiss the contention on the ground that the FSEIS cured the alleged defects in the DSEIS, then the NRC Staff could have filed a motion for summary disposition or a motion to dismiss. The NRC Staff did not do so. At this point, the deadline for filing motions for summary disposition has passed. In any event, if the NRC Staff asserts that the FSEIS cured the alleged defects in the DSEIS, then the NRC Staff can make this argument in its initial or rebuttal filings associated with the imminent evidentiary hearing.

B. Contention 1B

"Failure to Involve or Consult All Interested Tribes as Required by Federal Law."[46]

1. Party Positions

Both the Oglala Sioux Tribe and Consolidated Intervenors allege tribal exclusion throughout the entire application/licensing process. Based on their claim that the FSEIS has been completed without "the requisite level of Tribal participation," they maintain that the content of this contention migrates to the most current Staff review document.[47] The NRC Staff opposes migration, citing progress made in consultation since November 2012.[48] Powertech states that Intervenors' arguments fall short of what is needed to admit a contention, and that there is no new or materially different information in the FSEIS.[49]

2. Board Ruling

With the issuance of the FSEIS, the concerns regarding a failure to involve or consult with Tribes have migrated because this previously admitted contention now appears in relation to information in the FSEIS. Intervenors did not need to file "statements" on this previously admitted contention. If Intervenors' "statements" were filed in an attempt to expand the scope of this contention, such an effort fails. The NRC Staff's attempt to dismiss this contention also fails. A motion for summary disposition must be filed, with support, in order to dismiss a previously admitted contention.

As previously admitted, Contention 1B remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

C. Contention 2

"Failure to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality."[50]

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[46] OST Statement at 9.
[47] *Id.* at 13; CI Statement at 19.
[48] NRC Staff Answer at 16.
[49] Powertech Response at 11.
[50] OST Statement at 14.

1. Party Positions

The intervenors argue that baseline conditions are mandated by statute and regulation, and that the FSEIS is inadequate because, in common with the ER and the DSEIS, it fails to include a proper analysis of the required baselines with respect to groundwater quality.[51] The NRC Staff does not oppose migration of this contention.[52] Powertech, however, cites examples where text was added in the FSEIS in order to oppose migration of the contention.[53] Neither the NRC Staff nor Powertech moved for summary disposition of the environmental portions of this admitted contention.[54]

2. Board Ruling

The migration tenet applies and this issue migrates from a criticism of baseline groundwater determinations in the Powertech ER to a criticism of baseline groundwater determinations in the NRC Staff's FSEIS. Intervenors did not need to file "statements" on this previously admitted contention. If Intervenors' "statements" were filed in an attempt to expand the scope of this contention, such an effort fails. The addition of new text to an FSEIS does not necessarily prevent a contention from migrating, especially when it is a contention of adequacy.[55] As long as the underlying issue or concern involved in the admitted contention remains (whether or not there are additional passages on the subject in the FSEIS), the contention migrates. Despite the addition of new materials in the FSEIS, Intervenors' concern over the adequacy of these materials has not been resolved.

Except for changing DSEIS to FSEIS, Contention 2, as previously admitted, remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

D. Contention 3

"Failure to Include an Adequate Hydrogeological Analysis to Assess Potential Impacts to Groundwater."[56]

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[51] *Id.*; CI Statement at 20; Oglala Sioux Tribe's Proposed Contentions at 10-11.

[52] NRC Staff Answer at 18.

[53] Powertech Response at 12.

[54] The NRC Staff filed a timely motion for summary disposition of the *safety* portions of Contention 2 on April 11, 2014. *See* NRC Staff's Motion for Summary Disposition of Safety Contentions 2 and 3 (Apr. 11, 2014). Answers to that motion were due on or before April 25, 2014. The Board will decide all motions for summary disposition in a separate order.

[55] LBP-13-9, 78 NRC at 54 (previously indicating that this contention is a contention of adequacy).

[56] OST Statement at 16.

1. Party Positions

Intervenors claim that "the FSEIS fails to provide sufficient information regarding the hydrologic and geological setting of the area."[57] The NRC Staff asserts that the inclusion of a new Powertech report in the FSEIS comprises significant new information that should not allow the contention to migrate to the FSEIS.[58] Powertech asserts that its application contains sufficient data, and that in its opinion, Contention 3 "should be excluded."[59] Neither the NRC Staff nor Powertech has moved for summary disposition of the environmental portions of this admitted contention.[60]

2. Board Ruling

The Consolidated Intervenors and the Oglala Sioux Tribe present the same concern that was raised regarding Powertech's ER (and that was admitted as a contention) here, as a concern regarding the FSEIS. Thus, it is not necessary to propose a new or amended contention because, as the Board has explained, if the "new" contention raises the same concern admitted at the initial stage of the proceeding, its admissibility need not be relitigated and redecided at each step of the NEPA process, namely the issuances of the DSEIS and the FSEIS.[61] This contention is not new; it is merely the continuation of a previously admitted contention. To the extent the Intervenors have concerns with the adequacy of the hydrogeologic analysis necessary to show adequate confinement and potential impacts to groundwater, this is already an issue set for hearing. Contention 3 is a contention of adequacy, as the Board previously indicated,[62] and despite the inclusion of new data in the FSEIS, Intervenors' concern over the adequacy of the environmental review has not been resolved.

Except for changing DSEIS to FSEIS, Contention 3, as previously admitted, remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

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[57] *Id.*; CI Statement at 22.

[58] NRC Staff Answer at 19.

[59] Powertech Response at 15-16.

[60] The NRC Staff filed a timely motion for summary disposition of the *safety* portions of Contention 3 on April 11, 2014. *See* NRC Staff's Motion for Summary Disposition of Safety Contentions 2 and 3 (Apr. 11, 2014). Answers to that motion were due on or before April 25, 2014. The Board will decide all motions for summary disposition in a separate order.

[61] LBP-13-9, 78 NRC at 46-47.

[62] *Id.* at 58.

E. Contention 4

"Failure to Adequately Analyze Ground Water Quantity Impacts."[63]

1. Party Positions

The Intervenors contend that the FSEIS fails to provide adequate analysis of groundwater impacts of the project.[64] The NRC Staff opposes migration on the ground that the FSEIS contains substantial new relevant information which did not appear in previous ER documents.[65] Powertech posits that Contention 4 must be viewed as a new contention, and "rejected as showing no new or materially different information."[66]

2. Board Ruling

The Intervenors present the same concern that was raised by the Oglala Sioux Tribe in the initial pleading stage (and that was admitted as a contention) as a concern regarding the FSEIS. It is, therefore, unnecessary to raise a new or amended contention. To the extent the "new" contention raises the same concern admitted at the initial stage of the proceeding, it need not be repeated to remain a viable contention. Accordingly, the Oglala Sioux Tribe's concern with the adequacy of the analysis of groundwater quantity impacts is already an issue set for hearing. The addition of new text to an FSEIS does not necessarily prevent a contention from migrating, especially when it is a contention of adequacy.[67] Despite the addition of new materials in the FSEIS, Intervenors' concern over the adequacy of these materials has not been resolved. The NRC Staff's attempt to dismiss this contention fails. A motion for summary disposition must be filed, with support, in order to dismiss a previously admitted contention.[68]

Except for changing DSEIS to FSEIS, Contention 4, as previously admitted, remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

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[63] OST Statement at 19.
[64] *Id.* at 19; CI Statement at 25.
[65] NRC Staff Answer at 21.
[66] Powertech Response at 17.
[67] LBP-13-9, 78 NRC at 54 (previously indicating that this contention is a contention of adequacy).
[68] *Supra* note 45.

F. Contention 6

"Failure to Adequately Describe or Analyze Proposed Mitigation Measures."[69]

1. Party Positions

In Contention 6, the Oglala Sioux Tribe claims that the FSEIS violates 10 C.F.R. §§ 51.10, 51.70, and 51.71, and NEPA and implementing regulations and "fail[s] to include the required discussion of mitigation measures."[70] The Oglala Sioux Tribe also insists that NEPA requires the FSEIS to include and discuss means to mitigate adverse environmental impacts, but that the FSEIS does not evaluate the effectiveness of any of the mitigation measures it proposes.[71] Similar to its complaints about the DSEIS, the Oglala Sioux Tribe contends that the FSEIS "mitigation measure discussion consists of a multi-page chart which simply lists a series of proposed mitigation measure [sic], with no elaboration or other analysis of how the operator expects to accomplish these items, or the expected effectiveness/limitations of each measure, as required by NEPA."[72]

The NRC Staff opposes migration of this contention because the Staff claims the FSEIS identifies new mitigation measures and has additional discussions on previously identified mitigation measures.[73] Powertech also contends that significant new information in the FSEIS should result in the Board rejecting Contention 6.[74]

2. Board Ruling

Concerns regarding a failure to adequately describe or analyze proposed mitigation measures have migrated because this previously admitted contention now appears in relation to information in the FSEIS. Intervenors did not need to file "statements" on this previously admitted contention. If Intervenors' "statements" were filed in an attempt to expand the scope of this contention, such an effort fails. The NRC Staff's attempt to dismiss this contention also fails. A motion for summary disposition must be filed, with support, in order to dismiss a previously admitted contention.[75]

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[69] OST Statement at 21.
[70] *Id.*
[71] *Id.* at 21-22.
[72] *Id.* at 25.
[73] NRC Staff Answer at 23.
[74] Powertech Response at 18-19.
[75] *Supra* note 45.

Except for changing DSEIS to FSEIS, Contention 6, as previously admitted, remains unchanged and will be adjudicated in the evidentiary hearing. For convenience, it is reproduced in Appendix A to this Order.

G. Contention 9

"Failure to Consider Connected Actions."[76]

1. Party Positions

The Oglala Sioux Tribe contends that the same issues surrounding the NRC's failure to consider connected actions in the DSEIS continue in the FSEIS, and that no significant new information is provided.[77] The Oglala Sioux Tribe contends that "[l]ike the DSEIS, the FSEIS repeatedly relies upon EPA analyses to require appropriate mitigation measures to lessen impacts, and uses those permitting processes to simply defer analysis of impacts to EPA."[78] The NRC Staff claims that the migration tenet does not apply because updates have been made to the FSEIS analysis and because the "FSEIS's discussion of environmental impacts is not "essentially the same" as that in the DSEIS."[79] Powertech states that "contention 9 should not be admitted due the [sic] fact that NRC Staff has thoroughly addressed the use of Class III and V wells at the proposed Dewey-Burdock ISR site."[80] Powertech also contends that the "[T]ribe also does not attempt to show how the FSEIS differs from the impact analyses offered by Powertech in previously submitted documents or by NRC Staff in the DSEIS."[81]

2. Board Ruling

The Oglala Sioux Tribe asserts that NEPA requires the agency to include an analysis of actions "connected" to the project under review as well as an evaluation of the "cumulative impact" of permits and other authorizations from other federal and state agencies.[82] The NRC Staff maintains that the FSEIS's discussion of environmental impacts is not "essentially the same" as that in the DSEIS. The Staff asserts it has "updated its analysis in Chapter 4 of the SEIS, the

[76] OST Statement at 26.
[77] *Id.*
[78] *Id.* at 27.
[79] NRC Staff Answer at 25.
[80] Powertech Response at 19.
[81] *Id.* at 19-20.
[82] OST Statement at 26-27.

statutes themselves, which contain no such requirement. Section 2.309(f)(1)(vi) requires a petitioner to provide a citation to the section of law or regulation which sets forth the requirement alleged to be violated. The Oglala Sioux Tribe's contention does not do so, and thus, lacks a legal basis.

I. FSEIS Contention 2

"Inadequate Analysis of Direct, Indirect, and Cumulative Impacts of Disposal of Solid 11e2 Byproduct Material or the Reasonable Alternatives to Transportation and Disposal at the White Mesa Facility."[102]

1. Party Positions

The Oglala Sioux Tribe proposes a new contention based on what it claims is new information in the FSEIS that the waste disposal site for the project has been selected without a review of alternatives.[103] The NRC Staff argues that the Oglala Sioux Tribe has not supplied material new information since the DSEIS listed the White Mesa site as a possible site, and the proposed contention does not meet the requirements for a new contention.[104] Powertech states that no new information exists to support a new contention, as the waste disposal site chosen in the FSEIS was also selected in the DSEIS.[105]

2. Board Ruling

In FSEIS Contention 2 the Oglala Sioux Tribe argues that the FSEIS violates NEPA because it does not include a reviewable plan for disposal of byproduct material resulting from ISR operations. This contention has twice been rejected by this Board, once as a challenge to the Powertech ER,[106] and once as a challenge to the DSEIS.[107]

As the NRC Staff correctly notes, given that the Board rejected the contention originally, the migration tenet does not apply and the Oglala Sioux Tribe must meet the requirements applicable to new contentions.[108] Among these requirements, the

[102] OST Statement at 33.
[103] *Id.* at 33-34.
[104] NRC Staff Answer at 32-33.
[105] Powertech Response at 22.
[106] LBP-10-16, 72 NRC at 432-35.
[107] LBP-13-9, 78 NRC at 69-72.
[108] NRC Staff Answer at 32.

contention must be based on information materially different than the information previously available.[109]

A petitioner must demonstrate that the proposed contention is based on new or materially or significantly different information. Here, the Oglala Sioux Tribe does not identify any information that differs materially from the information available when the DSEIS was issued. The possible use of the White Mesa site in Utah for disposal of solid byproduct material appears in the DSEIS.[110] The change in White Mesa's designation from a possible disposal site to the site Powertech assumes it will use is not materially different information.[111] The Oglala Sioux Tribe does not even attempt to make this showing, as its argument does not identify where the FSEIS differs in any way from either Powertech's initial license application or subsequently filed documents identified by NRC Staff in monthly hearing file updates. Thus, the Oglala Sioux Tribe's arguments do not support admitting the proposed contention, and do not comply with 10 C.F.R. § 2.309(c)(2)(ii).

Further, the Oglala Sioux Tribe fails to challenge relevant sections of the environmental analysis. Although the Oglala Sioux Tribe makes general reference to the Generic Environmental Impact Statement (GEIS),[112] it does not challenge specific sections addressing waste disposal.[113] The Oglala Sioux Tribe also fails to challenge comment responses where the NRC Staff provides information relevant to this contention.[114]

Finally, the Board notes that Powertech's March 19, 2014 Draft License, License Conditions 9.9 and 12.6, requires Powertech to have an 11e(2) byproduct material disposal contract in place prior to the commencement of operations. This Board has already found that 10 C.F.R. § 40.31(h) applies to uranium mills, and not to ISR facilities.[115] Thus, the Oglala Sioux Tribe's allegation that 10 C.F.R. § 40.31(h) and 10 C.F.R. Part 40, Appendix A, Criterion 1 require further analysis of this issue will, again, not be admitted. Because the Tribe fails to meet the requirements for a new contention, the Board must reject FSEIS Contention 2.

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[109] 10 C.F.R. § 2.309(c)(1)(ii).
[110] DSEIS at 4-196–4-212.
[111] *Compare* DSEIS at p. 3-105 *with* FSEIS at p. 3-116.
[112] OST Statement at 38.
[113] GEIS §§ 4.2.12, 4.3.12, 4.4.12.
[114] FSEIS, Appendix E, § E5.29.2.
[115] LBP-10-16, 72 NRC 434.

The scope of that adjudication may, however, be narrowed by the grant of a motion for summary disposition. Such motions for summary disposition were filed on April 11, 2014[131] and will be addressed by the Board in a separate order.

Table of Admitted Contentions
Dewey-Burdock In-Situ Recovery Facility

Topic[132]	Oglala Sioux Original — 2010	Oglala Sioux DSEIS — 2013	Consolidated Intervenors Original — 2010	Consolidated Intervenors DSEIS — 2013	Admitted for Adjudication
Historical & cultural resources	1	1	K	A	1A
Failure to consult	1	1	—	—	1B
Groundwater quality	2	2	D	B	2
Hydrogeological information	3	3	E and J	C	3
Groundwater quantity impacts	4	4	F*	D*	4
Mitigation measures	—	6	—	—	6
Connected actions	—	9	—	—	9
Consultation on Endangered Species Act	—	14	—	—	14A
Sufficiency of impact analyses	—	14	—	—	14B

*Contentions rejected by the Board

[131] NRC Staff's Motion for Summary Disposition on Safety Contentions 2 and 3 (Apr. 11, 2014); Oglala Sioux Tribe's Motion for Summary Disposition National Environmental Policy Act Contentions 1A and 6 — Mitigation Measures (Apr. 11, 2014).

[132] The statement of the admitted contention going forward is contained in the Board's Order, *infra,* and in Appendix A to this Order.

IV. BOARD ORDER

A. The Board finds the following previously admitted contentions *migrate* and now refer to the FSEIS instead of the DSEIS:

Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources.

Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law.

Contention 2: The FSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality.

Contention 3: The FSEIS Fails to Include Adequate Hydrogeological Information to Demonstrate Ability to Contain Fluid Migration and Assess Potential Impacts to Groundwater.

Contention 4: The FSEIS Fails to Adequately Analyze Ground Water Quantity Impacts.

Contention 6: The FSEIS Fails to Adequately Describe or Analyze Proposed Mitigation Measures.

Contention 9: The FSEIS Fails to Consider Connected Actions.

Contention 14A: Whether an appropriate consultation was conducted pursuant to the Endangered Species Act and implementing regulations.

Contention 14B: Whether the FSEIS's impact analyses relevant to the greater sage grouse, the whooping crane, and the black-footed ferret are sufficient.

B. The NRC Staff's conclusion that "the Board should dismiss the Intervenors' previously admitted contentions"[133] is *denied.*

C. The Board finds *inadmissible* the Oglala Sioux Tribe's Contentions FSEIS 1, FSEIS 2, FSEIS 3 for failure to meet 10 C.F.R. § 2.309(f)(1) and/or § 2.309(c).

D. No specific section of the Commission's regulations, including 10 C.F.R. § 2.311, permits appeals from an order ruling on the admission of new or amended contentions. Nonetheless, interlocutory review of decisions and actions of a presiding officer may be available pursuant to section 2.341(f)(2) of the Commission's regulations.

[133] NRC Staff Answer at 35.

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

William J. Froehlich, Chairman
ADMINISTRATIVE JUDGE

Richard F. Cole
ADMINISTRATIVE JUDGE

Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
April 28, 2014

Cite as 81 NRC 618 (2015) **LBP-15-16**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Mark O. Barnett

In the Matter of **Docket No. 40-9075-MLA**
(ASLBP No. 10-898-02-MLA-BD01)

POWERTECH USA, INC.
(Dewey-Burdock In Situ Uranium Recovery Facility)

April 30, 2015

ATOMIC ENERGY ACT (AEA): MATERIALS LICENSE

The AEA and the Uranium Mill Tailings Radiation Control Act of 1978 authorize the NRC to issue licenses for the possession and use of source material and byproduct material. Section 11e(2) byproduct material is regulated by the NRC under 10 C.F.R. Part 40. These statutes require the NRC to license facilities that meet NRC regulatory requirements developed to protect public health and safety from radiological hazards. To operate, ISL uranium recovery facilities must meet NRC regulatory requirements and obtain a source materials license.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): ENVIRONMENTAL IMPACT STATEMENT

NEPA requires that federal agencies prepare a detailed environmental impact statement for proposed actions "significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). The adverse environmental effects that must be assessed under NEPA include "aesthetic, historic, cultural, economic, social, or health" effects. 40 C.F.R. § 1508.8(b).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): HARD LOOK

While reviewing any adverse effects, federal agencies must take a hard look at the environmental impacts of a proposed action. *See Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 87-88 (1998). This hard look must emerge from engagement in informed and reasoned decisionmaking, as the agency "obtains opinions from its own experts, obtains opinions from experts outside the agency, gives careful scientific scrutiny and responds to all legitimate concerns that are raised." *Hughes River Watershed Conservancy v. Johnson,* 165 F.3d 283, 288 (4th Cir. 1999) (citing *Marsh v. Oregon Natural Resources Council,* 490 U.S. 360, 378-85 (1989)).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): ADJUDICATORY RECORD PART OF ENVIRONMENTAL IMPACT STATEMENT

In an NRC adjudicatory proceeding, the Board's findings, as well as the adjudicatory record, "become, in effect, part of the [final EIS]." *Claiborne,* CLI-98-3, 47 NRC at 89.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): BURDEN OF PROOF

The statutory obligation of complying with NEPA rests with the NRC. *See, e.g., Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1049 (1983). When NEPA contentions are involved, the burden of proof lies with the NRC Staff, but because "the Staff, as a practical matter, relies heavily upon the Applicant's [Environmental Report] in preparing the EIS, should the Applicant become a proponent of a particular challenged position set forth in the EIS, the Applicant, as such a proponent, also has the burden on that matter." *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 339 (1996) (citing *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 489 n.8 (1978)), *rev'd on other grounds,* CLI-97-15, 46 NRC 294 (1997).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): SCOPE OF EFFECTS OF A PROJECT

Under NEPA regulations, defining the scope of effects of a project requires engagement with the governments of affected tribes through an "early and open process," aimed at identifying concerns, potential impacts, relevant effects of past

actions, and possible alternative actions. 40 C.F.R. § 1501.7. The Commission's regulations in 10 C.F.R. § 51.71(b) require the NRC Staff to include in the FSEIS "an analysis of significant problems and objections raised by . . . any affected Indian tribes, and by other interested persons."

NATIONAL HISTORIC PRESERVATION ACT (NHPA): REASONABLE AND GOOD FAITH EFFORT

Under the National Historic Preservation Act, a federal agency must make a reasonable and good faith effort to identify historic properties, determine whether identified properties are eligible for listing on the National Register based on the criteria in 36 C.F.R. § 60.4, assess the effects of the undertaking on any eligible historic properties found, determine whether the effect will be adverse, and avoid or mitigate any adverse effects. 36 C.F.R. §§ 800.4(b), (c); 800.5(c); 800.8(c); 800.9(b), (c).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) NATIONAL HISTORIC PRESERVATION ACT (NHPA): STATUTORY COMPLIANCE

Although the NHPA and NEPA resemble each other in certain respects, compliance with the NHPA "does not relieve a federal agency of the duty of complying with the [environmental] impact statement requirement 'to the fullest extent possible.'" *Preservation Coalition, Inc. v. Pierce,* 667 F.2d 851, 859 (9th Cir. 1982) (quoting 42 U.S.C. § 4332). It does not follow that a review that satisfies the NHPA necessarily satisfies NEPA requirements to take a hard look at cultural resources affected by a project.

NATIONAL HISTORIC PRESERVATION ACT (NHPA): NATIONAL REGISTER

The NHPA requires federal agencies, prior to approving any "undertaking," to "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register." 16 U.S.C. § 470f.

NATIONAL HISTORIC PRESERVATION ACT (NHPA): TRIBAL CONSULTATION

The NHPA requires federal agencies to "consult with any Indian tribe . . . that attaches religious and cultural significance" to a site. 16 U.S.C. § 470a(d)(6)(B).

Consultation must provide the tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects." 36 C.F.R. § 800.2(c)(2)(ii)(A). The NHPA further requires that consultation with Indian tribes "recognize the government-to-government relationship between the Federal Government and Indian tribes." *Id.*

NATIONAL HISTORIC PRESERVATION ACT (NHPA): ADEQUACY OF TRIBAL CONSULTATION

Adequate NRC face-to-face meaningful government-to-government consultation requirements are not satisfied by large group meetings, with members of many diverse tribes, all with varying degrees of attachment to the project area. Tribal Protocol Manual, NUREG-2173, at 10. Quantity of correspondence does not necessarily equate with meaningful or reasonable consultation, and "doesn't in itself show the NHPA-required consultation occurred." *Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Department of Interior,* 755 F. Supp. 2d 1104, 1118 (S.D. Cal. 2010).

NATIONAL HISTORIC PRESERVATION ACT (NHPA): PROGRAMMATIC AGREEMENT

A Programmatic Agreement may be used to implement the section 106 process in situations where the effects to historic properties cannot be fully determined prior to the approval of an undertaking, such as where an applicant proposes a phased approach to developing its project. 36 C.F.R. §§ 800.13, 800.14(b)(1). In such cases, the Programmatic Agreement establishes a phased process for consultation, review, and compliance with the NHPA.

RULES OF PRACTICE: BOARD-ORDERED SUSPENSION OF NRC LICENSE

A Board can require the immediate suspension of an issued materials license. *Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), CLI-06-8, 63 NRC 235, 238 (2008) ("If the Board determines after full adjudication that the license amendment should not have been granted, it may be revoked (or conditioned).").

REGULATIONS: INTERPRETATION (10 C.F.R. PART 40, APPENDIX A, CRITERION 7)

Criterion 7 of 10 C.F.R. Part 40, Appendix A requires an applicant to establish "a preoperational monitoring program [that] must be conducted to provide complete baseline data on a milling site and its environs." These criteria were developed for conventional uranium milling facilities, but have been applied, in at least limited fashion, to ISL facilities. *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 8-9 (1999).

REGULATIONS: INTERPRETATION (WATER QUALITY DATA)

Background water quality data are used to establish existing hazardous constituent concentrations in an aquifer, which can then be used to set 10 C.F.R. Part 40, Appendix A, Criterion 5B(5) post-operational concentration limits. Both NUREG-1569 and Regulatory Guide 4.14 also discuss environmental monitoring.

REGULATIONS: INTERPRETATION (WATER QUALITY DATA)

The language of Appendix A regarding the relationship between Criteria 5 and 7 is ambiguous and the terms "baseline" and "background" are not explicitly defined. But in *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-1, 63 NRC 1, 6 (2006), the Commission affirmed that given the sequential development of ISL wellfields, waiting until after licensing (although before mining operations begin) to establish definitively the groundwater quality baselines and upper control limits is consistent with industry practice and NRC methodology.

TECHNICAL ISSUES DISCUSSED: CONFINEMENT OF THE OVERALL ORE ZONE

Geologic confinement of an ore zone is required for an ISL license. This decision discusses issues surrounding the continuous thickness of the Fuson Shale, leakage shown by pumping tests, rapid groundwater flow, faults, fractures, and joints, breccia pipes, boreholes, the ability to contain fluid migration, artesian flow, and groundwater quantity impacts.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): MITIGATION

Mitigation under NEPA is defined as (a) avoiding an impact by not taking an action, (b) minimizing an impact by limiting the degree or magnitude of an action,

(c) rectifying the impact of an action by repairing, rehabilitating, or restoring the impacted area, (d) reducing or eliminating the impact over time by preservation and maintenance operations, or (e) compensating for the impact or replacing or substituting resources or environments. 40 C.F.R. § 1508.20.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): NRC STAFF MITIGATION MONITORING REQUIREMENT

The NRC Staff is required to confirm whether applicant/licensee mitigation measures are effective by establishing a monitoring program. 76 Fed. Reg. at 3849 (citing 40 C.F.R. § 1505.2(c)).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): CONNECTED ACTIONS

Actions are connected to the proposed project when they "(i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. § 1508.25(a)(1)(i)-(iii). When drafting an EIS, an agency's scope of review must include analysis of any connected or cumulative actions to the central proposed action. 40 C.F.R. § 1508.25; 10 C.F.R. § 51.14(b).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA): CUMULATIVE ACTIONS

Cumulative impacts are impacts resulting "from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. All aspects of the FSEIS, including the connected and cumulative actions discussions, must have been subjected to a hard look by the NRC Staff.

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; ADMISSIBILITY)

To be admissible, a new or amended contention must satisfy the substantive contention admissibility standards set forth in 10 C.F.R. § 2.309(f)(1).

RULES OF PRACTICE: CONTENTIONS (NEW OR AMENDED; ADMISSIBILITY)

A new or amended contention must be timely filed under 10 C.F.R. § 2.309(c).

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PARTIAL INITIAL DECISION

I. INTRODUCTION

Today, the Licensing Board rules on seven contentions raised by the Oglala Sioux Tribe and the Consolidated Intervenors that were the subject of an evidentiary hearing held on August 19, 20, and 21, 2014, at the Hotel Alex Johnson in Rapid City, South Dakota. The evidentiary record in this proceeding consists of the written direct testimony of 22 witnesses, 430 exhibits that were admitted into evidence, and the examination under oath of the witnesses by the Licensing Board, as recorded in the transcript of the evidentiary hearing. The parties were also afforded an opportunity to file initial and reply proposed findings of fact and conclusions of law after the hearing. This Partial Initial Decision upholds the NRC Staff issuance of Source Materials License No. SUA-1600, while imposing additional license conditions.

II. BACKGROUND

On February 25, 2009, Powertech (USA), Inc. (Powertech) submitted an application for a combined source[1] and 11e(2) byproduct material license[2] to construct

[1] The Atomic Energy Act of 1954, as amended [hereinafter AEA] defines "source material" in section 11z. 42 U.S.C. § 2014(z); *see also* 10 C.F.R. § 40.4. "Source material" in this decision refers to the uranium being extracted through the ISL process.

[2] The AEA defines "byproduct material" in section 11e(2). 42 U.S.C. § 2014(e)(2); *see also* 10 C.F.R. §§ 30.4 and 40.4. "Byproduct material" in this decision refers to "the tailings or wastes *(Continued)*

and operate the proposed Dewey-Burdock in-situ leach (ISL or ISR) uranium recovery facility[3] in Custer and Fall River Counties, South Dakota.[4] Powertech withdrew that application in June 2009 and revised it to provide additional information requested by the NRC Staff on hydrology/site characterization, waste disposal, location of extraction operations, protection of water resources, and operational issues.[5] On August 10, 2009 Powertech resubmitted its Dewey-Burdock license application with additional data and information, including its Environmental Report.[6] The NRC Staff accepted Powertech's application for docketing on October 2, 2009,[7] and on January 5, 2010, published a notice of opportunity to request a hearing on the application, which included instructions on how to gain access to sensitive unclassified nonsafeguards information (SUNSI) associated with the application.[8]

Two groups submitted requests for access to SUNSI material. On January 15,

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produced by the extraction or concentration of uranium or thorium from any ore processed for its source material content." 42 U.S.C. § 2014(e)(2).

[3] ISL facilities are designed to remove underground uranium without physical mining. An aqueous solution, called a lixiviant, is injected into a naturally occurring underground aquifer through an injection well, dissolving the uranium. When pumped back to the surface, the uranium is removed from the lixiviant. This same lixiviant is then reinjected into the ground to dissolve more uranium, and the cycle is repeated until all the economically recoverable uranium in the ore body has been removed. *See* LBP-10-16, 72 NRC 361, 378-80 (2010) for further details on this process.

[4] [Powertech's] Submission of an Application for a Nuclear Regulatory Commission Uranium Recovery License for Its Proposed Dewey-Burdock In-Situ Leach Uranium Recovery Facility in the State of South Dakota, Letter from Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech, to Charles Miller, Director, Office of Federal and State Materials and Environmental Management Program, NRC (Feb. 25, 2009) (ADAMS Accession No. ML091030707).

[5] Dewey-Burdock Project Supplement to Application for NRC Uranium Recovery License Dated February 2009 (Aug. 2009) (ADAMS Accession No. ML092870155).

[6] Exs. NRC-008-A-1 through NRC-008-B-2, Office of Federal and State Materials and Environmental Management Programs, Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Final Report, NUREG-1910 (Supp. 4 Jan. 2014), Ex. NRC-008-A-1 at 1-1 (ADAMS Accession Nos. ML14024A477 (Chapters 1-5) and ML14024A478 (Chapters 6-11 and Appendices)) [hereinafter FSEIS, Exs. NRC-008-A-1 through NRC-008-B-2]; *see also* Exs. APP-040-A through APP-040-EE, Powertech Application for NRC Uranium Recovery License Proposed Action Fall River and Custer Counties South Dakota Environmental Report (Feb. 2009).

[7] Results of Acceptance Review, Powertech (USA), Inc.'s Proposed Dewey-Burdock Facility, Fall River and Custer Counties, South Dakota, Letter from Ronald Burrows, Project Manager, NRC, to Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech (Oct. 2, 2009) (ADAMS Accession No. ML092610201).

[8] Notice of Opportunity for Hearing, License Application Request of Powertech (USA) Inc. Dewey-Burdock In Situ Uranium Recovery Facility in Fall River and Custer Counties, SD, and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information (SUNSI) for Contention Preparation, 75 Fed. Reg. 467 (Jan. 5, 2010).

2010, the Oglala Sioux Tribe requested access to SUNSI in this proceeding,[9] and was granted access by the NRC Staff on January 25, 2010.[10] As a result, a Protective Order granting access to the requested information was issued by the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel on March 5, 2010.[11] The Oglala Sioux Tribe filed its Hearing Request and Petition for Leave to Intervene on April 6, 2010.[12] Powertech and the NRC Staff filed answers to the Oglala Sioux Tribe Petition on May 3, 2010,[13] and the Oglala Sioux Tribe filed its reply to the Powertech and NRC Staff answers on May 14, 2010.[14]

Also on January 15, 2010, six individuals and two organizations sharing common counsel (Consolidated Petitioners) submitted a request for access to SUNSI material,[15] which was denied by the NRC Staff.[16] Consolidated Petitioners then joined a motion filed by the Oglala Sioux Tribe for a 90-day extension of time to file a hearing request, which was opposed by both Powertech and the NRC Staff, and was subsequently denied by the Commission on March 5, 2010.[17] On March 8, 2010, Consolidated Petitioners filed their Request for Hearing and Petition for Leave to Intervene,[18] and this Licensing Board was established on

[9] The Oglala Sioux Tribe asserted that the water resources within the area to be mined were "known to have been favored camping sites of indigenous peoples, both historically and prehistorically, and the likelihood that cultural artifacts and evidence of burial grounds exist in these areas is strong." Oglala Sioux Tribe Request for Sensitive Unclassified Non-Safeguards Information (Jan. 15, 2010) (ADAMS Accession No. ML100210203).

[10] *See* NRC Staff Response to Grace Dugan Granting Access to SUNSI Information (Jan. 25, 2010) (ADAMS Accession No. ML100252221).

[11] Licensing Board Order (Protective Order Governing the Disclosure of Sensitive Unclassified Non-Safeguards Information (SUNSI)), (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640405).

[12] Ex. OST-010, Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe at 22-23 (Apr. 6, 2010) [hereinafter Oglala Sioux Tribe Petition, Ex. OST-010].

[13] Applicant Powertech (USA) Inc.'s Response to Petitioner Oglala Sioux Tribe's Request for a Hearing/Petition for Intervention (May 3, 2010) (ADAMS Accession No. ML101230722); NRC Staff's Response to Oglala Sioux Tribe's Hearing Request (May 3, 2010) (ADAMS Accession No. ML101230726).

[14] Reply to NRC Staff and Applicant Responses to the Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe (May 14, 2010) (ADAMS Accession No. ML101340870).

[15] E-mail Request from David Cory Frankel, Legal Director for Aligning for Responsible Mining, *et al.* for Access to Sensitive Unclassified Non-safeguards Information (SUNSI) (Jan. 15, 2010) (ADAMS Accession No. ML100192098).

[16] NRC Staff Response to David Frankel Denying Request for Access to SUNSI Information (Jan. 25, 2010) (ADAMS Accession No. ML100252219).

[17] Order of the Secretary (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640426).

[18] Ex. INT-016, Consolidated Request for Hearing and Petition for Leave to Intervene (Mar. 8,

(Continued)

March 12, 2010.[19] After requesting and being granted an extension of time by this Licensing Board,[20] Powertech and the NRC Staff filed their answers to the Consolidated Petition on April 12, 2010,[21] and Consolidated Petitioners filed their reply to the Powertech and NRC Staff answers on April 22, 2010.[22]

On April 30, 2010, Consolidated Petitioners filed a new contention, Contention K, based on SUNSI material provided to Consolidated Petitioners' expert by the NRC Staff on April 1, 2010.[23] Answers to Contention K were timely filed by the NRC Staff and Powertech on May 21, 2010, and May 23, 2010 respectively.[24] The Consolidated Petitioners did not file a reply to these answers.[25]

The Board held oral argument on standing and contention admissibility in Custer, South Dakota, on June 8 and 9, 2010.[26] On August 5, 2010, the Board ruled on both petitions to intervene and requests for hearings,[27] admitting the Oglala Sioux Tribe and the Consolidated Petitioners (re-designated Consolidated Intervenors) as Intervenors.[28] The Board also admitted four of the contentions

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2010) [hereinafter Consolidated Intervenors' Petition, Ex. INT-016]. David Frankel, Esq., filed the Petition on his own behalf and on behalf of the following persons and organizations: Theodore P. Ebert, Gary Heckenlaible, Susan Henderson, Dayton Hyde, Lilias C. Jones Jarding, the Clean Water Alliance, and Aligning for Responsible Mining. *Id.* at 1.

[19] Establishment of Atomic Safety and Licensing Board (Mar. 12, 2010) (unpublished); *see also* Powertech (USA), Inc.; Establishment of Atomic Safety and Licensing Board, 75 Fed. Reg. 13,141 (Mar. 18, 2010).

[20] *See* Joint Motion for Extension of Time for Late-Filed Contentions and to Respond to Request for Hearing (Mar. 31, 2010) (ADAMS Accession No. ML100900058); Licensing Board Order (Granting Motion for Extension of Time) (Apr. 1, 2010) (unpublished) (ADAMS Accession No. ML100910251). This Order also granted Consolidated Petitioners additional time to file new or amended contentions based on information recently released by the NRC Staff. *Id.* at 2.

[21] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Apr. 12, 2010) (ADAMS Accession No. ML101020722); NRC Staff Response to Hearing Request of Consolidated Petitioners (Apr. 12, 2010) (ADAMS Accession No. ML101020723).

[22] Petitioners' Consolidated Reply to Applicant and NRC Staff Answers to Hearing Request/Petition to Intervene (Apr. 19, 2010) (ADAMS Accession No. ML101100001) [hereinafter Consolidated Intervenors' New Petition].

[23] Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (Apr. 30, 2010) (ADAMS Accession No. ML101200675).

[24] NRC Staff's Response to Consolidated Petitioners' Contention filed April 30, 2010 (May 21, 2010) (ADAMS Accession No. ML1014105410); Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (May 23, 2010) (ADAMS Accession No. ML1014300009).

[25] Tr. at 381.

[26] Tr. at 1-405.

[27] LBP-10-16, 72 NRC at 361.

[28] *Id.* at 376.

proposed by the Oglala Sioux Tribe[29] and three of the contentions proffered by the Consolidated Intervenors.[30]

In the meantime, the NRC Staff began preparing the environmental and safety reviews related to the Powertech application. The NRC Staff issued a Safety Evaluation Report (SER) in March 2013[31] and an SER (Revised) in April 2014.[32]

The NRC Staff issued requests for additional information (RAIs) to Powertech on environmental matters,[33] and on November 26, 2012, the NRC Staff issued a Draft Supplemental Environmental Impact Statement (DSEIS) for public comment.[34] On January 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors filed proposed contentions relating to the DSEIS.[35] On March 7, 2013, the NRC Staff filed its response to the proposed contentions,[36] followed on March 11, 2013, by the Powertech response.[37] On March 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors submitted replies in support of their respective motions for new contentions.[38]

On July 22, 2013, the Board concluded that three new contentions proposed in

[29] *Id.* at 444.

[30] *Id.* at 443.

[31] Ex. NRC-135, Office of Federal and State Materials and Environmental Management Programs, Safety Evaluation Report for the Dewey-Burdock Project (Mar. 2013) [hereinafter SER (Mar. 2013), Ex. NRC-135].

[32] Ex. NRC-134, Office of Federal and State Materials and Environmental Management Programs, Safety Evaluation Report (Revised) for the Dewey Burdock Project (Apr. 2014) [hereinafter SER (Revised) (Apr. 2014) Ex. NRC-134]. This revised SER corrected certain technical references.

[33] Ex. APP-050, Letter from Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech, to Ron Burrows, Project Manager, NRC (Aug. 12, 2010); *see also* Powertech (USA) Inc.'s Response to the Request for Additional Information to Support the Environmental Review of its Application (Aug. 26, 2010) (ADAMS Accession No. ML102380530); Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal and Email Requests for Clarification of Selected Issues Related to the Dewey-Burdock Uranium Project Environmental Review (Nov. 4, 2010) (ADAMS Accession No. ML103140318).

[34] Exs. NRC-009-A-1 through NRC-009-B-2, Office of Federal and State Materials and Environmental Management Programs, Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Draft Report for Comment, NUREG-1910 (Supp. 4 Nov. 2014) [hereinafter DSEIS, Exs. NRC-009-A-1 through NRC-009-B-2].

[35] *See* List of Contentions of the Oglala Sioux Tribe Based on the [DSEIS] (Jan. 25, 2013); Consolidated Intervenors' New Contentions Based on DSEIS (Jan. 25, 2013).

[36] NRC Staff's Answer to Contentions on the [DSEIS] (Mar. 7, 2013).

[37] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Mar. 11, 2013).

[38] Consolidated Intervenors' Consolidated Reply Re: DSEIS (Mar. 25, 2013); Consolidated Reply of the Oglala Sioux Tribe (Mar. 25, 2013).

response to the DSEIS were admissible, and that seven of the original contentions were admissible because of the migration tenet.[39]

On September 19 and 20, 2013, the Board conducted a site visit of the Dewey-Burdock site to which all parties and other interested participants were invited. Details regarding the site visit were made public before and after the visit.[40] At the site visit, the Board and other attendees viewed the Dewey-Burdock site, the entrance to one property owned by Intervenor Dayton Hyde, another by Intervenor Susan Henderson, and the exterior of the operational Cameco Crow Butte ISL facility in Crawford, Nebraska.[41]

On January 29, 2014, the NRC Staff issued a notice of public availability[42] of the Final Supplemental Environmental Impact Statement (FSEIS),[43] updating the information in the DSEIS. The FSEIS added an Appendix E, which presents the public comments received on the DSEIS and the NRC Staff's responses. On March 17, 2014, both the Oglala Sioux Tribe and the Consolidated Intervenors filed "Statements of Contentions" with proposed contentions relating to the FSEIS.[44] The Oglala Sioux Tribe filed ten contentions and the Consolidated Intervenors filed five contentions. On April 4, 2014, Powertech and the NRC Staff filed answers opposing the proposed contentions.[45] On April 11, 2014, the Oglala Sioux Tribe and the Consolidated Intervenors filed replies to the NRC Staff and Powertech answers.[46] The Board concluded that the previously admitted

[39] LBP-13-9, 78 NRC 37, 43 (2013). The migration tenet applies when the information in the DEIS is sufficiently similar to the information in the applicant's environmental report, and allows previously admitted contentions challenging the environmental report to apply to relevant portions of the DSEIS. *See id.*; *see also Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-11-1, 73 NRC 19, 26 (2011).

[40] *See* Licensing Board Order (Site Visit Information and Schedule) (Sept. 17, 2013) (unpublished); Licensing Board Order (Amending Site Visit Schedule) (Sept. 5, 2013) (unpublished); Licensing Board Order (Scheduling Site Visit) (Aug. 21, 2013) (unpublished); Licensing Board Memorandum (Memorializing Site Visit) (Sept. 24, 2013) (unpublished).

[41] Licensing Board Memorandum (Memorializing Site Visit) (Sept. 24, 2013) at 2-3 (unpublished).

[42] In the Matter of Powertech (USA) Inc., Letter from Patricia Jehle, Counsel for NRC Staff, to Administrative Judges and Parties (Jan. 29, 2014).

[43] FSEIS, Exs. NRC-008-A-1 through NRC-008-B-2.

[44] Statement of Contentions of the Oglala Sioux Tribe Following Issuance of [FSEIS] (Mar. 17, 2014); Consolidated Intervenors' Statement of Contentions (Mar. 17, 2014).

[45] Applicant Powertech (USA) Inc's Response to Consolidated Petitioners' Request for Admission of New or Amended Contentions on NUREG-1910, Supplement 4 (Apr. 4, 2014); NRC Staff's Answer to Contentions on [FSEIS] (Apr. 4, 2014).

[46] Reply of the Oglala Sioux Tribe Regarding Contentions Following Issuance of [FSEIS] (Apr. 11, 2014); Consolidated Intervenors' Consolidated Reply to Applicant and NRC Staff Answers to Contentions on [FSEIS] (Apr. 11, 2014).

contentions that referred to the DSEIS migrated to the FSEIS, and that the additional proposed FSEIS contentions were inadmissible.[47]

Meanwhile, on April 8, 2014, the NRC Staff issued NRC Source Materials License No. SUA-1600 to Powertech.[48] The license allows Powertech to possess and use source and byproduct material in connection with the Dewey-Burdock Project.[49] Pursuant to 10 C.F.R. § 2.1213 the Oglala Sioux Tribe and Consolidated Intervenors filed motions to stay the license.[50] The Oglala Sioux Tribe also filed an answer in support of the Consolidated Intervenors' stay motion.[51] On April 24, 2014, the NRC Staff and Powertech filed oppositions to Intervenors' motions.[52] Pending oral argument on the motions, the Board temporarily granted the stay request.[53]

On May 13, 2014, the Board held a telephonic oral argument on the stay motion.[54] A week later, on May 20, 2014, the Board lifted its temporary stay and denied Intervenors' stay motions.[55]

On April 11, 2014, both the NRC Staff and the Oglala Sioux Tribe filed motions for summary disposition.[56] On April 25, 2014, responses to the motions

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[47] LBP-14-5, 79 NRC 377, 401 (2014).

[48] Ex. NRC-012, SUA-1600 Materials License, NRC Form 374 (Apr. 8, 2014) [hereinafter Powertech Materials License, Ex. NRC-012]; *see also* ADAMS Accession Package Number ML14043A052, which includes the license transmittal letter, the license, and the Final Safety Evaluation Report. The NRC Staff also issued its Record of Decision for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Project at ADAMS Accession No. ML14066A466. The Final Programmatic Agreement was executed April 7, 2014, and is available in ADAMS Accession Package No. ML14066A344.

[49] Powertech Materials License, Ex. NRC-012, at 1.

[50] Oglala Sioux Tribe's Motion for Stay of Effectiveness of License (Apr. 14, 2014); Consolidated Intervenors' Application for a Stay of the Issuance of License No. SUA-1600 Under 10 CFR Section 2.1213 (Apr. 14, 2014).

[51] Oglala Sioux Tribe's Answer in Support of Consolidated Intervenors' Motion for Stay of Effectiveness of License (Apr. 24, 2014).

[52] NRC Staff's Opposition to Application for a Stay (Apr. 24, 2014); Powertech (USA) Inc's Response to Consolidated Intervenors and the Oglala Sioux Tribe Motions for Stay of the Effectiveness of NRC License No. SUA-1600 (Apr. 24, 2014).

[53] Licensing Board Order (Temporarily Granting Stay of Materials License Number SUA-1600) (Apr. 30, 2014) (unpublished).

[54] Tr. at 578-637.

[55] Licensing Board Order (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600) (May 20, 2014) at 6-8 (unpublished).

[56] NRC Staff's Motion for Summary Disposition on Safety Contentions 2 and 3 (Apr. 11, 2014) (seeking summary disposition on the safety aspects of Contentions 2 and 3); Oglala Sioux Tribe's Motion for Summary Disposition National Environmental Policy Act Contentions 1A and 6 — Mitigation Measures (Apr. 11, 2014) (seeking summary disposition of NEPA issues in Contentions 1A and 6).

for summary disposition were filed by all parties.[57] The Board denied both parties' motions on June 2, 2014.[58]

On June 20, 2014, the Oglala Sioux Tribe voluntarily withdrew Contentions 14A and 14B.[59] On July 15, 2014, the Board dismissed these contentions based on this voluntary withdrawal.[60] On August 18, 2014, the Board held a Limited Appearance Session[61] to allow members of the public who were not parties to the adjudication to provide the Board with oral statements setting forth their positions on matters related to the admitted contentions.[62] On August 19, 20, and 21, 2014, the Board held an evidentiary hearing at the Hotel Alex Johnson in Rapid City, South Dakota, concerning the seven contentions raised by the Oglala Sioux Tribe and the Consolidated Intervenors.[63] At the hearing the Board heard argument from counsel and testimony from witnesses for each party, and admitted party exhibits into the evidentiary record, with an exhibit list bound into the hearing transcript.[64]

On August 16, 2014, just prior to the evidentiary hearing, the Oglala Sioux Tribe filed a motion[65] seeking disclosure of certain data logs referred to by Powertech in an August 7, 2014 e-mail[66] and other documents referenced in a filing required by Canadian securities laws. At the hearing the Board heard argument from counsel and asked each party's geologic witnesses questions

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[57] NRC Staff's Response to Oglala Sioux Tribe's Motion for Summary Disposition (Apr. 25, 2014); Powertech (USA) Inc's Response to Oglala Sioux Tribe and NRC Staff Motions for Summary Disposition (Apr. 25, 2014); Oglala Sioux Tribe's Response to NRC Staff's Motion for Summary Disposition (Apr. 25, 2014); Consolidated Intervenors' Response to NRC Staff's Motion for Summary Disposition on Contentions 2 and 3 (Apr. 25, 2014).

[58] Licensing Board Order (Denying Motions for Summary Disposition) (June 2, 2014) at 7 (unpublished).

[59] Oglala Sioux Tribe's Statement of Position on Contentions (June 20, 2014) at 41-42 [hereinafter Oglala Sioux Tribe Statement of Position].

[60] Licensing Board Order (Granting Request to Withdraw and Motion to Dismiss Contentions 14A and 14B) (July 15, 2014) (unpublished).

[61] Atomic Safety and Licensing Board Hearing in the Matter of Powertech USA, Inc. (Dewey-Burdock In Situ Uranium Recovery Facility), 79 Fed. Reg. 39,413 (July 10, 2014).

[62] At the morning session, thirty-six people made oral limited appearance statements. Transcript of Limited Appearance Session (Aug. 18, 2014) (ADAMS Accession No. ML14234A068). During the evening session, twenty-nine people addressed the Board. Transcript of Limited Appearance Session (Aug. 18, 2014) (ADAMS Accession No. ML14234A067). Fifty-three written limited appearance statements were received.

[63] Notice of Evidentiary Hearing, 79 Fed. Reg. 42,836 (July 23, 2014).

[64] Tr. at 692-1328.

[65] Oglala Sioux Tribe's Motion to Enforce Mandatory Disclosure Duties Under 10 C.F.R. § 2.336 (Aug. 16, 2014).

[66] E-mail from Christopher Pugsley, Powertech Counsel, to Licensing Board Judges, RE: NRC Proceeding "Powertech USA 40-9075-MLA" (Aug. 7, 2014); *see also* Ex. OST-019, Powertech Press Release, Powertech Uranium (Azarga Uranium) Enters into Data Purchase Agreement for Dewey-Burdock Project (July 16, 2014).

regarding the relevancy of Powertech's newly acquired data logs.[67] The Board then ruled that the data logs were relevant to Contention 3 and that an "opportunity for this data to be viewed by all parties to the case" must be given by Powertech to fulfill its mandatory disclosure duties.[68] In a post-hearing Order ruling on this dispute, the Board reiterated its conclusion that the logs and certain other information were relevant and must be made available to the Intervenors and the NRC Staff immediately.[69]

On October 9, 2014, the Oglala Sioux Tribe and Consolidated Intervenors jointly moved to extend the deadline for filing new contentions relative to the data log materials.[70] On October 14, 2014, the Oglala Sioux Tribe submitted new exhibits,[71] and the NRC Staff submitted supplemental testimony and exhibits.[72] On October 22, 2014, the Board granted Intervenors a 30-day extension to file any additional testimony/exhibits on Contention 3.[73] On November 7, 2014, the Oglala Sioux Tribe submitted two new contentions and further additional exhibits.[74] On November 13, 2014, the Board admitted the Oglala Sioux Tribe's and NRC Staff's new exhibits, and closed the record as it pertained to Contentions 1A, 1B, 2, 4, 6, and 9.[75] On November 21, 2014, the Oglala Sioux Tribe submitted its additional testimony and exhibits on Contention 3.[76] Powertech filed a response and additional exhibits/testimony on December 4, 2014,[77] and the NRC Staff filed its response and additional exhibits/testimony on December 9, 2014.[78] On December 10, 2014, the Board admitted all exhibits, requested further memoranda of law on whether any or all of the Oglala Sioux Tribe's

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[67] Tr. at 880-966.

[68] Tr. at 967.

[69] Licensing Board Post-Hearing Order (Sept. 8, 2014) at 7-8, 11-12 (unpublished).

[70] Oglala Sioux Tribe and Consolidated Intervenors' Motion to Extend Deadline for Submission of Testimony and Amend or File New Contentions (Oct. 9, 2014) [hereinafter Motion to Extend].

[71] Oglala Sioux Tribe Motion to Admit Additional Exhibits (Oct. 14, 2014).

[72] NRC Staff's Motion to Admit Testimony and Exhibits Addressing Powertech's September 14, 2014 Disclosures (Oct. 14, 2014) (submitting testimony and exhibits addressing the information disclosed by Powertech on September 14, 2014).

[73] Licensing Board Order (Granting in Part Motion to Extend Deadline) (Oct. 22, 2014) (unpublished).

[74] Motion for Leave to File New or Amended Contention on Behalf of the Oglala Sioux Tribe (Nov. 7, 2014); Oglala Sioux Tribe Unopposed Motion to Admit Additional Exhibits (Nov. 7, 2014). The admission of both these contentions is denied in Parts G.1 and G.2 of this Order. *See* Licensing Board Notice (Pursuant to 10 C.F.R. § 2.309(j)(1)) (Jan. 14, 2015) (unpublished).

[75] Licensing Board Order (Admitting New Exhibits and Closing the Evidentiary Record on Contentions 1A, 1B, 2, 4, 6 and 9) (Nov. 13, 2014) (unpublished).

[76] Oglala Sioux Tribe Motion to Admit Additional Testimony and Exhibits (Nov. 21, 2014).

[77] Powertech (USA), Inc. Response to the Oglala Sioux Tribe's November 21, 2014, Motion to Admit Additional Testimony and Exhibits (Dec. 4, 2014).

[78] NRC Staff's Brief in Support of Answering Testimony (Dec. 9, 2014).

exhibits should be accorded nonpublic status, and closed the evidentiary record on Contention 3.[79] The parties filed their memoranda on the nonpublic status of exhibits on December 19, 2014,[80] and the Board subsequently ruled that newly submitted supplemental testimony would be made public, while other Oglala Sioux Tribe exhibits should remain nonpublic.[81]

On January 9, 2015, the parties submitted their Proposed Findings of Fact and Conclusions of Law,[82] and on January 29, 2015, their Replies to these post-hearing filings.[83] On March 9, 2015, the Board issued a Notice that it anticipated issuing an Initial Decision no later than April 30, 2015.[84]

This Partial Initial Decision makes a determination regarding the merits of the seven contentions that were the subjects of the evidentiary hearing in August 2014, and rules on the admissibility of two additional contentions proposed by the Oglala Sioux Tribe on November 7, 2014. In addressing each of the concerns raised by the Intervenors in their contentions, this Partial Initial Decision upholds the NRC Staff issuance of Source Materials License No. SUA-1600, albeit with the imposition of additional license conditions.

III. LEGAL STANDARDS

Contentions 1A, 1B, 2, 3, 4, 6, and 9 raise challenges to the Powertech

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[79] Licensing Board Order (Admitting Additional Exhibits, Closing the Record on Contention 3 and Setting Briefing Dates) (Dec. 10, 2014) (unpublished).

[80] NRC Staff's Response to Board's December 10, 2014 Order (Dec. 19, 2014); Powertech (USA), Inc. Response to the Atomic Safety and Licensing Board's Request for Argument on Potential Non-Public Status of Oglala Sioux Tribe's Exhibits (Dec. 19, 2014); Oglala Sioux Tribe's Memorandum of Law in Response to the Board's December 9, 2014 Order in Regarding Public Disclosure of Admitted Testimony and Exhibits (Dec. 19, 2014).

[81] Licensing Board Order (Ruling on Confidentiality of Exhibits OST-029 through OST-041) (Jan. 12, 2015) (unpublished).

[82] NRC Staff's Proposed Findings of Fact and Conclusions of Law (Jan. 9, 2015); NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015); Powertech (USA), Inc's Proposed Findings of Fact and Conclusions of Law (Jan. 9, 2015) [hereinafter Powertech Initial Findings of Fact and Conclusions of Law]; Consolidated Intervenors' Proposed Findings of Fact and Conclusions of Law and Response to Post-Hearing Order (Jan. 9, 2015); Oglala Sioux Tribe's Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law (Jan. 9, 2015) [hereinafter Oglala Sioux Tribe Post-Hearing Initial Brief].

[83] Consolidated Intervenor's Reply to Post-Hearing Briefs (Jan. 29, 2015); NRC Staff's Reply Brief (Jan. 29, 2015) [hereinafter NRC Staff's Post-Hearing Reply Brief]; Errata to NRC Staff's Post-Hearing Briefs (Feb. 2, 2015); Powertech (USA), Inc's Reply to Proposed Findings of Fact and Conclusions of Law (Jan. 29, 2015); Oglala Sioux Tribe's Post-Hearing Reply Brief (Jan. 29, 2015) [hereinafter Oglala Sioux Tribe Post-Hearing Reply Brief].

[84] Licensing Board Notice (Regarding Expected Issuance of Initial Decision) (Mar. 9, 2015) (unpublished).

ISL license application under the Atomic Energy Act of 1954, as amended (AEA), the National Environmental Policy Act of 1969 (NEPA),[85] the National Historic Preservation Act (NHPA)[86] and the NRC regulations implementing the agency's responsibilities pursuant to these Acts.[87] Together, these statutes and the corresponding agency regulations govern an applicant's and the NRC Staff's roles in considering the safety and environmental effects of a proposed agency ISL licensing action under 10 C.F.R. Part 40. The NRC has a statutory obligation to assess each site-specific license application to ensure it complies with NRC regulations before issuing a license.

Additionally, the Council on Environmental Quality (CEQ) and the Advisory Council on Historic Preservation (ACHP) have issued regulations that provide guidance on agency compliance with NEPA[88] and the NHPA,[89] that, while not binding on the NRC when the agency has not expressly adopted them, are entitled to considerable deference.[90]

A. AEA Requirements

The AEA and the Uranium Mill Tailings Radiation Control Act of 1978[91] authorize the NRC to issue licenses for the possession and use of source material and byproduct material.[92] These statutes require the NRC to license facilities that meet NRC regulatory requirements developed to protect public health and safety from radiological hazards. To operate, ISL uranium recovery facilities must meet NRC regulatory requirements and obtain a source materials license.

The AEA also provides hearing rights in licensing actions concerning "the granting . . . of any license . . . upon the request of any person whose interest may be affected by the proceeding."[93] Given that the licensing action in dispute

[85] 42 U.S.C. § 4321 *et seq.*

[86] 16 U.S.C. § 470 *et seq.* While the NHPA was previously codified at title 16 of the U.S. Code, effective December 19, 2014, it was moved to title 54. *See* 54 U.S.C. § 300101 *et seq.*

[87] 10 C.F.R. Part 51.

[88] *See* 40 C.F.R. Part 1500.

[89] 36 C.F.R. § 800 *et seq.*

[90] *Limerick Ecology Action, Inc. v. NRC,* 869 F.2d 719, 725, 743 (3d Cir. 1989); *Dominion Nuclear North Anna, LLC* (Early Site Permit for North Anna ESP Site), CLI-07-27, 66 NRC 215, 222 n.21 (2007) (giving CEQ's regulations and guidance "substantial deference").

[91] AEA, 42 U.S.C. 2011 *et seq.*; Uranium Mill Tailings Radiation Control Act of 1978, 42 U.S.C. §§ 2022 *et seq.,* 7901 *et seq.*

[92] Section 11e(2) byproduct material is regulated by the NRC under 10 C.F.R. Part 40. In 10 C.F.R. § 40.4, the NRC clarified the definition of byproduct material by adding the clause "including discrete surface wastes resulting from uranium solution extraction processes." In simpler terms, it is the waste and tailings generated by the processing of ore for its uranium or thorium content.

[93] AEA § 189(a)(1)(A), 42 U.S.C. § 2239a(1)(a).

here is the grant of Powertech's combined source and 11e(2) byproduct materials license, AEA hearing rights attach. ISL license applications require a safety review to determine if a license applicant has met all relevant criteria in 10 C.F.R. Parts 20 and 40. These safety requirements include certain criteria in Appendix A to Part 40, which provides specific standards for operating uranium mills and disposing of waste material. However, because the Dewey-Burdock Project is not a conventional uranium mill, not all criteria in Appendix A must be met.[94]

B. NEPA Requirements

NEPA requires that federal agencies prepare a detailed environmental impact statement for proposed actions "significantly affecting the quality of the human environment."[95] The adverse environmental effects that must be assessed under NEPA include "aesthetic, historic, cultural, economic, social, or health" effects.[96] While reviewing any adverse effects, federal agencies must take a hard look at the environmental impacts of a proposed action.[97] This hard look is intended to foster both informed agency decisionmaking and informed public participation so as to ensure that the agency does not act upon incomplete information.[98] The NRC Staff must provide "a reasonably thorough discussion of the significant aspects of the probable environmental consequences."[99] However, the hard look is subject to a "rule of reason," and consideration of environmental impacts need not address all theoretical possibilities, but only those that have some reasonable possibility

[94] *See Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 9 (1999) ("We agree that those requirements in Part 40, such as many of the provisions in Appendix A, that, by their own terms, apply only to conventional uranium milling activities, cannot sensibly govern ISL mining.").

[95] 42 U.S.C. § 4332(2)(C).

[96] 40 C.F.R. § 1508.8(b) (2014).

[97] *See Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 87-88 (1998).

[98] The NEPA hard look must emerge from an engagement in informed and reasoned decisionmaking, as the agency "obtains opinions from its own experts, obtains opinions from experts outside the agency, gives careful scientific scrutiny and responds to all legitimate concerns that are raised." *Hughes River Watershed Conservancy v. Johnson,* 165 F.3d 283, 288 (4th Cir. 1999) (citing *Marsh v. Oregon Natural Resources Council,* 490 U.S. 360, 378-85 (1989)).

[99] *Trout Unlimited v. Morton,* 509 F.2d 1276, 1283 (9th Cir. 1974); *Warm Springs Dam Task Force v. Gribble,* 621 F.2d 1017, 1026-27 (9th Cir. 1980); *see also Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005) ("NEPA also does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts." (emphasis in original)).

of occurring.[100] As the Commission has emphasized, "an environmental impact statement is not intended to be 'a research document.'"[101]

In an NRC adjudicatory proceeding, even if a Board finds an Environmental Impact Statement (EIS) prepared by the NRC Staff inadequate in certain respects, the Board's findings, as well as the adjudicatory record, "become, in effect, part of the [final EIS]."[102] Thus, the Board's ultimate NEPA judgments are made on the basis of the entire adjudicatory record in addition to the NRC Staff's FSEIS.[103] In this proceeding, the NRC Staff issued the license after it issued the FSEIS, but before the evidentiary hearing.[104]

C. NHPA Requirements

The NHPA, like NEPA, is a procedural statute requiring government agencies to "stop, look, and listen" before proceeding with agency action.[105] Under the

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[100] *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-156, 6 AEC 831, 836 (1973); *see also Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-05-29, 62 NRC 801, 807 (2005); *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-17, 56 NRC 1, 7 (2002). The NRC Staff must have some discretion to draw the line and move forward with decisionmaking. *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (citation omitted).

[101] *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010) (citation omitted). NEPA does not require the NRC Staff to analyze every conceivable aspect of the proposed project. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 349 (2002).

[102] *Claiborne,* CLI-98-3, 47 NRC at 89.

[103] *See Louisiana Energy Services, L.P.* (National Enrichment Facility), LBP-05-13, 61 NRC 385, 404 (2005), *aff'd,* CLI-06-22, 64 NRC 37 (2006); *see also Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-09-7, 69 NRC 613, 733 (2009), *petition for review denied,* CLI-10-5, 71 NRC 90 (2010).

[104] Section 2.1202(a) of 10 C.F.R. instructs the NRC Staff "to promptly issue its approval or denial of the application" consistent with its findings, despite the pendency of a hearing. Nonetheless, the issued license can be revoked, conditioned, modified, or affirmed based on the evidence reviewed at the evidentiary hearing. *See* 10 C.F.R. § 40.41(e)(2) ("The Commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, such additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of source or byproduct material as it deems appropriate or necessary in order to . . . protect health or to minimize danger of life or property."); *see also Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-422, 6 NRC 33, 68 (1977) (quoting CLI-77-8, 5 NRC 503, 530 (1977) ("In granting a proposed license, the Board may condition it upon some precautionary measures required at the chosen site.").

[105] Ex. NRC-048, Council on Environmental Quality, Executive Office of the President, and Advisory Council on Historic Preservation, NEPA and NHPA: A Handbook for Integrating NEPA and Section 106 at 4 (Mar. 2013) [hereinafter NEPA and NHPA Handbook, Ex. NRC-048]; *see also* 16 U.S.C. § 470 *et seq.*

NHPA, a federal agency must make a reasonable and good faith effort to identify historic properties,[106] determine whether identified properties are eligible for listing on the National Register based on the criteria in 36 C.F.R. § 60.4, assess the effects of the undertaking on any eligible historic properties found,[107] determine whether the effect will be adverse,[108] and avoid or mitigate any adverse effects.[109] The federal agency must confer with a State Historic Preservation Officer and seek the approval of the ACHP.[110]

Section 106 of the NHPA requires federal agencies, prior to approving any "undertaking," such as the Dewey-Burdock project, to "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."[111] If an undertaking "may affect" an eligible site, the agency must make a reasonable and good faith effort to seek information from consulting parties, other members of the public, and Native American tribes to identify historic properties in the area of potential effect. The NHPA also requires that federal agencies "consult with any Indian tribe . . . that attaches religious and cultural significance" to the sites.[112] Consultation must provide the tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[113] The NHPA further requires that consultation with Indian tribes "recognize the government-to-government relationship between the Federal Government and Indian tribes."[114]

Agencies are directed by presidential memoranda and Executive Orders to undertake meaningful consultation with Indian tribes. In 1994, President Clinton called for agencies "to ensure that the Federal Government operates within a government-to-government relationship with federally recognized Native American tribes[,] . . . reflecting respect for the rights of self-government due the

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[106] 36 C.F.R. § 800.4(b).

[107] 36 C.F.R. §§ 800.4(c), 800.5, 800.9(a).

[108] 36 C.F.R. §§ 800.5(c), 800.9(b).

[109] 36 C.F.R. §§ 800.8(c), 800.9(c).

[110] *Muckleshoot Indian Tribe v. U.S. Forest Service,* 177 F.3d 800, 805 (9th Cir. 1999); *see also* 36 C.F.R. § 800.8(c)(1)(v) (An agency must "develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of the undertaking on historic properties and describe them in the [environmental assessment] EA or DEIS.").

[111] 16 U.S.C. § 470f.

[112] 16 U.S.C. § 470a(d)(6)(B).

[113] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[114] 36 C.F.R. § 800.2(c)(2)(ii)(C).

sovereign tribal governments."[115] In 2000, President Clinton issued an Executive Order "to establish regular and meaningful consultation and collaboration with tribal officials" through "an accountable process" at each agency.[116] In 2009, President Obama issued a memorandum commenting that a lack of consultation with tribes "has all too often led to undesirable and, at times, devastating and tragic results," but that "meaningful dialogue between Federal officials and tribal officials has greatly improved Federal policy toward Indian tribes."[117]

An agency may fulfill its NHPA review responsibilities through several means, one of which includes the issuance of a Programmatic Agreement. A Programmatic Agreement may be used to implement the Section 106 process in situations where the effects to historic properties cannot be fully determined prior to the approval of an undertaking, such as where an applicant proposes a phased approach to developing its project.[118] In such cases, the Programmatic Agreement establishes a phased process for consultation, review, and compliance with the NHPA.

The ACHP guidance on consultation reiterates that consultation must begin at the earliest possible time in an agency's consideration of an undertaking, framing such early engagement with Indian tribes as an issue of respect for tribal sovereignty.[119] Agencies must ensure that a tribe has "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, . . . articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[120] Federal policy, as reflected in the American Indian Religious Freedom Act of

[115] Memorandum on Government-to-Government Relations with Native American Tribal Governments, 30 Weekly Comp. Pres. Doc. 936 (May 2, 1994).

[116] Exec. Order No. 13,175, 65 Fed. Reg. 67,249, 67,250 (Nov. 6, 2000). Independent regulatory agencies, including the NRC, were "encouraged to comply with the provisions of this order." *Id.* at 67,251. The NRC has created a Tribal Protocol Manual, and stated that it would act in a manner consistent with the fundamental precepts expressed in the Executive Order. Division of Material, Safety, States, Tribal, and Rulemaking Programs, Office of Nuclear Material Safety and Safeguards, Tribal Protocol Manual, NUREG-2173, at 4 (Dec. 2014) (ADAMS Accession No. ML14274A014) [hereinafter Tribal Protocol Manual].

[117] Memorandum on Tribal Consultation, 74 Fed. Reg. 57,881 (Nov. 5, 2009).

[118] 36 C.F.R. §§ 800.13, 800.14(b)(1).

[119] Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook, at 3, 7, 12, 29 (Nov. 2008).

[120] 36 C.F.R. § 800.2(c)(2)(ii)(A).

1978[121] and the 1996 Executive Order on Indian Sacred Sites[122] also supports special consideration where tribal religious exercise is threatened.

D. NRC Regulations

The NRC's environmental protection regulations, which implement NEPA, are found in Title 10, Part 51 of the *Code of Federal Regulations.* Issuance of a license to possess and use source material for uranium milling and ISL mining requires an EIS or a supplement to an EIS, and the NRC has prepared a Generic Environmental Impact Statement (GEIS) for ISL mining, NUREG-1910, to help fulfill this requirement.[123] The GEIS assesses the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISL uranium recovery facility in four specified regions in the western United States. The intent of the GEIS is to determine which impacts would be essentially the same for all ISL facilities and which ones would result in varying levels of impacts for different facilities, thus requiring further site-specific information to determine the potential impacts. As such, the GEIS provides a starting point for the NRC's NEPA analyses for site-specific license applications for new ISL facilities, as well as for applications to amend or renew existing ISL licenses.

E. Burden of Proof

As the proponent of the agency action, an applicant generally has the burden of proof in a licensing proceeding.[124] The statutory obligation of complying with NEPA, however, rests with the NRC.[125] Consequently, when NEPA contentions are involved, the burden shifts to the NRC Staff.[126] Nonetheless, because "the

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[121] American Indian Religious Freedom Act, Pub. L. No. 95-341, 92 Stat. 469 (1978) (codified at 42 U.S.C. § 1996 (2012)).

[122] Exec. Order No. 13,007, 61 Fed. Reg. 26,771 (May 24, 1996), *reprinted in* 42 U.S.C. § 1996 (2012).

[123] Issuing a license to possess and use source material to a uranium milling facility is identified as a major federal action. 10 C.F.R. § 51.20(b)(8); *see also* Ex. NRC-010-A-1 through NRC-010-B-2, Office of Federal and State Materials and Environmental Management Programs, Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, NUREG-1910 (May 2009).

[124] *See* 10 C.F.R. § 2.325.

[125] *See, e.g., Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

[126] *See Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2), CLI-10-2, 71 NRC 27, 34 (2010); *see also Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP *(Continued)*

Staff, as a practical matter, relies heavily upon the Applicant's Environmental Report in preparing the EIS, should the Applicant become a proponent of a particular challenged position set forth in the EIS, the Applicant, as such a proponent, also has the burden on that matter."[127] And relative to factual matters, to carry that burden, the NRC Staff and/or Powertech[128] must establish that its position is supported by a preponderance of the evidence.[129]

IV. DISCUSSION

Contentions 1A and 1B challenge the adequacy of the NRC Staff's FSEIS discussion of the protection of Native American religious and cultural resources.[130] In Contention 1A, the Intervenors allege that the NRC Staff's FSEIS does not adequately address the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources. In Contention 1B the Oglala Sioux Tribe challenges the consultation process employed, and alleges the NRC Staff failed to fulfill its responsibilities regarding consultation with Native American tribes.

Contentions 2, 3, and 4 question the adequacy of the FSEIS analysis of baseline groundwater quality (Contention 2), the potential for fluid migration and its impact on groundwater quality (Contention 3), as well as a failure to adequately analyze groundwater quantity impacts (Contention 4).

Contentions 6 and 9 allege an inadequate description and analysis of mitigation measures (Contention 6) and a failure to consider connected actions in the FSEIS (Contention 9).

A. Contentions 1A and 1B: Historical and Cultural Resources and Consultation

Based on the intertwined nature of Contentions 1A and 1B, the Board will

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Site), CLI-07-17, 65 NRC 392, 395 (2007) (stating that "NRC hearings on NEPA issues focus entirely on the adequacy of the NRC Staff's work").

[127] *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 339 (1996) (citing *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 489 n.8 (1978)), *rev'd on other grounds,* CLI-97-15, 46 NRC 294 (1997).

[128] On April 8, 2014, the NRC Staff issued NRC Source Materials License No. SUA-1600 to Powertech (USA), Inc. pursuant to 10 C.F.R. § 2.1202(a).

[129] *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-763, 19 NRC 571, 577 & n.22 (1984).

[130] Originally, this contention challenged the discussion of this subject in Powertech's ER. However, with the release of the NRC Staff's NEPA documents, the contention subsequently migrated into a challenge of the discussion of this subject in the NRC Staff's FSEIS.

consider these contentions jointly. For Contentions 1A and 1B at the evidentiary hearing, the Oglala Sioux Tribe offered witnesses Wilmer Mesteth[131] and Michael CatchesEnemy.[132] Consolidated Intervenors offered witness Louis Redmond.[133] Powertech offered witnesses Lynn Sebastian,[134] Adrien Hannus,[135] and Michael Fosha.[136] The NRC Staff offered witnesses Haimanot Yilma,[137] Kellee Jamerson,[138] Po-Wen (Kevin) Hsueh,[139] and Hope Luhman.[140]

1. Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources

Contention 1A was originally submitted as part of the Oglala Sioux Tribe's Contention 1 and Consolidated Intervenors' Contention K.[141] The current form of Contention 1A challenges the NRC Staff's FSEIS.[142]

2. Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law

The Board first addressed the adequacy of the consultation process in 2010, when the Board held, in LBP-10-16, that "the issue of the alleged failure to consult with the Tribe . . . is material and within the scope of this proceeding."[143] The Board found, however, that "the failure to consult" portion of the contention

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[131] Ex. OST-015, Declaration of Wilmer Mesteth (Apr. 1, 2010).

[132] Ex. OST-014, Declaration of Michael CatchesEnemy (Apr. 14, 2014).

[133] Ex. INT-003, Louis Redmond Curriculum Vitae.

[134] Ex. APP-002, Lynne Sebastian Curriculum Vitae.

[135] Ex. APP-004, L. Adrien Hannus Curriculum Vitae.

[136] Ex. APP-011, Michael R. Fosha Curriculum Vitae.

[137] Ex. NRC-003-R, Revised Statement of Professional Qualifications of Haimanot Yilma.

[138] Ex. NRC-004-R, Revised Statement of Professional Qualifications of Kellee L. Jamerson.

[139] Ex. NRC-002-R, Revised Statement of Professional Qualifications of Po-Wen (Kevin) Hsueh.

[140] Ex. NRC-152, Statement of Professional Qualifications of Hope E. Luhman.

[141] Contention 1, as filed, read in full, "Failure to meet applicable legal requirements regarding protection of historical and cultural resources, and failure to involve or consult the Oglala Sioux Tribe as required by Federal law." Oglala Sioux Tribe Petition, Ex. OST-010 at 12; Consolidated Intervenors' New Petition at 1-2. Contention K read, "The Application is not in conformance with 10 C.F.R. § 40.9 and 10 C.F.R. § 51.45 because the Application does not provide analyses that are adequate, accurate, and complete in all material respects to demonstrate that cultural and historic resources . . . are identified and protected pursuant to Section 106 of the National Historic Preservation Act. As a result, the Application fails to comply with Section 51.60." Consolidated Intervenors' Petition, Ex. INT-016 at 1-2.

[142] LBP-14-5, 79 NRC at 401.

[143] LBP-10-16, 72 NRC at 422; *see also Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), CLI-09-9, 69 NRC 331, 350-51 (2009) (discussing the licensing board's ruling that tribal consultation is within the scope of the proceeding).

was not yet ripe and directed the Oglala Sioux Tribe to "wait until the [DSEIS] is issued by the NRC Staff to interpose the issue of the adequacy of the agency's consultation efforts."[144] The "failure to consult" contention was re-raised by the Oglala Sioux Tribe in response to the DSEIS, and admitted by the Board.[145] Thereafter, in LBP-14-5 the Board held that the contention migrated as a criticism of the FSEIS.[146]

3. Summary of Consultation Efforts and Cultural Surveys

The disposition of Contentions 1A and 1B largely flows from the specific steps taken throughout the consultation process. With this in mind, the Board begins by laying out the details of consultation efforts and tribal cultural surveys pursued during the NEPA process for the Dewey-Burdock project as described in the FSEIS.[147]

At the outset, the FSEIS notes that "the proposed action has the potential to affect certain sites of religious and cultural significance to Native American tribes; however, the impacts to such sites are expected to be reduced through mitigation strategies developed through the National Historic Preservation Act Section 106 consultation process."[148] Beginning in 2010 the NRC Staff began its efforts to address cultural, religious, and historical Native American sites. The South Dakota State Historic Preservation Officer initially identified twenty Native American tribes that might attach historic, cultural, and religious significance to historic properties within the proposed Dewey-Burdock ISL Project area.[149] The NRC Staff contacted these twenty tribal governments by letters dated March 19, 2010, September 10, 2010, and March 4, 2011.[150] The NRC Staff invited the tribes to participate as consulting parties in the NHPA § 106 process and requested assistance in identifying tribal historic sites or cultural resources that might be affected by the proposed action.

By letter dated January 31, 2011, the Oglala Sioux Tribe Tribal Historic

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[144] LBP-10-16, 72 NRC at 422.

[145] LBP-13-9, 78 NRC at 113.

[146] LBP-14-5, 79 NRC at 401.

[147] FSEIS, Ex. NRC-008-A-1, § 1.7.3.5.

[148] FSEIS, Ex. NRC-008-A-1, Executive Summary at xliv. Quoting an earlier study of the area, the FSEIS states, "most of the tribal members interviewed knew their people had regular ceremonial, cultural, and religious activity in the Black Hills prior to the establishment of reservations; however, no one could pinpoint present cultural, ceremonial, or religious use in the proposed area (Sprague, 2008, p. 14)." *Id.* § 1.7.3.1.

[149] The Cheyenne and Arapaho, Pawnee, and Omaha tribes were contacted later in February 2013. FSEIS, Ex. NRC-008-A-1, § 1.7.3.5.

[150] *Id.*

Preservation Officer accepted the invitation to participate as a consulting party and stated that the proposed Dewey-Burdock Project represented a substantial potential threat to the preservation of cultural and historic resources of the Oglala Sioux Tribe.[151] The Oglala Sioux Tribal Historic Preservation Officer also declared that the proposed project site was located within an area about which various Sioux tribes, along with the Cheyenne, Arapahoe, Crow, and Arikara Tribes, possess intimate cultural knowledge.[152] The Tribal Historic Preservation Officer further stated that impacts that could result from the proposed project include not only site-specific physical impacts, but intangible impacts to the integrity of the area from cultural, historical, spiritual, and religious perspectives.[153]

The NRC Staff held an "informal information gathering meeting" on June 8, 2011, at the Prairie Winds Casino and Hotel on the Pine Ridge Reservation with representatives of six tribes.[154] At that meeting tribal officials expressed concerns about the identification and preservation of historic properties of traditional religious and cultural importance to tribes at the proposed Dewey-Burdock site and two Crow Butte ISL sites in Nebraska. Tribal officials stated that historic and cultural resource studies of the sites should be conducted with tribal involvement.[155] In conjunction with the June 8, 2011, informal information gathering meeting, Powertech hosted a visit to the project site on June 9, 2011.

The NRC Staff held a second meeting with representatives of thirteen Native American tribes[156] in Rapid City, South Dakota, on February 14-15, 2012. The purpose of this meeting was to solicit the views of interested tribes about the general types and descriptions of historic properties of religious and cultural significance that may be affected by the proposed project and how these properties could be identified and evaluated as part of the ongoing consultations under section 106 of the NHPA.[157] Tribal representatives requested another face-to-face meeting to review draft statements of work prepared by several tribes and applicants.[158] Although a followup meeting was scheduled for March 14-15, 2012, it was

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[151] *Id.*

[152] *Id.*

[153] *Id.*

[154] The tribes with representatives in attendance were: the Oglala Sioux, Standing Rock Sioux, Flandreau-Santee Sioux, Sisseton-Wahpeton Oyate, Cheyenne River Sioux, and Rosebud Sioux. *Id.*

[155] *Id.*

[156] The tribes in attendance were: Cheyenne River Sioux, Crow Creek Sioux, Crow Tribe of Montana, Eastern Shoshone, Fort Peak Assiniboine Sioux, Northern Arapaho, Northern Cheyenne, Oglala Sioux, Rosebud Sioux, Yankton Sioux, Sisseton-Wahpeton Sioux, Santee Sioux Nation, and Standing Rock Sioux. *See id.*

[157] *Id.*

[158] These statements of work were for the preparation of traditional cultural properties for three proposed ISL projects in the greater Black Hills area; Dewey-Burdock ISR, Crow Butte License Renewal ISR in Nebraska, and the Crow Butte North Trend expansion area.

subsequently canceled. In lieu of this face-to-face meeting, the NRC Staff instead held a series of telephone conference calls and an exchange of letters and e-mails.[159]

On September 5, 2012, the NRC Staff met with representatives of seven tribes in Bismarck, North Dakota.[160] During this meeting, participants discussed how to proceed with the development of a statement of work to identify religious and cultural properties within the area of potential effects. All parties agreed a survey was necessary for historic property identification. All parties also agreed further consultation was needed to develop a statement of work that focused survey efforts on the identification of properties directly and indirectly affected by the proposed project.[161] Following this meeting, the NRC Staff asked participants from the September 5, 2012 meeting in Bismarck, North Dakota, to designate a preferred contractor to submit a proposal to conduct a survey on their behalf. The NRC Staff requested that the contractor's proposal be based on the area of direct effect that might be disturbed during the initial phase of the Dewey-Burdock ISL Project, and that the proposal include a cost estimate.[162] The NRC Staff also indicated a Programmatic Agreement would need to be "developed to address the phased identification and evaluation of historic properties."[163]

On June 19, 2012, the tribes provided the NRC Staff with a preliminary tribal statement of work for identifying properties of religious and cultural significance at the Dewey-Burdock ISL Project site. On September 27, 2012, the NRC Staff received a proposal and cost estimate from the tribes for a traditional cultural properties survey for the proposed Dewey-Burdock Project. The proposal and cost estimate were prepared by Makoche Wowapi/Mentz-Wilson Consultants, LLP, the contractor selected by the tribes to complete the cultural resources survey of the proposed project. On October 12, 2012, the NRC Staff informed the tribes of the significant differences between the Makoche Wowapi/Mentz-Wilson Consultants, LLP proposal and Powertech's proposal. The NRC Staff requested that the tribes propose alternative methods for identifying potential properties of traditional religious and cultural importance to the tribes. The NRC Staff suggested that alternative methods might include opening the site to interested tribal specialists over a period of several weeks with payment for survey costs

[159] FSEIS, Ex. NRC-008-A-1, § 1.7.3.5.

[160] Representatives of the Yankton Sioux, Sisseton-Wahpeton Oyate Sioux, Rosebud Sioux, Standing Rock Sioux, Northern Cheyenne, Oglala Sioux, and Crow Nation attended this meeting. *Id.*

[161] *Id.*

[162] *Id.*

[163] DSEIS, Ex. NRC-009-B-2, App. A at A-298, Request for Proposal, Letter from Kevin Hsueh, NRC Branch Chief, to Tribal Historic Preservation Officer (Sept. 18, 2012).

made to individual tribes or seeking ethno-historic and ethnographic information from tribal specialists in interviews at tribal headquarters.[164]

Between October 15 and October 20, 2012, the NRC Staff received letters and e-mails from four tribes opposing the NRC Staff's request for alternative survey approaches.[165] These tribes maintained that the only level of effort sufficient for identifying historic properties would be an on-the-ground, 100% survey of the entire license boundary by tribal personnel from participating tribes.[166] On October 19, 2012, the NRC Staff received an alternative field survey proposal from four tribes (not including the Oglala Sioux Tribe) in collaboration with Kadramas, Lee, & Jackson (KLJ), a private consulting firm from North Dakota. This alternative field survey proposed investigation of previously recorded archaeological sites, use of light detection and ranging mapping technology to locate potential rock alignments, cairns, and other stone features, and a systematic pedestrian survey of the 2637 acres of the project.[167] The NRC Staff found that the proposed level of effort in the KLJ proposal was reasonable and appropriate to the project area and that the estimated costs were in line with the range of survey costs obtained in tribal surveys of other projects. On October 31, 2012, the NRC Staff endorsed the KLJ survey approach and invited all consulting tribes to participate in the survey with paid compensation for one representative per tribe. However, five tribes (including the Oglala Sioux Tribe) opposed the KLJ proposal.[168] KLJ subsequently withdrew its proposal.[169]

The NRC Staff issued the DSEIS in November 2012, stating that it was using the NEPA process to satisfy the public participation requirements of the NHPA.[170] The guidance in the NHPA Handbook, admitted into evidence as an NRC Staff exhibit, notes that the term "cultural resources" covers a wider range of resources than just "historic properties," and includes "sacred sites, archaeological sites not eligible for the National Register of Historic Places,

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[164] *Id.* at 81.

[165] The four tribes were the Standing Rock Sioux Tribe, the Sisseton-Wahpeton Oyate, the Rosebud Sioux Tribe, and the Yankton Sioux Tribe. FSEIS, Ex. NRC-008-A-1, § 1.7.3.5.

[166] *Id.* The entire license boundary of the proposed Dewey-Burdock ISL project encompasses 10,580 acres. FSEIS, Ex. NRC-008-A-2 § 4.12.2.

[167] FSEIS, Ex. NRC-008-A-1, § 1.7.3.5. These 2637 acres represent the area of immediate direct effects. FSEIS, Ex. NRC-008-B-2, § E5.11.

[168] FSEIS, Ex. NRC-008-A-1, § 1.7.3.5. The other tribes that opposed this proposal were the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Sisseton-Wahpeton Oyate, and Yankton Sioux Tribe.

[169] *Id.*

[170] This approach, referred to as "substitution," is permitted under NHPA regulations. 36 C.F.R. § 800.8; *see also* NEPA and NHPA Handbook, Ex. NRC-048 at 29-33 (describing the substitution process).

and archaeological collections."[171] The NRC Staff explained that, consistent with this broader approach, after completion of the DSEIS it continued "working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment."[172]

In December 2012 the NRC Staff invited all interested consulting parties to provide information relevant to the development of a Programmatic Agreement.[173] The NRC Staff also stated that it intended to move forward with an alternative field survey approach in the spring of 2013.[174]

On February 8, 2013, the NRC Staff invited twenty-three tribes[175] to participate in a field survey between April 1 and May 1, 2013, and described procedures for site access, and compensation for survey participation. Tribes interested in participating in the field survey were advised to respond by March 12, 2013. On March 22, 2013, the Oglala Sioux Tribe objected to the terms of the survey proposal and indicated that the proposed April 1, 2013 date for the start of the field survey did not allow sufficient time for formal authorization from its Tribal Council and constituents. The Oglala Sioux Tribe expressed concern that (1) the scope of the work methodology was inadequate, (2) the funds allocated for the survey were insufficient, (3) the NRC Staff lacked cultural sensitivity on these issues, and (4) the NRC Staff was not fully addressing the direct and indirect effects on cultural resources and burial grounds, and the protection of intellectual property generated during the survey. The Oglala Sioux Tribe declared that the existing NHPA § 106 consultation did not satisfy the required formal government-to-government consultation.[176]

Despite these objections from the Oglala Sioux Tribe, the field survey of the Dewey-Burdock site began on April 1, 2013, with three tribes subsequently

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[171] NEPA and NHPA Handbook, Ex. NRC-048, at 4.

[172] NRC Staff's Answer to Contentions on the [DSEIS] (Mar. 7, 2013) at 13 (citation omitted).

[173] The prospect of a post-FSEIS Programmatic Agreement was raised during a series of teleconferences held in August 2012 and correspondence in September 2012. DSEIS, NRC-009-B-2, App. A at A-86, Proposed Agenda, E-mail from Haimanot Yilma, NRC, to Tribal Historic Preservation Officers (Aug. 20, 2012).

[174] *Id.*

[175] The original twenty tribes were invited, as well as the Cheyenne and Arapaho, Pawnee, and Omaha Tribes.

[176] FSEIS, Ex. NRC-008-A-1, § 1.7.3.5. On May 23, 2013, the NRC Staff hosted a meeting in Rapid City, South Dakota, concerning licensing actions associated with three proposed uranium recovery projects under NRC licensing review. The NRC Staff invited over thirty tribes currently in consultation on uranium recovery projects to this meeting with NRC management. *Id.*

submitting survey reports to the NRC Staff for inclusion in the FSEIS.[177] The survey reports documented sites of religious and cultural significance identified during site surveys, and included National Register of Historic Places eligibility recommendations as well as mitigation measures recommended for each identified site.

The NRC Staff later officially separated its NHPA § 106 activities from its NEPA review, informing the tribes and the ACHP of this by letter dated November 6, 2013.[178] By separating the NHPA § 106 process from the NEPA review the NRC Staff determined that a phased process for compliance with section 106 was appropriate. From this point, the NRC Staff's evaluation and determinations of effects on historic properties and consultation concerning measures needed to avoid, minimize, or mitigate any adverse effects was carried out in phases, as set forth in the Programmatic Agreement.[179] In January 2014 the NRC Staff issued the FSEIS. The FSEIS contained the results of the field survey, which consisted of the three reports by Native American tribes with National Register of Historic Places eligibility recommendations.[180] The NRC Staff continued to consult with the Bureau of Land Management (BLM), the South Dakota State Historic Preservation Officer, and the tribes on issues arising under section 106 of the NHPA, and finalized the Programmatic Agreement on April 7, 2014.[181] The ACHP noted that a consensus was not reached with the tribes relative to the Programmatic Agreement, but that the Programmatic Agreement was to incorporate "a path forward to continue working with consulting tribes to conclude the identification and evaluation process."[182]

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[177] The Cheyenne and Arapaho, Northern Arapaho, and Northern Cheyenne tribes submitted survey reports to the NRC. The NRC Staff also received field notes from the Crow Tribe, although the Crow Tribe field notes did not contain NHPA eligibility recommendations.

[178] Ex. NRC-015, Project Summary of Tribal Outreach Timeline at 15 (Apr. 8, 2014) [hereinafter Tribal Outreach Timeline, NRC-015]; *see also* FSEIS, NRC-008-B-2, App. A, at A-161-66.

[179] Ex. NRC-018-A, Programmatic Agreement Among U.S. Nuclear Regulatory Commission, U.S. Bureau of Land Management, South Dakota State Historic Preservation Office, Powertech (USA), Inc., and Advisory Council on Historic Preservation Regarding the Dewey-Burdock In Situ Recovery Project Located in Custer and Fall River Counties South Dakota at 2 (Mar. 19, 2014) [hereinafter Programmatic Agreement, Ex. NRC-018-A].

[180] Ex. NRC-019, Summary Report Regarding the Tribal Cultural Surveys Completed for the Dewey-Burdock Uranium In-Situ Recovery Project at 1-2 (Dec. 16, 2013) [hereinafter Report on Tribal Cultural Surveys, NRC-019]. Seven tribes participated in the field survey and three tribes (Northern Arapaho Tribe, Northern Cheyenne Tribe, Cheyenne and Arapaho Tribes of Oklahoma) submitted written reports. The Crow Nation provided the NRC Staff with a copy of field notes identifying several sites of interest to that tribe.

[181] Ex. NRC-018-D, Letter from Reid Nelson, Director, Office of Federal Agency Programs, Advisory Council on Historic Preservation, to Kevin Hsueh, Chief, Environmental Review Branch, NRC, at 1 (Apr. 7, 2014) (finalizing section 106 review).

[182] *Id.*

4. Legal Standards

Under NEPA regulations, defining the scope of effects of a project requires engagement with the governments of affected tribes through an "early and open process," aimed at identifying concerns, potential impacts, relevant effects of past actions, and possible alternative actions.[183] The Commission's regulations in 10 C.F.R. § 51.71(b) require the NRC Staff to include in the FSEIS "an analysis of significant problems and objections raised by . . . any affected Indian tribes, and by other interested persons." The GEIS in this case determined the impacts for all ISL facilities in the region, but the FSEIS for each project must contain the site-specific information to determine potential impacts of a particular project.

5. Parties' Positions

In Contention 1A, Intervenors assert that the NRC Staff failed to adequately analyze cultural and historic resources under NEPA before the license was issued, and that the FSEIS and other environmental documents[184] contain insufficient analysis of cultural impacts. Specifically, Intervenors allege that while 10 C.F.R. §§ 51.71(d), 51.45(b) and NEPA require the FSEIS to include an analysis of cultural impacts, "neither [the applicant nor the NRC Staff] has conducted an adequate and competent cultural resources survey, impacts analysis, or mitigation review."[185]

The Oglala Sioux Tribe contends that because the Augustana College Level III archaeological survey[186] performed at the behest of Powertech, and referenced in the FSEIS, left a significant number of archaeological, historical, and traditional cultural resources on the site unevaluated, the potential impacts to these resources have not been addressed.[187] As a result, the Oglala Sioux Tribe objects "that no

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[183] 40 C.F.R. § 1501.7.

[184] An "environmental document" includes the documents specified in 40 C.F.R. § 1508.9 (environmental assessment), § 1508.11 (environmental impact statement), § 1508.13 (finding of no significant impact), and § 1508.22 (notice of intent). 40 C.F.R. § 1508.10.

[185] Oglala Sioux Tribe Post-Hearing Initial Brief at 13.

[186] Ex. APP-009, A Level III Cultural Resources Evaluation of Powertech (USA) Incorporated's Proposed Dewey-Burdock Uranium Project Locality Within the Southern Black Hills, Custer and Fall River Counties, South Dakota, Archeology Laboratory, Augustana College (Mar. 2008) [hereinafter Level III Cultural Resources Evaluation, Ex. APP-009].

[187] Oglala Sioux Tribe Post-Hearing Initial Brief at 13. Citing CEQ's NEPA regulations which state that "effects and impacts as used in these regulations are synonymous, the Oglala Sioux Tribe further notes that the regulations specifically require that the 'effects' that must be reviewed in a NEPA document include 'ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.'" Oglala Sioux Tribe Post-Hearing Reply Brief at 5-6 (quoting 40 C.F.R. § 1508.8).

NEPA environmental document contains a scientifically-defensible protocol and methodology for analysis of cultural resources."[188] The Oglala Sioux Tribe further contends that the FSEIS does not address cultural resources specific to the Sioux tribes, that the identification efforts were inadequate and that the NHPA measures in the Programmatic Agreement are insufficient to meet the NEPA requirements to review impacts on Native American historic, religious, and cultural resources.

The Oglala Sioux Tribe further argues that the NHPA requires federal agencies to "consult with any Indian tribe . . . that attaches religious and cultural significance" to potentially impacted historic properties.[189] They contend the NRC Staff failed to comply with NHPA regulations to conduct government-to-government consultation "in a manner sensitive to the concerns and needs of the Indian tribe."[190] Consultation, they argue, encompasses providing the Oglala Sioux Tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[191] The Oglala Sioux Tribe contends that conversations with the NRC Staff have been neither meaningful nor reasonable because the NRC Staff has refused to work through the problems identified by the Oglala Sioux Tribe and its representatives. The Oglala Sioux Tribe (as well as several other Sioux Tribes) objected to the NRC Staff's approach to date, arguing that the tribal field surveys conducted did not address their cultural, historic, and religious concerns.[192] Specifically, the Oglala Sioux Tribe argues that of the twenty-three consulting tribes, only four participated in the field survey process and none were Sioux.[193]

The NRC Staff, on the other hand, represents to the Board that it complied with both NEPA and the NHPA and that it made "a reasonable and good faith effort — an effort that lasted almost 4 years — to obtain information on religious and cultural resources that are significant to the tribes."[194] The NRC Staff states that it "followed the joint guidance of the CEQ and the ACHP, the agencies charged with implementing NEPA and the NHPA, and the ACHP specifically

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[188] Oglala Sioux Tribe Post-Hearing Initial Brief at 14.

[189] 16 U.S.C. § 470(a)(d)(6)(B).

[190] 36 C.F.R. § 800.2(c)(2)(ii)(C).

[191] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[192] Oglala Sioux Tribe Statement of Position at 17.

[193] The four tribes were the Northern Arapaho (Wyoming), Northern Cheyenne (Montana), and Cheyenne and Arapaho of Oklahoma. Ex. NRC-018-B, Final Programmatic Agreement for Powertech (USA) Inc. Dewey-Burdock Project, Appendix A at 14 [hereinafter Programmatic Agreement Appendix, Ex. NRC-018-B].

[194] NRC Staff's Post-Hearing Reply Brief at 5.

approved of the Staff's NHPA review."[195] As part of its "reasonable and good faith effort" the NRC Staff explains that it initially invited twenty tribes, including the Oglala Sioux Tribe, to participate in identification efforts and provided all interested tribes a reasonable opportunity to identify historic properties, advise on the identification and evaluation of such properties, comment on the undertaking, and participate in resolving potential adverse effects.[196] The NRC Staff contends that it conducted a comprehensive review of cultural, archeological, and tribal resources at the Dewey-Burdock site and that the Oglala Sioux Tribe had the same opportunity to participate in each phase of the NRC Staff's review as all consulting tribes.

The NRC Staff defends its FSEIS analysis by stating that it first took appropriate steps to identify cultural resources that may be affected by the project, and then responded to input from consulting tribes by facilitating field surveys of the Dewey-Burdock site so that tribes could identify any traditional cultural properties.[197] The NRC Staff also states that since initiating consultation in March 2010, it has held three face-to-face meetings, conducted three teleconferences, and exchanged many e-mails, letters, and telephone calls with tribal representatives. In addition, in April and May 2013, representatives from seven of the invited tribes conducted field surveys of the Dewey-Burdock site.[198] The NRC Staff concludes that it complied with NEPA by making repeated attempts to obtain information on cultural resources and by including mitigation measures in the Programmatic Agreement that will limit impacts to any unidentified resources.[199]

Powertech, which paid the costs of the various cultural surveys, argues that the Augustana College Level III archeological survey satisfied all applicable regulatory guidelines and that the tribal field surveys, held in April and May 2013, allowed each tribe to evaluate the entire project area in a manner culturally appropriate for each tribe. Powertech also argues that the NRC Staff appropriately evaluated archeological and tribal survey results as required by NEPA and the NHPA,[200] and that a phased approach to comply with the NHPA is allowed under federal regulations. Powertech asserts that the NRC Staff has met the applicable statutes' requirements, and that all tribes, including the Oglala Sioux Tribe, were

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[195] *Id.*

[196] *Id.* at 7.

[197] Programmatic Agreement Appendix, Ex. NRC-018-B, at 16-21.

[198] Report on Tribal Cultural Surveys, Ex. NRC-019.

[199] Programmatic Agreement Appendix, Ex. NRC-018-B, at 13-24; *see also* Tribal Outreach Timeline, Ex. NRC-015 (listing Staff's efforts to obtain information for use in the Programmatic Agreement).

[200] Powertech Initial Findings of Fact and Conclusions of Law at 45-47.

afforded an opportunity to participate in a field survey, but the Oglala Sioux Tribe chose not to participate.[201]

6. Board Ruling

a. Contention 1A

To fulfill the agency's NEPA and NHPA responsibilities to protect and preserve cultural, religious, and historical sites important to the Native American tribal cultures in the Powertech project area, the NRC Staff must conduct a study or survey of tribal cultural resources before granting a license. Haimanot Yilma, NRC Staff witness and project manager for the Staff's environmental review of the Dewey-Burdock application, testified that "under NEPA, we're supposed to be looking at cultural resources. Historical property is a subset of cultural resources and so therefore any information that [is] provided under the NHPA historical properties [is] a subset of NEPA review. So we have to consider them under the NEPA review."[202]

As part of its application, Powertech submitted a Class III archeological survey of the Dewey-Burdock site.[203] A Class III archeological survey involves a professionally conducted, pedestrian survey of an entire target area to identify properties that may be eligible for inclusion on the National Register of Historic Places.[204] This on-the-ground survey describes the distribution of properties in an area; determines the number, location, and condition of properties; determines the types of properties actually present within the area; permits classification of individual properties; and records the physical extent of specific properties.[205] A Class III survey, however, is not the same as a cultural resources survey or a traditional cultural properties survey. A Class III survey can satisfy the requirements of the NHPA and identify a property's eligibility to be added to the National Register of Historic Places.[206] However, as the NRC Staff testified, a Class III survey "wouldn't necessarily identify all of the [Native American cultural and religious] resources primarily because some of the knowledge is not available to those conducting a Level 3 survey. That would be provided by the Native American groups themselves."[207] The category of "cultural resources"

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[201] *Id.* at 41-44.

[202] Tr. at 785.

[203] Level III Cultural Resources Evaluation, Ex. APP-009.

[204] *Montana Wilderness Association v. U.S. Department of Interior,* 725 F.3d 988, 1005-06 (2013) (citing BLM Manual 8110 (Release 8-73, Dec. 3, 2004)).

[205] *Id.*

[206] Tr. at 762.

[207] Tr. at 762-63.

"covers a wider range of resources than 'historic properties,' such as sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections."[208]

With respect to identifying historic properties, the NRC Staff has complied with the NHPA requirement to make a good faith and reasonable effort to identify properties that are eligible for inclusion in the National Register of Historic Places within the Dewey-Burdock ISL project area. The ACHP's guidance states that a reasonable and good faith effort may consist of "one or more methodologies" of identifying historic properties,[209] and the Staff used, to varying extents, four of the five methodologies specified in ACHP regulations: background research, consultation, field investigations, and field surveys.[210] The only methodology that the Staff did not use was oral history interviews.[211] We find that these efforts satisfy the NHPA with respect to historic properties.

The more difficult question is whether the methodologies the NRC Staff employed to identify tribal cultural, religious, and historic resources satisfied the NHPA and the NEPA hard look.[212] Although the NRC Staff points to the concurrence of the ACHP and the South Dakota State Historic Preservation Officer in the context of the NHPA § 106 investigation as evidence that NEPA's hard look has been satisfied,[213] it does not follow that a review that satisfies the NHPA necessarily satisfies NEPA requirements to take a hard look at cultural resources affected by a project.[214] Although the NHPA and NEPA resemble each other in certain respects, compliance with the NHPA "does not relieve a federal

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[208] NEPA and NHPA Handbook, Ex. NRC-048, at 4.

[209] Ex. NRC-047, Advisory Council on Historic Preservation, Meeting the "Reasonable and Good Faith" Identification Standard in Section 106 Review at 2 (Nov. 2011).

[210] Ex. NRC-001, NRC Staff's Initial Testimony (June 20, 2014) at 5-9 [hereinafter NRC Staff's Initial Testimony, Ex. NRC-001]; Ex. NRC-151, NRC Staff's Rebuttal Testimony (July 15, 2014) at 7-8 [hereinafter NRC Staff's Rebuttal Testimony, Ex. NRC-151].

[211] NRC Staff's Initial Testimony, Ex. NRC-001, at 8-9.

[212] 42 U.S.C. § 4321 *et seq.*

[213] Ex. NRC-018-E, Programmatic Agreement, Advisory Council on Historic Preservation Signature Page (Apr. 7, 2014); Ex. NRC-031, Letter from Advisory Council on Historic Preservation to Standing Rock Sioux Tribe on Dewey-Burdock Project at 3; Ex. NRC-018-G, Programmatic Agreement, South Dakota State Historic Preservation Officer Signature Page.

[214] *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), LBP-05-26, 62 NRC 442, 472 (2005) ("Although an agency may coordinate and, where practicable, integrate its NEPA and NHPA review efforts, the two statutes impose separate and distinct obligations.") (citation omitted); *see also Te-Moak Tribe of Western Shoshone of Nevada v. U.S. Department of Interior,* 608 F.3d 592, 606, 610 (9th Cir. 2010) (concluding that an agency failed to take a hard look at cumulative impacts on cultural resources under NEPA even though the agency had satisfied its obligations under NHPA to consult with the tribe).

agency of the duty of complying with the [environmental] impact statement requirement 'to the fullest extent possible.'"[215]

The Commission's regulations in 10 C.F.R. § 51.71(b) require the NRC Staff to include in an EIS "an analysis of significant problems and objections raised by . . . any affected Indian tribes and by other interested persons."[216] For a variety of reasons,[217] the FSEIS in this proceeding does not contain an analysis of the impacts of the project on the cultural, historical, and religious sites of the Oglala Sioux Tribe and the majority of the other consulting Native American tribes.[218] The field surveys conducted in 2013 by members of seven tribes and the three sets of findings submitted do not satisfy this requirement.[219] Because the cultural, historical, and religious sites of the Oglala Sioux Tribe have not been adequately catalogued, the FSEIS does not include mitigation measures sufficient to protect this Native American tribe's cultural, historical, and religious sites that may be affected by the Powertech project.

Accordingly, as to Contention 1A, the Board finds and concludes that the FSEIS has not adequately addressed the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources. Without additional analysis as to how the Powertech project may affect the Sioux Tribes' cultural, historical, and religious connections with the area, NEPA's hard look requirement has not been satisfied, and potentially necessary mitigation measures have not been established. The NRC Staff did not give this issue its required hard look in the FSEIS, and therefore the Record of Decision is incomplete.

b. Contention 1B

With respect to Contention 1B, the NRC Staff/tribal consultation process broke down,[220] and the vast majority of the consulting tribal parties, including the Oglala Sioux Tribe, did not participate in the field survey opportunity provided by the NRC Staff and Powertech. The consulting parties and the NRC Staff could agree

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[215] *Preservation Coalition, Inc. v. Pierce,* 667 F.2d 851, 859 (9th Cir. 1982) (quoting 42 U.S.C. § 4332).

[216] The Oglala Sioux Tribe raised its cultural, historical, and religious problems and objections in a timely manner, and pursued these concerns throughout the NEPA process.

[217] Some of these reasons relate to difficulties encountered in the consultation efforts between the NRC Staff and the Native American Tribes, including the Oglala Sioux Tribe.

[218] NEPA compels agencies to take a hard look at "preserv[ing] important historic [and] cultural . . . aspects of our national heritage." 42 U.S.C. § 4331(b)(4).

[219] While more comprehensive than the Powertech Class III survey because it included some tribal participation, the additional April 2013 survey done at the behest of the NRC Staff as part of the Staff's efforts to comply with NHPA and NEPA did not contain any tribal ethnographic studies, oral histories, or a survey of sites of significance to the intervenor, the Oglala Sioux Tribe.

[220] *See above,* Parts IV.A.3 and IV.A.5 of this Partial Initial Decision.

on neither the scope, techniques, or timing of the field surveys, nor alternatives to a field survey to address Native American cultural, religious, and historic concerns.

Even after a thorough review of the record in this case, the Board is not able to decide definitively which party or specific actions led to the impasse preventing an adequate tribal cultural survey. But the Board does take note that witnesses for the Intervenors,[221] the NRC Staff,[222] and Powertech[223] all agreed that tribal representatives must prepare the cultural survey along with any archeological survey team.

The NRC Staff is at least partly at fault for the failed consultation process. For the past 5 years the Oglala Sioux Tribe has raised its concerns with the consultation process, and yet the NRC Staff has not held a single consultation session, on a government-to-government basis, solely with members of the Oglala Sioux Tribe. Instead, the NRC Staff has held three face-to-face sessions with multiple tribes concerning multiple ISL projects in both South Dakota and Nebraska.[224] The three meetings cited by the NRC Staff as government-to-government consultations were large group meetings, with members of many diverse tribes, all with varying degrees of attachment to the Black Hills area of South Dakota.[225] Though numerous letters were sent to the Oglala Sioux Tribe, as detailed above, quantity does not necessarily equate with meaningful or reasonable consultation, and "doesn't in itself show the NHPA-required consultation occurred."[226] The Oglala Sioux Tribe has shown it has the most direct historical, cultural, and religious ties to the area.[227] The Oglala Sioux Tribe's Pine Ridge reservation is located approximately 50 miles from the project site.[228] The Oglala Sioux Tribe is both a consulting party and an Intervenor in this proceeding. It is entitled to a meaningful, face-to-face, government-to-government consultation session with the NRC Staff regarding this specific project. To be sure, the Oglala Sioux Tribe does share some responsibility for the inadequacy of the FSEIS and the lack of meaningful consultation. While the Oglala Sioux Tribe argues that its input to the FSEIS

[221] Tr. at 764.

[222] Tr. at 757.

[223] Tr. at 758.

[224] Tr. at 825-30.

[225] A large group meeting, run more as an information gathering session and less as a government-to-government consultation, is inconsistent with NRC Staff guidance "to encourage Tribes to participate in the NRC regulatory process." Tribal Protocol Manual at 10; *see also* Tr. at 827-30.

[226] *Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Department of Interior,* 755 F. Supp. 2d 1104, 1118 (S.D. Cal. 2010).

[227] Ex. OST-014, Declaration of Michael CatchesEnemy (Apr. 14, 2014); Ex. OST-015, Declaration of Wilmer Mesteth (Apr. 1, 2010); Ex. OST-017, Letter from Bryan Brewer, Sr., President of the Oglala Sioux Tribe, to Kevin Hsueh, NRC Environmental Review Branch Chief (Mar. 22, 2013).

[228] FSEIS, NRC-008-A-1, Executive Summary at xliv.

is essential, some of its demands to engage with the NRC Staff were patently unreasonable.[229]

As to Contention 1B, the Board finds and concludes that the consultation process between the NRC Staff and the Oglala Sioux Tribe was inadequate.

c. Board Order on Contentions 1A and 1B

The FSEIS has not adequately addressed the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources, and the required meaningful government-to-government consultation between the Oglala Sioux Tribe and the NRC Staff has not taken place. Because of these facts, procedures must be put in place to assure that the required NEPA hard look is taken, the NRC's Part 51 environmental regulations are satisfied, and an opportunity for meaningful consultation is provided.[230]

Though the license has already been issued, the land disturbance in the project area will proceed in stages,[231] and NEPA requires that agencies take a hard look at the environmental effects of actions even after a proposal has received initial approval.[232] Meaningful consultation between the NRC Staff and the Oglala Sioux Tribe may still be undertaken to identify and mitigate any potential harm to Sioux cultural, historical, or religious sites, even though the Programmatic Agreement has been finalized.[233] We therefore conclude that additional consultation between the NRC Staff and the Oglala Sioux Tribe is necessary.[234] This additional consultation is required in order (1) to satisfy the hard look at impacts required by NEPA and to supplement the FSEIS, if necessary; and (2) to satisfy the consultation requirements of the NHPA.

The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with

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[229] These demands, outlined at the evidentiary hearing, include the definition of elected governmental representation, Tr. at 781-82, 850-51, and the funds requested to collect tribal cultural information, Tr. at 807, 810.

[230] NRC Staff guidance "supports meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications [and] acknowledges the status of Tribes as domestic dependent sovereign nations." Tribal Protocol Manual at 9.

[231] Programmatic Agreement, Ex. NRC-018-A. "The NRC determined a phased process for compliance with Section 106 of the NHPA is appropriate for this undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of and determinations of effects on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this Programmatic Agreement." *See id.* at 2.

[232] *Marsh,* 490 U.S. at 374.

[233] The Programmatic Agreement is, by its terms, "a condition on the NRC License." Programmatic Agreement, Ex. NRC-018-A, at 4.

[234] The Oglala Sioux Tribe is both an intervenor in this case as well as a consulting party.

the Oglala Sioux Tribe to identify any adverse effects to cultural, historic, or religious sites of significance to the Oglala Sioux Tribe that may be impacted by the Powertech Dewey-Burdock project. This would then allow the adoption of mitigation measures, as necessary. The FSEIS and Record of Decision in this case must be supplemented, if necessary, to include any cultural, historic, or religious sites identified and to discuss any mitigation measures necessary to avoid any adverse effects.

Finally, given our conclusion that the inadequate discussion of potential impacts to Sioux cultural, historical, or religious sites in the FSEIS or Record of Decision is a significant deficiency in the NRC Staff's NEPA review, this Board could require the immediate suspension of the issued materials license.[235] However, the Board declines to do so because the Oglala Sioux Tribe bears some responsibility for lack of information on this issue, and did not participate in the April 2013 field survey effort.[236] Instead, the Board will retain jurisdiction of this case pending the NRC Staff's curing of the deficiencies in Contentions 1A and 1B. The NRC Staff will submit a monthly status report to the Board on the first business day of every month beginning June 2015 describing the consultations with the Oglala Sioux Tribe and the process being made in identifying Sioux tribal cultural, historic, or religious sites impacted by the Powertech project.[237] In the interim, if the Oglala Sioux Tribe can identify specific cultural, historic, or religious sites that are subject to immediate and irreparable harm by the Powertech project, they may, within 10 days of this Order, petition this Board for a stay of the license's effectiveness, as may be necessary to halt ground disturbing activities, with party responses to such a stay request due 10 days thereafter.[238]

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[235] *Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), CLI-06-8, 63 NRC 235, 238 (2008) ("If the Board determines after full adjudication that the license amendment should not have been granted, it may be revoked (or conditioned).").

[236] An opportunity is being provided for the Oglala Sioux Tribe and the NRC Staff to consult in a meaningful manner as the project moves forward. If the Oglala Sioux Tribe refuses to engage in a meaningful consultation or makes unreasonable demands as a precondition for its cooperation in identifying cultural, historic, or religious sites, such actions would be fundamentally unfair to the NRC Staff, Powertech, and incompatible with an orderly administrative process. All parties have an obligation to cooperate to resolve these contentions.

[237] These status reports should take the same form as the status reports the NRC Staff submitted to this Board, per a Board Order, starting in 2010. Licensing Board Order (Prehearing Conference Call Summary and Initial Scheduling Order) (Oct. 4, 2010) at 6 (unpublished) ("So as to keep the Board, the parties, and the public abreast of any changes in this schedule, we hereby direct the NRC Staff to submit a monthly status report on November 1, 2010, to be updated on the first business day of each month thereafter.").

[238] Licensing Board Order (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600) (May 20, 2014) at 2-4, 7-8 (unpublished).

B. Contention 2: The FSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Groundwater Quality

1. Legal Standards

The NRC has issued numerous regulations and Staff guidance documents on groundwater quality standards at ISL facilities. Criterion 7 of 10 C.F.R. Part 40, Appendix A requires an applicant to establish "a preoperational monitoring program [that] must be conducted to provide complete baseline data on a milling site and its environs." These criteria were developed for conventional uranium milling facilities, but have been applied, in at least limited fashion, to ISL facilities.[239] In addition, background water quality data are used to establish existing hazardous constituent concentrations in an aquifer, which can then be used to set 10 C.F.R. Part 40, Appendix A, Criterion 5B(5) post-operational concentration limits. Both NUREG-1569[240] and Regulatory Guide 4.14[241] also discuss environmental monitoring. Although this Board is not bound to follow Staff guidance documents, which do not have the binding force of statutes or regulations, a Board must provide sufficient justification if it chooses not to accept Staff guidance.[242] Notably, for the purposes of resolving this contention, neither "baseline" nor "background" is explicitly defined in 10 C.F.R. Part 40, Appendix A, Section 2.7.3 of NUREG-1569, or Regulatory Guide 4.14.

2. Parties' Positions

In Contention 2,[243] the Oglala Sioux Tribe alleges that:

> the FSEIS violates 10 C.F.R. Part 40, Appendix A, Criterion 7, 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations . . . in that it fails to provide an adequate baseline groundwater character-

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[239] *Hydro Res.,* CLI-99-22, 50 NRC at 8 ("While, as a general matter, Part 40 applies to ISL mining, some of the specific requirements in Part 40, such as many of those found in Appendix A, address hazards posed only by conventional uranium milling operations, and do not carry over to ISL mining.").

[240] Ex. NRC-013, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG-1569 (June 2003) [hereinafter NUREG-1569, Ex. NRC-013].

[241] Ex. NRC-074, Radiological Effluent and Environmental Monitoring at Uranium Mills, Regulatory Guide 4.14 (Rev. 1 Apr. 1980) [hereinafter Regulatory Guide 4.14, Ex. NRC-074]. From a regulatory standpoint, ISL facilities are considered uranium mills.

[242] *Entergy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), CLI-15-6, 81 NRC 340, 359 (2015) (finding Boards should accord "special weight" to Staff guidance).

[243] LBP-14-5, 79 NRC at 401.

> ization or demonstrate that ground water samples were collected in a scientifically defensible manner, using proper sample methodologies.[244]

Further, the Oglala Sioux Tribe contends that "while the FSEIS contains data from 2007-2009, the background water quality for use in the actual regulatory process [*e.g.,* Appendix A, Criterion 5B(5)] for the facility will be established [at] a future date, outside of the NEPA process, and outside of the public's review."[245] The Oglala Sioux Tribe contends that this approach is a prima facie violation of the NEPA process.[246]

As support, the Oglala Sioux Tribe cites 10 C.F.R. Part 40, Appendix A, Criterion 7 which states that "regulations require the applicant to provide '*complete* baseline data on a milling site and its environs.'"[247] Further, the Oglala Sioux Tribe claims that NRC Regulatory Guide 4.14 is outdated and was not designed for ISL mining, and the NRC Staff's reliance on this guidance "to designate the boundary for which groundwater monitoring will be required'" is improper.[248] The Oglala Sioux Tribe also notes the lack of analysis of past mining impacts in the project area.[249]

The NRC Staff and Powertech both acknowledge that Powertech will collect the additional background groundwater quality information necessary to satisfy Appendix A, Criterion 5B(5) post-license issuance but pre-operation. In fact, Powertech asserts that installing the wells needed to establish Criterion 5 background concentrations prior to license issuance would be a violation of the "Construction Rule" and therefore automatic grounds for denial of the license.[250]

The NRC Staff defends the baseline groundwater quality analysis performed in the FSEIS as adequate under NEPA.[251] The NRC Staff first offers the explanation that there is a distinction between the groundwater quality terms "baseline" and "background" as used in the FSEIS.[252] "Baseline" data are submitted to

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[244] Oglala Sioux Tribe Post-Hearing Initial Brief at 38.

[245] *Id.*

[246] Oglala Sioux Tribe Post-Hearing Initial Brief at 39.

[247] Oglala Sioux Tribe Statement of Position at 21.

[248] *Id.*

[249] Oglala Sioux Tribe Post-Hearing Initial Brief at 39.

[250] Powertech (USA), Inc. Initial Statement of Position (June 20, 2014) at 39 [hereinafter Powertech Statement of Position]. The "Construction Rule" in 10 C.F.R. § 40.32(e) prohibits commencement of construction prior to a NEPA determination.

[251] NRC Staff's Initial Statement of Position (June 20, 2014) at 25 [hereinafter NRC Staff Statement of Position].

[252] NRC Staff's Initial Testimony, Ex. NRC-001, at 30-31. We note, however, that neither "baseline" nor "background" is explicitly defined in the FSEIS. This contention might have been rendered moot, or at the very least more easily resolved, had the NRC Staff documents explicitly and clearly defined these important words.

the NRC under 10 C.F.R. § 51.45(b), and describe "the results of Powertech's preoperational or baseline groundwater quality sampling program provid[ing] data on project-wide groundwater conditions."[253] "Background" data carry a separate meaning, and describe the groundwater quality in certain designated wells to "establish standards for aquifer restoration after uranium recovery is complete" but not to characterize the groundwater quality in the ISL environment generally.[254] Background values must be established before beginning ISL uranium production "in accordance with Criterion 5B(5) in Appendix A."[255] Although baseline data must be submitted to the NRC in an application, the NRC Staff argues that background data need not be submitted as part of the initial application.[256] The NRC Staff views obtaining background data as a monitoring requirement, and thus argues that "the EIS is sufficient as long as it adequately describes the process by which the monitoring data will be obtained."[257]

The NRC Staff also rejects any claims that necessary information related to past activities was excluded from the NEPA review process. For example, the NRC Staff argues that it was unnecessary to account for past mining activity in its baseline groundwater quality data.[258] The NRC Staff asserts that the purpose of baseline data is to describe the existing environmental conditions, including any impacts past mining had on the Dewey-Burdock site.[259] The NRC Staff further asserts that the impact of past mining on the site (i.e., relative to "pre-baseline" conditions) is considered in the "cumulative impacts" section of the FSEIS, and is outside the scope of Contention 2.[260] The NRC Staff also defends some groundwater chemical constituents lacking a reference in the FSEIS.[261] The NRC Staff states that all relevant environmental information was considered, as required by NEPA, but that NEPA does not also "require the Staff to repeat all this information in the FSEIS."[262] The NRC Staff maintains that references to Powertech documents, which do analyze the chemical constituents not mentioned in the FSEIS, satisfies the "obligation to disclose relevant information."[263] Finally, the NRC

[253] *Id.* at 30. Baseline data are later "used to evaluate future impacts on facility operations or accidental or unplanned releases." *Id. See also* NRC Staff Statement of Position at 25.

[254] NRC Staff's Initial Testimony, Ex. NRC-001, at 31; *see also* NRC Staff Statement of Position at 26.

[255] NRC Staff's Initial Testimony, Ex. NRC-001, at 31.

[256] NRC Staff Statement of Position at 26.

[257] *Id.* at 26. The NRC Staff further asserts that it "describes this process in Condition 11.3 of Powertech's license, thereby complying with NEPA." *Id.*

[258] *Id.* at 27.

[259] *Id.*

[260] *Id.* at 27-28.

[261] *Id.* at 29.

[262] *Id.*

[263] *Id.*

Staff defends the methods used by Powertech to collect data as "consistent with Staff guidance" in Section 2.7.3 of NUREG-1569 and Regulatory Guide 4.14.[264] The NRC Staff believes the guidance describes data collection methods which will sufficiently describe the environment and evaluate groundwater quality.[265]

Powertech concurs with the NRC Staff's interpretation of the required "baseline" and "background" data and cites the process outlined in NUREG-1569:

> Reviewers should keep in mind that the development and initial licensing of an in situ leach facility is not based on comprehensive information. This is because in situ leach facilities obtain enough information *to generally locate the ore body and understand the natural systems involved.* More detailed information is developed as each area is brought into production. . . . [R]eviewers should ensure that sufficient information is presented to reach only the conclusion necessary for initial licensing.[266]

Powertech also defends the use of NRC guidance documents in setting the specific groundwater sampling program.[267]

3. Summary of Key Evidence

In addition to the legal arguments in support of Contention 2, the Oglala Sioux Tribe also relies on the testimony of Robert Moran.[268] Dr. Moran raised technical concerns relative to this contention due to (1) the lack of analysis of impacts of past mining activities on baseline groundwater quality; (2) the lack of detailed existing water quality information necessary to develop reliable and scientifically defensible baseline analysis; and (3) analytical results that rely solely on data provided by the project proponent to the exclusion of data available from external

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[264] *Id.* at 31.

[265] *Id.* at 32.

[266] Powertech Statement of Position at 39, quoting NUREG-1569, Ex. NRC-013, at 40 (emphasis added by Powertech).

[267] *Id.* at 42-43.

[268] Ex. OST-001, Opening Written Testimony of Dr. Robert E. Moran, Curriculum Vitae (June 20, 2014) at 29 [hereinafter Moran Testimony, Ex. OST-001].

Despite the Oglala Sioux Tribe and Consolidated Intervenors' mention of Dr. Richard Abitz in their post-hearing briefs, we were unable to locate anything in the record from Dr. Abitz addressing the proposed Dewey-Burdock ISL facility. A letter from Dr. Abitz appears to address a site characterization plan for a proposed Powertech facility in Weld County, CO. Ex. INT-002, Geochemical Consulting Services LLC Comments on Powertech's Proposed Baseline Plan (Oct. 31, 2009).

agencies.[269] Much of Dr. Moran's written testimony was relatively general, and Dr. Moran acknowledged that his experience with ISL facility licensing was limited.[270] Questioned at the evidentiary hearing on what specific detailed water quality information he alleged was missing, Dr. Moran mentioned data for the elements strontium and lithium.[271]

Regarding the lack of analysis of the impacts of past mining activities, NRC Staff witnesses James Prikryl[272] and Thomas Lancaster[273] testified regarding the NRC Staff's interpretation of preoperational baseline groundwater quality, which is assessed "so that corrective actions can be taken if adverse water quality conditions resulting from the proposed action are detected."[274] Witnesses Mr. Prikryl and Mr. Lancaster further testified that "[u]nder regulations issued by the Council on Environmental Quality . . . the environmental impacts that result from past actions are assessed as 'cumulative effects'" [and that] the NRC Staff "appropriately discussed this information in the context of cumulative impacts, rather than in the context of preoperational water quality."[275]

Further, Powertech witness Errol Lawrence[276] testified that a "comparison between historical and recent data sets provided in Sec. 2.7.3.2.2 of the revised [Technical Report] (Exhibit APP-015-B at 2-217 through 2-230b) shows very little variation in groundwater quality between the data sets" and that "table 2.7-40 (Exhibit APP-015-B at 2-223) provides a statistical comparison between the historical and recent data sets and shows that the concentrations of alkalinity, specific conductance, pH and total dissolved solids (TDS) are very similar" and "do not provide any indication of widespread groundwater quality degradation within or near the project area as a result of historical mining and exploration activities."[277]

In regards to a lack of detailed existing water quality information necessary to develop a reliable and scientifically defensible baseline analysis, NRC Staff witnesses Mr. Prikryl and Mr. Lancaster further testified that Powertech followed NUREG-1569, used sampling methods that were consistent with standard industry

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[269] Several items, like the "chemical compositions and volumes of all solid and liquid wastes" listed in support of Contention 2 of Dr. Moran's opening testimony are outside the scope of the admitted contention. Moran Testimony, Ex. OST-001, at 17.

[270] Tr. at 1000-01.

[271] Tr. at 1007-08.

[272] Ex. NRC-006, James Prikryl Statement of Professional Qualifications.

[273] Ex. NRC-005-R, Thomas R. Lancaster Revised Statement of Professional Qualifications.

[274] NRC Staff's Initial Testimony, Ex. NRC-001 at 19.

[275] *Id.* at 20.

[276] Ex. APP-038, Errol Lawrence Curriculum Vitae.

[277] Ex. APP-066, Answering Testimony of Errol Lawrence at 3 (July 15, 2014) [hereinafter Lawrence Answering Testimony, Ex. APP-066].

practice, and analyzed chemical constituents and parameters using appropriate Environmental Protection Agency (EPA) and American Society for Testing and Materials (ASTM) standard methods."[278]

NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the FSEIS data on quarterly groundwater samples from wells located within 2 kilometers (1.2 miles) of the site show that the preoperational baseline water quality meets Criterion 7 in 10 C.F.R. Part 40 Appendix A, and is adequate to assess how the Dewey-Burdock Project may affect groundwater quality.[279]

The NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the approach of sampling within 2 kilometers of the site is consistent with NRC Regulatory Guide 4.14,[280] which the NRC Staff developed because conventional mill "tailings areas" have the potential to be a source of contamination to groundwater. Mr. Prikryl and Mr. Lancaster further testified that the use of the 2-kilometer guideline was validated in NUREG/CR-6705, "Historical Case Analysis of Uranium Plume Attenuation."[281] This report concluded that the average radiological plume dispersion at Uranium Mill Tailings Remedial Action sites is less than 2 kilometers.[282] However, the NRC Staff apparently did not consider that NUREG/CR-6705 specifically excludes ISL facilities from this 2-kilometer rule of thumb ("uranium plumes . . . [e]xceed roughly 2 km in length only in special cases *e.g.* where *in situ* leaching has been carried out").[283]

However, NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that

> the radius of 2 km [1.2 mi] from an ISR wellfield has been shown to be sufficient based on historical and current monitoring data from NRC licensed sites. There are no reported instances of contamination of any monitored private wells within or beyond 2 km of an ISR wellfield at any sites historically or currently licensed by the NRC (Ex. NRC-075)."[284]

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[278] NRC Staff's Rebuttal Testimony, Ex. NRC-151, at 14-15.

[279] NRC Staff's Initial Testimony, Ex. NRC-001, at 30-31.

[280] Regulatory Guide 4.14, Ex. NRC-074.

[281] Ex. NRC-076, Division of Regulatory Applications and Analysis, Office of Nuclear Regulatory Research, Historical Case Analysis of Uranium Plume Attenuation, NUREG/CR-6705 (July 20, 2014) [hereinafter NUREG/CR-6705, Ex. NRC-076].

[282] NRC Staff's Initial Testimony, Ex. NRC-001 at 29.

[283] NUREG/CR-6705, Ex. NRC-076, at 4.

[284] NRC Staff's Initial Testimony, Ex. NRC-001, at 29-30. We were unable to find a specific mention of a 2-kilometer radius in Exhibit NRC-075, Data on Groundwater Impacts at the Existing ISR Facilities.

4. Board Ruling

While we agree that the language of Appendix A regarding the relationship between Criterion 5 and 7 is ambiguous and that the terms "baseline" and "background" are not explicitly defined, we are bound by precedent. In *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-1, 63 NRC 1, 6 (2006) (citation omitted), the Commission affirmed that:

> Waiting until after licensing (although before mining operations begin) to establish definitively the groundwater quality baselines and upper control limits is, as the Presiding Officer stated, "consistent with industry practice and NRC methodology," given the sequential development of *in situ* leach well fields. The site-specific data to confirm proper baseline quality values, and confirm whether existing rock units provide adequate confinement cannot be collected until an *in situ* leach well field has been installed . . . .

Further, the Commission noted that "in this proceeding the Intervenors also have had the opportunity to litigate — and did litigate — whether the performance-based licensing complies with the Atomic Energy Act and National Environmental Policy Act (NEPA), and whether it accords undue discretion to the Licensee."[285]

More recently, the Licensing Board in *Strata Energy, Inc.* (Ross In Situ Recovery Uranium Project), LBP-15-3, 81 NRC 65, 91-92 (2015) rejected a very similar contention by noting:

> in light of the Commission's *Hydro Resources* decision and the language of Appendix A, Criterion 7A, we are unable to discern a legal basis for concluding that the Appendix A, Criterion 7 prelicensing monitoring program for the purpose of establishing existing characterization values for certain site groundwater constituents must be coextensive with the Criterion 7A preoperational monitoring, license condition-based program intended to provide the information needed for setting Appendix A, Criterion 5B groundwater protection standards and UCLs.

In this case, the Intervenors did not challenge any specific license conditions, only that the use of license conditions to establish background concentrations after licensing violated NEPA. However, based on the previous review in *Hydro Resources,* and recognizing the similar interpretation in *Strata,* we conclude that collection of groundwater quality data in a staggered manner is not in and of itself a violation of NEPA.[286]

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[285] *Hydro Res.,* CLI-06-1, 63 NRC at 5.

[286] Like our colleagues in *Strata,* we are also less convinced that anything in the "Construction Rule" would prohibit collection of any needed prelicense data.

Regarding the specific technical concerns of Dr. Moran, we find the testimony offered by NRC Staff witnesses Mr. Prikryl and Mr. Lancaster and Powertech witness Mr. Lawrence to be more detailed and more persuasive.

Finally, we turn to the Oglala Sioux Tribe's exhibits regarding an EPA Preliminary Assessment which are potentially relevant to Contention 2.[287]

On first inspection, the Preliminary Assessment's conclusion that the "lack of groundwater sampling data from near and upgradient of the Site limited availability of reliable background concentrations" appears dispositive of whether the FSEIS included the necessary information for adequate determination of baseline groundwater quality.[288] However, in considering the different objectives of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) versus NRC and NEPA regulations, we conclude that background/baseline is being used in two fundamentally different contexts. Under CERCLA, determining the unimpacted natural (i.e., upgradient) background is important in assessing the impact of past mining activities on the current state of the environment at the site. Under NRC and NEPA regulations, the site's current baseline is important in assessing the potential future impacts (both cumulative and incremental) of the proposed ISL facility on the current state of the environment at the site. Accordingly, we find that the identification and documentation of the historic mining operations as documented in the FSEIS is adequate to assess the incremental and cumulative impacts of the proposed project.

As a result, we find for Powertech and the NRC Staff on Contention 2.

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[287] Ex. OST-025, Darrow/Freezeout/Triangle Uranium Mine, EPA, Preliminary Assessment Announcement (Sept. 2014) is an announcement that EPA Region 8 has completed a Preliminary Assessment of the abandoned uranium mines located within and adjacent to the proposed Dewey-Burdock lSL Project in response to a citizen's petition under the Comprehensive Environmental Response, Compensation, and Liability Act. According to the announcement, a Preliminary Assessment is "designed to distinguish, based on limited data, between sites that pose little or no threat to human health and the environment and sites that may pose a threat and require further investigation." *Id.* at 1. Ex. OST-026, Seagull Environmental Technologies, Inc., Preliminary Assessment Report Regarding the Darrow/Freezeout/Triangle Uranium Mine Site Near Edgemont, South Dakota at 35 (Sept. 24, 2014) [hereinafter Preliminary Assessment, Ex. OST-026] is the Preliminary Assessment report itself [hereinafter Preliminary Assessment]. Although the Oglala Sioux Tribe argued that Ex. OST-025, Darrow/Freezeout/Triangle Uranium Mine, EPA, Preliminary Assessment Announcement (Sept. 2014) and the Preliminary Assessment, Ex. OST-026, had relevance to Contentions 2, 3, 4, and 6, we saw little if anything in those exhibits relating to the ability of the site to contain ISL fluids (Contention 3), groundwater quantity (Contention 4), or mitigation measures (Contention 6).

[288] Preliminary Assessment, Ex. OST-026, at 35.

C. Contention 3: The FSEIS Fails to Include Adequate Hydrogeological Information to Demonstrate the Ability to Contain Fluid Migration and Assess Potential Impacts to Groundwater

1. Legal Standards

In this Partial Initial Decision the Board reviews the NRC Staff's FSEIS under the NEPA hard look standard.[289]

2. Parties' Positions

In Contention 3[290] the Oglala Sioux Tribe argues that the Dewey-Burdock site contains numerous geological and man-made features such as interfingering sediments, unplugged boreholes, breccia pipes/collapse structures, and faults and fractures that will permit unwanted groundwater migration.[291] Given these features, the Oglala Sioux Tribe and Consolidated Intervenors also argue that deferring collection of necessary data to confirm the ability of the site to contain production fluids violates NEPA.[292]

The NRC Staff argues that the evidence does not indicate the presence of faults, fractures, breccia pipes, and related features at the Dewey-Burdock site.[293] While the NRC Staff acknowledges that there are a number of improperly plugged or abandoned boreholes at the Dewey-Burdock site, they also argue that as a condition of its license Powertech must address these boreholes before beginning operations. Finally, the NRC Staff argues that although Powertech's license includes conditions requiring that it submit additional data on hydrogeological confinement before beginning operations in any wellfield, these conditions are consistent with NEPA, NRC regulations, and NRC guidance.[294]

Similarly, Powertech presented testimony and exhibits in support of its position that the ore-bearing formations at the Dewey-Burdock site are sufficiently hydrogeologically isolated to allow ISL operations to be conducted safely.

3. Summary of Key Evidence

The technical issue at the heart of Contention 3 is Intervenors' assertion that Powertech's conceptual model, which was adopted by the NRC Staff in the

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[289] This standard is fully explained above in Part II.B of this Partial Initial Decision.
[290] LBP-14-5, 79 NRC at 401.
[291] Oglala Sioux Tribe Post-Hearing Initial Brief at 45-46.
[292] *Id.*
[293] NRC Staff's Post-Hearing Reply Brief at 26.
[294] *Id.*

FSEIS, fails to account for natural and man-made hydraulic conductivity that makes it unlikely process waters can be contained within the mined formations.[295] Potential groundwater flow pathways enumerated by the Oglala Sioux Tribe's witness Robert Moran include (a) interfingering fluvial sediments, (b) fractures and faults, (c) breccia pipes and collapse structures, and (d) historical boreholes.[296] Consolidated Intervenors rely upon the testimony of Hannan LaGarry.[297] Powertech witnesses Hal Demuth,[298] Errol Lawrence, and Frank Lichnovsky[299] and NRC Staff witnesses James Prikryl, Thomas Lancaster, Paul Bertetti,[300] and Ronald McGinnis[301] provided testimony in support of hydrological confinement.

Because of the multiple potential fluid migration pathways raised by the Intervenors, we divide our analysis into general issues relating to fluid confinement (including interfingering sediments) and specific technical issues associated with faults, fractures and joints, breccia pipes, and boreholes. We address in turn each potential hydrological pathway, the evidence in the record as to each potential pathway, and conclude with our decision as to the sufficiency of the analysis of the potential for fluid migration.

a. General Issues

Intervenors assert that the physical nature of fluvial sandstones that host roll-front uranium deposits like those at the Dewey-Burdock site makes confinement nearly impossible because these formations typically interfinger with finer-grained silts and shales, allowing groundwater to flow between the different stratigraphic horizons.[302] Intervenors further maintain that a series of pumping tests conducted in 1979 and 2008 demonstrate that groundwater is not confined in the ore zone and that there is leakage between the various formations bounding the ore bodies. Dr. Moran, citing an analysis of the 1979 tests in the Dewey-Burdock area,[303] notes that the authors of that study concluded the Fuson Shale is inherently leaky owing to "the primary pore space and naturally occurring joints and fractures" as well as

[295] Oglala Sioux Tribe Petition, Ex. OST-010, at 22.
[296] Moran Testimony, Ex. OST-001, at 20.
[297] Ex. INT-004, Hannan E. LaGarry Curriculum Vitae.
[298] Ex. APP-014, Hal P. Demuth Curriculum Vitae.
[299] Ex. APP-073, Frank Lichnovsky Curriculum Vitae.
[300] Ex. NRC-159, F. Paul Bertetti Curriculum Vitae.
[301] Ex. NRC-160, Ronald N. McGinnis, Jr. Curriculum Vitae.
[302] Oglala Sioux Tribe Petition, Ex. OST-010, at 23.
[303] Ex. OST-006, Tennessee Valley Authority Analysis of Aquifer Tests Conducted at the Proposed Burdock Uranium Mine Site Burdock, South Dakota (Sept. 2012) [hereinafter TVA Aquifer Analysis, Ex. OST-006].

unplugged boreholes.[304] Dr. Moran rejects Powertech's assertion both that natural geologic features such as faults and breccia pipes play no role in transmitting water through the Fuson Shale and that the drawdown observed in the Fall River Formation during recent pumping tests was entirely attributable to improperly abandoned boreholes.[305] Dr. Moran also testified that the 2012 numerical models prepared by Petrotek (a consultant for Powertech) for the Dewey-Burdock site are unreliable because they are based on several improper simplifications and assumptions, the most significant of which is that the Fuson Shale is an effective aquitard.[306]

Dr. LaGarry contends (a) that groundwater in the Fall River and Chilson aquifers exists under artesian conditions, which he asserts will increase the likelihood that production waters could migrate vertically into adjacent aquifers or flow onto the surface, and (b) horizontal groundwater velocities of up to 35.5 meters per day for groundwater within the uranium-bearing strata could result in the rapid migration of contaminants outside the controlled area.[307]

Powertech and the NRC Staff witnesses maintain that the ore-bearing formations at the Dewey-Burdock site are sufficiently hydrogeologically isolated to allow ISL operations to be conducted safely. Powertech witness Mr. Demuth testified that the ore-bearing formations are confined above by the Graneros Group and below by thick shale horizons in the Morrison Formation. Mr. Demuth maintains that the 20- to 80-foot-thick Fuson Shale separating the two ore-bearing units in the Inyan Kara Group is an effective barrier to fluid migration.[308] Powertech witness Mr. Lawrence testified that the lower-permeability siltstones and mudstones that typically interfinger with sandstones in these deposits actually help control water flow and contribute to the hydrologic isolation of the ore-bearing sands.[309] Powertech witness Mr. Lichnovsky testified that analysis of geophysical logs for more than 3000 boreholes indicates the Fuson Shale is continuous and no less than 20 feet thick throughout the project area.[310]

Powertech witness Mr. Lawrence reviewed the 1979 aquifer tests cited by Dr. Moran and concluded that the leaks it found were most likely caused by

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[304] Moran Testimony, Ex. OST-001, at 19 (emphasis omitted).

[305] *Id.* at 24-25.

[306] *Id.* at 23-26.

[307] Ex. INT-020A, Expert Opinion Regarding the Proposed Dewey-Burdock Project ISL Mine near Edgemont, South Dakota at 3-4 (Aug. 19, 2014).

[308] Ex. APP-013, Written Testimony of Hal Demuth at 14 (June 20, 2014) [hereinafter Demuth Testimony, Ex. APP-013].

[309] Ex. APP-037, Written Testimony of Errol Lawrence at 20 (June 20, 2014) [hereinafter Lawrence Testimony, Ex. APP-037].

[310] Ex. APP-072, Answering Testimony Regarding NRC Staff's Analysis of TVA Well Log Data (Oct. 24, 2014) at 3.

open boreholes completed in both the Chilson and Fall River aquifers.[311] Mr. Lawrence testified that the 2008 pumping test focused in the Chilson sandstones caused a 91-foot drawdown in that aquifer but produced only a 1-foot drawdown response in the overlying Fall River aquifer, which he maintains is consistent with leakage through unplugged boreholes.[312] Powertech witness Mr. Demuth testified that the Fuson Shale is an effective hydraulic barrier in the absence of open boreholes. As support for this conclusion, he testified that the potentiometric surfaces (water level elevations) in paired wells completed in the Fall River and Chilson aquifers differ by as much as 40 feet whereas if the two aquifers were hydraulically connected these surfaces would be at approximately the same elevation.[313] Mr. Demuth also cited a U.S. Geological Survey study of the quality of groundwater in different aquifers in and around the Dewey-Burdock site[314] that he maintained further supports the conclusion that no significant transfer of water has occurred across the confining units between aquifers.[315] While admitting that uncertainties remain whether the Fuson Shale can function as a confining horizon throughout the entire Dewey-Burdock project area, Mr. Demuth emphasized that in the Burdock area, where production is located in the Chilson member, license conditions will require Powertech to place monitoring wells in the overlying Fall River aquifer to identify any lack of confinement.[316]

Regarding the question of artesian flow in the ore-bearing aquifers, both Powertech and the NRC Staff acknowledge that the Fall River and Chilson members host artesian aquifers in the project area. However, Powertech contends that this condition does not signify that either aquifer is in communication with overlying or underlying aquifers, but instead indicates they are hydraulically confined.[317] The NRC Staff testified that artesian flow concerns were addressed by including a license condition whereby Powertech must monitor twice monthly for excursions at the surface and thereby "limit the environmental impact of any excursion associated with artesian flow."[318] Dr. LaGarry asserted that horizontal groundwater velocity in the ore-zone aquifer could be as much as 35.5 meters

[311] Lawrence Testimony, Ex. APP-037, at 35.

[312] *Id.*

[313] Demuth Testimony, Ex. APP-013, at 15.

[314] Ex. APP-026, Raymond H. Johnson, Presentation to EPA, USGS Research at the Proposed Dewey-Burdock Uranium In-Situ Recovery Mine, Edgemont, South Dakota (Feb. 22, 2012).

[315] Demuth Testimony, Ex. APP-013, at 16.

[316] *Id.* at 29.

[317] Ex. APP-074, Answering Testimony Regarding Dr. LaGarry's Analysis of Borehole Log Data (Dec. 4, 2014) at 7 [hereinafter Borehole Log Data Answering Testimony, Ex. APP-074].

[318] Ex. NRC-175, NRC Staff's Answering Testimony at 6-7 (Dec. 9, 2014) [hereinafter NRC Staff's Answering Testimony, Ex. NRC-175].

per day.[319] Powertech witness Mr. Lawrence stated this velocity was calculated incorrectly, and that based on his "experience working with over a dozen permitted ISR facilities, groundwater flow velocities on the order of 10 feet per year are typical for ISR facilities."[320] Further, he cited a U.S. Geological Survey estimate of the horizontal flow velocity in the Chilson aquifer to be 4.34 meters per year, which he testified is of similar magnitude to Powertech's estimate and consistent with typical natural flow velocities at ISL facilities.[321]

b. Faults, Fractures, and Joints

Intervenors assert it is unlikely that production fluids can be contained within the ore zone aquifers because faults and joints in the project area create vertical permeability pathways between aquifers.[322] In response to Powertech's claims that there are no identified faults in the Dewey-Burdock project area,[323] Consolidated Intervenors' witness Dr. LaGarry explained that the Dewey Fault, which is only 1 mile northwest of the Dewey-Burdock property, is only the most prominent expression of a structural zone that contains numerous ancillary faults and joints that are likely to extend onto the site.[324] Dr. LaGarry further noted[325] that the Tennessee Valley Authority's (TVA) 1979 Draft Environmental Statement for a property that overlaps part of the present Dewey-Burdock site specifically mentions faults and fractures associated with the Dewey Fault,[326] and cites twelve examples in which faults are mentioned or otherwise indicated in the written notes on drillers' logs prepared during TVA's evaluation of the Dewey-Burdock deposits in the late 1970s.[327] Dr. Moran asserted that satellite imagery of the Dewey-Burdock area shows that the site is intersected by numerous faults and fractures.[328] In response to Board questions about whether geophysical well logs

[319] Ex. INT-013, Opening Written Testimony of Dr. Hannon [sic] LaGarry at 6 (June 20, 2014).

[320] Lawrence Answering Testimony, Ex. APP-066, at 11.

[321] Ex. APP-041, Raymond H. Johnson, Presentation to EPA, Using Groundwater and Solid-Phase Geochemistry for Reactive Transport Modeling at the Proposed Dewey-Burdock Uranium In-Situ Recovery Site, Edgemont, South Dakota at 36 (Apr. 11, 2012).

[322] Oglala Sioux Tribe Petition, Ex. OST-010, at 23.

[323] Ex. APP-015-B, Powertech, Dewey-Burdock Project Application for NRC Uranium Recovery License, Technical Report § 2.6.2.1 (Rev. Dec. 2013).

[324] Tr. at 1065.

[325] Tr. at 1073.

[326] Ex. OST-009, Tennessee Valley Authority Draft Environmental Statement, Edgemont Uranium Mine at 60 (Aug. 30, 1978) [hereinafter TVA Draft Environmental Statement, Ex. OST-009].

[327] Ex. OST-029, Written Supplemental Testimony of Dr. Hannan LaGarry at 2 (Nov. 21, 2014) [hereinafter LaGarry Supplemental Testimony, Ex. OST-029].

[328] Moran Testimony, Ex. OST-001, at 21; Ex. OST-005, Robert E. Moran, Powerpoint Presentation at 29 (Aug. 19, 2014) [hereinafter Moran Presentation, Ex. OST-005]; Tr. at 1078.

would reveal the presence of faults, Dr. LaGarry explained that small faults with only a few meters of offset are commonly overlooked but could be detected by careful examination of electrical resistivity logs if the spacing of the boreholes were close enough.[329] Finally, Dr. LaGarry asserted that even if pumping tests show that faults and fractures do not presently act as conduits for groundwater, the use of oxidizing lixiviant during mining could dissolve minerals that had been deposited along fault surfaces and "uncork" these pathways between aquifers.[330]

Powertech and NRC Staff witnesses maintain that no faults have been identified within the Dewey-Burdock permit area[331] but that, if undetected faults or joints are present on the site, they would not significantly affect the hydrogeology.[332] Many of these witnesses relied heavily on the geologic cross sections or "fence diagrams" developed from electrical resistivity logs of boreholes (e-logs) to demonstrate that faults have not caused significant offsets in the distinctive stratigraphic horizons.[333] In particular, the NRC Staff reviewed e-logs from closely spaced drill holes that transect the lineaments that Dr. Moran interpreted as faults.[334] Based on fence diagrams constructed using these logs,[335] the NRC Staff concluded that the subsurface strata do not show evidence of faulting.[336] In response to Dr. LaGarry's analysis of notes on drillers' logs purporting to contain twelve references to faults present on the project site, witnesses for both Powertech and NRC Staff asserted that whereas geophysical well logs provide objective data that can be examined and interpreted by experts, drillers' comments recorded at the time the boreholes were constructed are subjective observations by persons whose qualifications are unknown.[337] Powertech further asserted that references to "offsets" in drillers' remarks on two of Intervenors' exhibits[338] were incorrectly interpreted by Dr. LaGarry as referring to faults, whereas the term used in these drillers' notes refers to the location of the drill hole.[339] In addition, Powertech investigated the site

[329] Tr. at 1075.

[330] Tr. at 1084.

[331] FSEIS, Ex. NRC-008-A-1, § 3.4.3.

[332] Lawrence Answering Testimony, Ex. APP-066, at 6.

[333] Lawrence Testimony, Ex. APP-037, at 20; NRC Staff's Rebuttal Testimony, Ex. NRC-151, at 20; Tr. at 1107.

[334] Moran Presentation, Ex. OST-005, at 29.

[335] Ex. NRC-168, Transect 1 — Fence Diagram of Drill Hole Resistivity Logs (Oct. 14, 2014) [hereinafter Transect 1, Ex. NRC-168]; Ex. NRC-169, Transect 2 — Fence Diagram of Drill Hole Resistivity Logs (Oct. 14, 2014) [hereinafter Transect 2, Ex. NRC-169].

[336] Ex. NRC-158, Supplemental Testimony Regarding NRC Staff's Analysis of TVA Well Log Data (Oct. 14, 2014) at 12 [hereinafter NRC Staff Well Log Data Supplemental Testimony, Ex. NRC-158].

[337] Borehole Log Data Answering Testimony, Ex. APP-074, at 3; NRC Staff's Answering Testimony, Ex. NRC-175, at 14.

[338] Ex. OST-034, DS392 Driller Remarks; Ex. OST-036, IHM32 Driller Remarks.

[339] Borehole Log Data Answering Testimony, Ex. APP-074, at 13-14.

of historical drill hole IHK2, where drillers' remarks indicated the presence of an east-west trending fault zone, by conducting a field check of the site and by constructing two cross sections based on e-logs of closely spaced drill holes. In Powertech's estimation, neither indicated the presence of a fault.[340]

c. Breccia Pipes

Intervenors contend that the presence of natural breccia pipe formations in the Dewey-Burdock area create additional vertical permeability pathways between aquifers.[341] Dr. Moran specifically cited the 1974 geological report by Gott et al.[342] as support for his assertion that breccia pipes and collapse structures occur near the Dewey-Burdock project area.[343] Dr. Moran further stated that circular features visible on satellite imagery of the project site "likely represent solution/collapse structures," and he indicated the outline of one of these features on a satellite image.[344] Additional testimony by Dr. LaGarry[345] maintained that drillers' notes from the 1970s TVA project document a sinkhole on the Dewey-Burdock site associated with two closely spaced faults.[346]

Powertech witness Mr. Lawrence responded by noting that concerns about collapse structures on the Dewey-Burdock site were specifically addressed by a numerical model that simulated the potentiometric groundwater surface that would result from discharge of groundwater into the Chilson Member via a hypothetical breccia pipe.[347] Referring to the results of the numerical model,[348] he stated that the effect on the aquifer surface would be readily discernible with the current monitor well network but that no such recharge mound has been detected. Regarding the purported collapse feature identified by Dr. Moran on satellite images, Powertech geologist Mr. Lichnovsky testified that he field-checked the specific site and determined that the feature was an open depression caused by erosion and was not a sinkhole.[349] In addition, the NRC Staff conducted an analysis

[340] *Id.* at 14.

[341] Moran Testimony, Ex. OST-001, at 21-22.

[342] Ex. NRC-081, Garland B. Gott, Don E. Wolcott & C. Golbert Bowles, Stratigraphy of the Inyan Kara Group and Localization of Uranium Deposits, Southern Black Hills, South Dakota and Wyoming, Geological Survey Professional Paper 763 (1974).

[343] Moran Testimony, Ex. OST-001, at 22.

[344] *Id.* at 22; Moran Presentation, Ex. OST-005, at 13.

[345] LaGarry Supplemental Testimony, Ex. OST-029, at 3.

[346] Ex. OST-033, DS178 Driller Remarks.

[347] Lawrence Answering Testimony, Ex. APP-066, at 6.

[348] Ex. APP-025, Petrotek, Numerical Modeling of Hydrogeologic Conditions, Dewey-Burdock Project South Dakota at 26 (Feb. 2012).

[349] Tr. at 1126.

of e-logs for five drill holes in the vicinity of the circular feature identified by Dr. Moran and reported that neither the land surface profile nor the stratigraphic horizons showed evidence of a sinkhole-like structure or any discontinuity that might result from brecciation.[350] Finally, in response to Dr. LaGarry's assertion that a sketch drawn on the back of a driller's lithologic log depicts a sinkhole and two parallel faults, Powertech witness Mr. Lichnovsky noted that the sketch is unlabeled and that the hash marks on the circular feature point outward, indicating a dome, rather than inward, which would be the usual way to indicate a circular depression.[351]

d. Historical Boreholes

Intervenors first note that the NRC Staff and Powertech acknowledge that unplugged or improperly abandoned historical boreholes occur on the Dewey-Burdock project site. Intervenors then contend that leaky boreholes can provide pathways for waters to mix between the mineralized zones and the surrounding aquifers.[352] Based on a review of drillers' comments on logs of historical TVA boreholes, Dr. LaGarry cited specific examples of old boreholes that were uncased, displayed artesian water, or had been plugged with wood fence posts or broken steel, asserting that these examples indicate open drill holes that could potentially serve as fluid pathways.[353] Dr. Moran disputed the NRC Staff's and Powertech's assertion that leaking boreholes would necessarily produce wet areas detectable by satellite color infrared imagery (CIR). Dr. Moran also noted that old boreholes can connect water-bearing units without producing flowing water.[354] In addition, Intervenors objected to the NRC Staff's acceptance of Powertech's plan to locate and plug historical boreholes at some later date. Instead, Intervenors maintained that the FSEIS must discuss how old boreholes will be identified and must explain the methodology that will be used to assess the effectiveness of plugging and abandonment.[355]

Powertech witness Mr. Lawrence responded that historical drill holes that penetrate to uranium-bearing horizons in the Inyan Kara Group would have to pass through at least 500 feet of bentonitic shale in the overlying Graneros Group and that collapse and swelling of these shales would self-seal the holes.[356] Mr. Lawrence asserted that this self-sealing process occurs so rapidly in uncased

[350] NRC Staff Well Log Data Supplemental Testimony, Ex. NRC-158, at 17.
[351] Borehole Log Data Answering Testimony, Ex. APP-074, at 12.
[352] Moran Testimony, Ex. OST-001, at 19.
[353] LaGarry Supplemental Testimony, Ex. OST-029, at 3.
[354] Moran Testimony, Ex. OST-001, at 20.
[355] Oglala Sioux Tribe Statement of Position at 33.
[356] Lawrence Testimony, Ex. APP-037, at 26.

holes that it is often difficult to perform geophysical logging immediately after drilling.[357] As to whether large numbers of historical boreholes remain unplugged or were improperly abandoned, Mr. Lawrence responded that TVA and Powertech exploration holes were plugged with bentonite or cement grout in accordance with South Dakota state requirements that were in effect at the time these holes were drilled.[358] In response to Dr. LaGarry's interpretation of comments on driller's logs, Powertech witnesses maintained that (a) exploration boreholes are almost never cased and a notation to that effect is not relevant to whether or not the hole in question was adequately abandoned; (b) the Fall River and Chilson aquifers are indeed artesian at some locations on the site, but instead of indicating open communication with other aquifers, artesian conditions demonstrate these aquifers are confined; and (c) wooden fence posts are commonly inserted in previously plugged boreholes to mark their locations, and references to "broken steel" likely refer to drill pipe lost during construction of the borehole, and neither is relevant to whether or not the hole was properly plugged.[359]

With regard to the use of infrared imagery to detect leaking boreholes, Powertech and NRC Staff witnesses referred to a 2010 Powertech Technical Report RAI Response[360] that explains that CIR imagery detects anomalous areas of vegetation which, in the semi-arid Dewey-Burdock region, may indicate groundwater discharge at or near the surface. Powertech attributed the anomalous CIR signature in the southwest corner of the Burdock portion of the project area, known as "alkali flats," to improperly plugged boreholes, and asserted that if old boreholes caused similar discharges elsewhere on the site, they would have been readily detectable.[361] Powertech witnesses responded to Intervenors' assertion that the FSEIS lacks a discussion of how old boreholes will be located and abandoned by stating that existing historical records show the survey coordinates of old boreholes and that South Dakota regulations require that boreholes be plugged with bentonite or cement grout.[362] Specifically, Powertech witness Mr. Lichnovsky states that "the FSEIS describes Powertech's commitment to follow South Dakota regulations for plugging exploration holes and wells."[363]

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[357] *Id.*

[358] *Id.* at 25.

[359] Borehole Log Data Answering Testimony, Ex. APP-074, at 4-11.

[360] Ex. APP-016-C, Powertech, Revised Responses to [Technical Report] RAIs Dated May 28, 2010 at 201-10 (June 2011).

[361] *Id.*

[362] Borehole Log Data Answering Testimony, Ex. APP-074, at 5.

[363] *Id.* at 10 (citing FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.5.2).

4. Board Ruling

Because of the number of issues involved in this Contention, we set forth our conclusions separately on each specific technical issue related to fluid confinement.

a. General Confinement of the Overall Ore Zone

According to the FSEIS, the geologic confinement required for an ISL license is provided in the Dewey-Burdock area by the Morrison Formation below the ore-bearing units and the three formations of the Graneros Group above those units.[364] Aside from a statement questioning whether testing has been adequate to demonstrate the confining ability of the Morrison Formation, Intervenors offered little evidence relating specifically to these stratigraphic units.[365] Powertech witness Mr. Lawrence testified that pumping tests in the Chilson showed no response in the Unkpapa aquifer (below the Morrison Formation), which he maintained supported "a no-flow boundary for the Morrison Formation for modeling purposes."[366] Powertech witness Mr. Demuth, citing the FSEIS and license application, noted that the overlying Graneros Group is up to 550 feet thick and is present across the project area, except where eroded in the eastern edge of the site. In contrast, the Intervenors offered very little evidence to support their claim that the Graneros Group and Morrison Formation were not effective aquitards. Accordingly, we conclude the NRC Staff has given the confinement of the overall ore zone a hard look and agree with the conclusion in the FSEIS that the general confinement requirement for the Dewey-Burdock project has been met.

b. Continuity and Thickness of Fuson Shale

The FSEIS concludes that the continuous thickness of the Fuson Shale is based on the well logs of thousands of drill holes; representative examples of which indicate that the Fuson Shale can be clearly identified by its e-log signature. Intervenors' witnesses had access to these logs, but did not use them to challenge the continuity and thickness of the Fuson Shale. Accordingly, we conclude that Powertech has adequately shown that the Fuson Shale is continuous and has a minimum thickness of 20 feet, as indicated in the cross sections.

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[364] FSEIS, Ex. NRC-008-A-1, § 3.4.1.

[365] Moran Testimony, Ex. OST-001, at 27.

[366] Lawrence Answering Testimony, Ex. APP-066, at 10.

c. Leakage Shown by Pumping Tests

The question whether the NRC Staff's and Powertech's witnesses were justified in the conclusion that boreholes were the only cause for leakage through the Fuson Shale (indicated by pumping tests) is not fully answerable without discussing faulting and collapse structures. These are discussed below. Powertech and the NRC Staff witness testimony about differences in the potentiometric surfaces in paired wells in the Chilson and Fall River aquifers is compelling evidence that these aquifers are not freely connected by natural pathways. Further, that boreholes are known to exist in the vicinity of the test wells and reports of the earlier TVA pump tests both point to unplugged boreholes as the most likely cause of leakage. This indicates that, in the absence of compelling evidence for natural connectivity, we find the assumption that boreholes caused the leakage to be reasonable.

d. Rapid Groundwater Flow

Regarding the question of rapid horizontal flow, Powertech witness Mr. Lawrence testified that the average groundwater velocity in the Fall River and Chilson aquifers is approximately 6 to 7 feet per year (1.8 to 2.1 meters per year), which was consistent with the U.S. Geological Survey's independent estimate.[367] Intervenor witness Dr. LaGarry in contrast alleged the groundwater velocity in the ore zone was 35.5 meters per day. The Board was unable to find any support for Dr. LaGarry's claim. Accordingly, we concur with Mr. Demuth's analysis that Dr. LaGarry's groundwater velocity estimates are not supported by the record.

e. Faults, Fractures, and Joints

The Intervenors assert that faults and joints provide significant pathways for groundwater to migrate between aquifers. This is not simply a question of whether faults and joints are present, but rather whether they are large and open enough to produce a substantial breach in the confining layers, particularly in the Fuson Shale. The reports focusing on the TVA project in the Dewey-Burdock area are unequivocal in stating that faults and joints are present on the site.[368] Moreover, as correctly pointed out by Powertech and NRC Staff witnesses, although most of the drillers' notes presented as evidence by Intervenors are subject to interpretation, the driller's remark for drill hole TRR17 giving a specific description of a

[367] Lawrence Answering Testimony, Ex. APP-066, at 11.

[368] TVA Aquifer Analysis, Ex. OST-006, at 31; TVA Draft Environmental Statement, Ex. OST-009, at 50.

fault exposed in the wall of a mine pit seems credible.[369] On the other hand, none of the analyses of borehole logs performed by witnesses for Powertech, the NRC Staff, or the Intervenors have demonstrated that faults produced any significant displacements within the geophysically distinctive Fuson Shale. The fence diagrams based on logs from closely spaced drill holes that transect the purported faults identified by Dr. Moran provide particularly convincing evidence for a lack of significant faulting in that part of the project area.[370] Further, although Powertech and Staff witnesses are loath to acknowledge the existence of any faults or fractures in the area, Mr. Demuth noted in oral testimony that ISL operations have operated successfully in areas where faults cut the ore body, and that the presence of "small scale features in the orebody is not a deal killer."[371]

We therefore find that the evidence indicates that even though small faults and joints may be present in the project area, their presence does not support Intervenors' assertions that such faults produced significant offsets, much less that such faults and joints provide pathways for groundwater to migrate between aquifers.

f. Breccia Pipes

Intervenors' assertion that breccia pipes on the Dewey-Burdock property could provide connections between aquifers is less credible than the concerns about faulting. The satellite imagery offered in evidence by Dr. Moran was effectively refuted by both Mr. Lichnovsky's testimony that a field examination showed it was not a sinkhole,[372] and by the NRC Staff's analysis of e-logs from wells in the vicinity of the purported feature that demonstrated no disruption of the bedding.[373] Mr. Lichnovsky's analysis of the sketch on the drillers' log convincingly refuted Dr. LaGarry's interpretation that it depicted a sinkhole. In addition, Petrotek's conclusion, based on one of their numerical models, that groundwater flow through a breccia pipe would produce a mound in the potentiometric surface that would be easily detected if it were present, along with the totality of testimony and exhibits presented on the issue of breccia pipes, further convinces us that the FSEIS analysis on this issue is adequate.

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[369] Ex. OST-038, TRR17 Driller Remarks.

[370] Ex. NRC-167, Location of Drill Hole Transects; Transect 1, Ex. NRC-168; Transect 2, Ex. NRC-169s.

[371] Tr. at 1079.

[372] Tr. at 1126.

[373] Ex. NRC-172, Fence Diagram of Resistivity Profiles for Selected Drill Holes (Oct. 14, 2014).

g. Boreholes

While all parties acknowledge that thousands of historical boreholes penetrate the Dewey-Burdock site, Intervenors assert that a large number remain open and could act as pathways for waters moving from the ore zones to adjacent aquifers. It is apparent that some boreholes on the site have not been adequately plugged, because leakage between formations was attributed to open boreholes in the TVA studies of the late 1970s, was again cited as the cause of leakage by Powertech and NRC Staff witnesses who analyzed the more recent pumping tests, and is cited as the cause for surface water in the "alkali flats" area. In light of these occurrences, it seems unlikely that all historic boreholes have been properly abandoned or have "self sealed."

Both Powertech and NRC Staff witnesses further assert that open boreholes do not pose a concern because Powertech will be required to locate any historical boreholes that were not properly abandoned and plug them with bentonite or cement grout. After considerable searching, we were able to locate the place in the record where "Powertech commits to properly plugging and abandoning or mitigating any . . . historical wells and exploration holes."[374] And, despite the NRC Staff's claim that because "there are a number of improperly plugged or abandoned boreholes at the Dewey-Burdock site, as a condition of its license Powertech must address these boreholes before beginning operations,"[375] we did not find any such explicit condition in the license.[376]

Therefore, the Board will amend license SUA-1600 with a similar condition that was included in the *Strata* license. License SUA-1600 shall be amended to include an additional license condition stating:

> Prior to conducting tests for a wellfield data package, the licensee will attempt to locate and properly abandon all historic drill holes located within the perimeter well ring for the wellfield. The licensee will document, and provide to the NRC, such efforts to identify and properly abandon all drill holes in the wellfield data package.

h. Artesian Flow

As noted by Consolidated Intervenor witness Dr. LaGarry, the record is replete with acknowledgments that artesian conditions exist at the proposed site.[377] The

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[374] Ex. APP-016-B, Powertech Application for NRC Uranium Recovery License, Technical Report RAI Responses at 31 (June 2011).

[375] NRC Staff's Post-Hearing Reply Brief at 26.

[376] Powertech Materials License, Ex. NRC-012.

[377] *See* Ex. APP-040-A, Application for NRC Uranium Recovery License Proposed Action Fall and Custer Counties South Dakota Environmental Report § 3.4.1.2 (Feb. 2009); SER (Revised) (Apr. 2014), Ex. NRC-134, §§ 2.3.3.3.1, 2.4.3.3.2; FSEIS, Ex. NRC-008-A-1, §§ 3.12.1.1, 3.12.2.

FSEIS notes that "anomalous (*i.e.,* high) gamma-ray readings identified in the southern part of the Dewey area in the area of an artesian well are likely due to discharging groundwater from the Inyan Kara aquifer."[378] Powertech witness Mr. Lawrence testified that flowing artesian conditions in the Fall River and Chilson aquifers throughout much of the license area are advantageous in identifying potential unplugged boreholes or wells, since surface discharge would be readily identifiable at these locations.[379]

Thus, there is no factual dispute as to whether there are artesian conditions at the site nor whether such conditions have the potential to spread fluids from the Inyan Kara aquifer to the surface. The NRC Staff addressed concerns about artesian flow at the surface by stating that Powertech is bound by license conditions to "limit the environmental impacts of any excursion associated with artesian flow" by monitoring for excursions twice monthly.[380] The NRC Staff also stated, "we took [artesian flow] into account when developing mitigation measures (*e.g.,* license conditions) and assessing the environmental impacts of the Dewey-Burdock Project."[381] NRC Staff witnesses Mr. Prikryl and Mr. Lancaster testified that the presence of artesian wells in and around the license area is documented in FSEIS § 4.5.2.1.1.2.2.[382] NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the FSEIS documents Powertech's procedures to mitigate potential impacts regarding flowing artesian wells, including removing all domestic wells within the project area from private use prior to beginning operations, removing all stock wells within 0.25 mile of any wellfield from private use prior to operation of that wellfield, and monitoring all domestic, livestock, and crop irrigation wells within 2 kilometers of the boundary of any wellfield during operations.[383] Mr. Prikryl and Mr. Lancaster also testified that Powertech's routine excursion monitoring program, required by LC 11.5, and Powertech's requirement to maintain a net inward hydraulic gradient, required by LC 10.7, will further minimize potential impacts from flowing artesian conditions.[384]

Powertech and the NRC Staff convincingly note that the very existence of artesian conditions in the ore zone aquifers means that they are largely confined, and that in the absence of significant natural pathways, such as faults and breccia pipes, the only way the artesian conditions can result in a transfer of water out of the ore zone aquifers is via unplugged boreholes. Therefore, requiring boreholes

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[378] FSEIS, Ex. NRC-008-A-1, § 3.12.1.1.

[379] Lawrence Testimony, Ex. APP-037, at 28.

[380] NRC Staff's Answering Testimony, Ex. NRC-175, at 6-7.

[381] *Id.* at 7.

[382] NRC Staff's Rebuttal Testimony, Ex. NRC-151, at 39; *see also* NRC Staff's Answering Testimony, Ex. NRC-175, at 6.

[383] *See* NRC Staff's Answering Testimony, Ex. NRC-175, at 6.

[384] *See* NRC Staff's Rebuttal Testimony, Ex. NRC-151, at 39-40.

to be located and properly abandoned should largely resolve any threats posed to either surface water or the shallow aquifers by the existing artesian conditions.

With the condition that unplugged boreholes be located and properly abandoned, the FSEIS and the record in this proceeding include adequate hydrogeological information to demonstrate the ability to contain fluid migration and assess potential impacts to groundwater. We therefore find for Powertech and the NRC Staff on Contention 3.

D. Contention 4: The FSEIS Fails to Adequately Analyze Groundwater Quantity Impacts

1. Legal Standards

In this Partial Initial Decision the Board reviews the NRC Staff's FSEIS under the NEPA hard look standard.[385]

2. Parties' Positions

In Contention 4[386] the Oglala Sioux Tribe alleges that the FSEIS fails to comply with NEPA's hard look requirement because it inadequately analyzes groundwater quantity impacts of the ISL project. Specifically, the Oglala Sioux Tribe argues that "the FSEIS presents conflicting information on groundwater consumption such that the water consumption impacts of the project cannot be accurately evaluated."[387] The Oglala Sioux Tribe maintains that these consumption impacts and "the underlying basis for the quantity of water lost due to contamination, reverse osmosis, evaporation, and deep disposal were never established" in the FSEIS, or in the evidentiary record of this hearing.[388]

The Oglala Sioux Tribe also characterizes the FSEIS as improperly relying on South Dakota Department of Environment and Natural Resources (SDDENR) findings that "annual water consumption will not exceed the recharge rates of either the Madison or Inyan Kara aquifers."[389] The Oglala Sioux Tribe contends that non-NEPA documents cannot satisfy NEPA, except when tiered with other documents that must have both been prepared within a NEPA process and address

[385] This standard is fully explained above in Part II.B of this Partial Initial Decision.
[386] LBP-14-5, 79 NRC at 401.
[387] Oglala Sioux Tribe Post-Hearing Initial Brief at 56.
[388] *Id.* at 57.
[389] Tr. at 1303.

the specific proposed action.[390] The Oglala Sioux Tribe does not believe that the SDDENR permits in this proceeding are eligible for NEPA tiering.

Powertech argues that project water usage is properly quantified in the FSEIS, that the water quantity impacts to local wells have been adequately analyzed, and that the project water balance is adequate and appropriate for its intended purpose.[391] The NRC Staff argues that both CEQ guidance and NRC practice allow the NRC Staff to incorporate other analyses and information relevant to NEPA decisionmaking, including those prepared by other state and federal agencies.[392] Specifically, although the NRC Staff acknowledges consideration of the SDDENR water permit applications and EPA groundwater injection regulations, the NRC Staff asserts it conducted independent analyses.[393]

3. Summary of Key Evidence

The Oglala Sioux Tribe relies on Dr. Moran's testimony that Powertech will use and contaminate 4.5 billion gallons of water per year from the Inyan Kara aquifer and up to 290 million gallons of water per year from the Madison aquifer.[394] Although Dr. Moran does acknowledge that the "consumptive use" figure of 2% listed in the FSEIS will be relatively small, he opined that this estimate ignored the water that will be contaminated and lost by evapotranspiration, rendering it "no longer available for present or future uses within the exempted aquifer zone."[395] Dr. Moran also testified that based on the limited testing and modeling done by the NRC Staff, the "long-term water level drawdown in either the Madison or Inyan Kara are semi-quantitative, at best."[396] Dr. Moran criticized the purported water balance shown in FSEIS Figure 2.1-14[397] because it is based only on flow rates rather than total volumes. In Dr. Moran's estimation, the FSEIS failed to consider the basic components of a water balance by excluding "detailed, measured data for volumes of water entering the system and losses (*e.g.* volumes of ground water available in the various aquifers, evaporation from land

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[390] Oglala Sioux Tribe Post-Hearing Initial Brief at 58-59. In support of its position that an FSEIS cannot rely on non-NEPA documents, the Oglala Sioux Tribe cites *South Fork Band Council v. U.S. Department of the Interior,* 588 F.3d 718, 726 (9th Cir. 2009).

[391] Powertech Initial Findings of Fact and Conclusions of Law at 113-20.

[392] NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015) at 18-19.

[393] *Id.* at 19-22.

[394] Moran Testimony, Ex. OST-001, at 26.

[395] *Id.* at 27.

[396] *Id.*

[397] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.4, Figure 2.1-14.

application facilities, volumes under-going Underground Injection Control, etc.), and fail[ing] to calculate an actual balance."[398]

Powertech's witness Doyl Fritz[399] provided detailed written testimony that the FSEIS did provide a water balance for the project that included "the typical water consumption estimates for the Inyan Kara and Madison aquifers during each project phase (production, production/restoration, restoration) and for each wastewater disposal option."[400] Mr. Fritz testified that Powertech has submitted applications to the SDDENR for water appropriation permits from the Inyan Kara and Madison aquifers, that information from the applications and the SDDENR's review and recommended approval of those applications is provided in the FSEIS, and that the "SDDENR has recommended approval on the basis that sufficient water is available, the proposed withdrawals will not exceed average annual recharge, and there is not anticipated to be harm to nearby water users."[401] Further, Mr. Fritz testified that "Powertech will be required by South Dakota water right permits to not adversely affect existing water rights or domestic wells."[402]

With detailed reference and specific citations to the FSEIS and other items in the record, Powertech witness Mr. Demuth testified (1) to the location (in the record) of the water balance and its relationship to groundwater use;[403] (2) how the water balance was developed based on NUREG 1569 guidance;[404] (3) the

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[398] Moran Testimony, Ex. OST-001, at 26-27 (emphasis omitted).

[399] Ex. APP-047, Doyl M. Fritz Curriculum Vitae.

[400] Ex. APP-046, Written Testimony of Doyl Fritz (June 20, 2014) at 8 [hereinafter Fritz Testimony, Ex. APP-046]. In discussing the water balance, Mr. Fritz cited RAI Responses, Ex. APP-016-B at 68-73, which appears to be identical to FSEIS Figure 2.1-14. FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.4, Figure 2.1-14. Dr. Moran's response characterizes this as an "attempt to identify materials in the hearing record that could be construed as part of a water balance. [However], [t]he comments of Mr. Fritz do not change my opinions or the basis of my opinion that the FSEIS does not contain a water balance." Ex. OST-018, Written Rebuttal Testimony of Dr. Robert E. Moran (July 15, 2014) at 7-8 [hereinafter Moran Rebuttal Testimony, Ex. OST-018].

[401] Fritz Testimony, Ex. APP-046, at 5; *see also* FSEIS, Ex. NRC-008-A-2, § 4.5.2.1. At the hearing, Dr. Moran did not dispute the FSEIS's summary of the SDDENR's conclusions, although he did add that he did not "see any of the backup for defending those conclusions." Tr. at 1150-52.

[402] Fritz Testimony, Ex. APP-046, at 10; *see also* Ex. APP-028, SDDENR, Report to Chief Engineer on Powertech Water Permit Application at 16 (Nov. 2, 2012) [hereinafter SDDENR Report on Water Permit Application, Ex. APP-028].

[403] Demuth Testimony, Ex. APP-013, at 18.

[404] *Id.* at 19. Mr. Demuth's rebuttal testimony further commented that the water balance in the FSEIS is appropriate and "in accordance with NRC regulatory guidance in NUREG-1569 Section 3.1.3 and federal regulations in 10 CFR 40.32(c) and 40.41(c)," and "the NRC Staff found that the modeling effort was sufficient to 'enhance understanding of the Fall River and Chilson aquifer systems with respect to: regional and local flow patterns; recharge and discharge boundaries; and overall water budget.'" Ex. APP-065, Answering Testimony of Hal Demuth at 4-5 (July 15, 2014).

workings of the water balance;[405] (4) how "measured data" cannot be included in a water balance prior to the commencement of facility operations;[406] (5) how any water loss due to evaporation will occur from water temporarily stored in ponds prior to disposal, which is effectively accounted for in the water balance diagram in streams I and N;[407] (6) the relatively small projected impact of facility operations on local wells;[408] (7) water level and flow rate data for existing wells;[409] and (8) measures to protect existing wells during operation.[410] Powertech witness Mr. Lawrence also added that ISL:

> actually does not require much water relative to many other types of uses (including irrigation), and there are many incentives for Powertech to minimize water withdrawal, not the least of which is to minimize the amount of water that must be disposed by land application or deep well injection, both of which are relatively expensive.[411]

NRC Staff witnesses Mr. Lancaster and Mr. Prikryl jointly filed initial written testimony on Contention 4.[412] Mr. Lancaster and Mr. Prikryl (1) identified specific locations in the record where water consumption was discussed;[413] (2) defined a "water balance" and its significance and identified its location in the record for the Dewey-Burdock site as well as local and regional balances for the Inyan Kara and Madison aquifers;[414] (3) identified the results of numerical modeling used to predict drawdown in the Inyan Kara;[415] (4) identified the section of the FSEIS where consumptive groundwater use is discussed;[416] (5) identified the sections of

[405] Demuth Testimony, Ex. APP-013, at 19-20.

[406] *Id.* at 20.

[407] *Id.* at 19-20; *see also* Tr. at 1146-47. Dr. Moran responds that "Mr. Demuth wrongly asserts that water lost via evaporation from the waste ponds has no effect on the volumes of water used by the D-B project. Mr. Demuth wrongly asserts that my expert opinion was 'based on a false premise — that water loss through evaporation would somehow increase the overall water consumption rate.' My testimony is not based on the increase in consumption rate. My testimony is based on the conclusion that such evaporation and any other categories of water loss not accounted for in the FSEIS estimate will increase the total volumes of water used by the D-B project." Moran Rebuttal Testimony, Ex. OST-018, at 7.

[408] Demuth Testimony, Ex. APP-013, at 20-22.

[409] *Id.* at 22-23.

[410] *Id.* at 23.

[411] Lawrence Testimony, Ex. APP-037, at 45.

[412] NRC Staff's Initial Testimony, Ex. NRC-001.

[413] *Id.* at 65.

[414] *Id.* at 65-68. At the hearing, Mr. Prikryl confirmed that "water taken from the Inyan Kara and injected in deep wells would be counted for [in streams] I and N." Tr. at 1147-48.

[415] NRC Staff's Initial Testimony, Ex. NRC-001, at 68-69.

[416] *Id.* at 69-71.

the FSEIS describing wastewater treatment, disposition, and the applicable water quality standards;[417] (6) identified the location in the record of the discussion and analysis of the facility impacts on local (<2 kilometers) and surrounding domestic and livestock groundwater wells;[418] (7) explained that Powertech cannot provide facility-specific "measured data" in the water balance until the facility becomes operational;[419] (8) discussed the SDDENR's analysis and approval of the groundwater appropriation for the facility;[420] and (9) discussed the use of flow volumes versus flow rates (volume per time) in the water balance.[421]

4. Board Ruling

We find that based upon a reasonably comprehensive analysis, the SDDENR has recommended approval of water rights permits limiting Powertech to net withdrawals of 274.2 acre-feet per year (89.3 million gallons per year) from the Inyan Kara aquifer and 888.8 acre-feet per year (290 million gallons per year) from the Madison aquifer. SDDENR's recommended approval is based on the conclusion that withdrawals at the approved rates will not result in annual withdrawals that exceed the annual average recharge to the aquifers, that there is a reasonable probability that unappropriated water is available in the aquifers to supply the proposed appropriation, and there is a reasonable probability that the withdrawals proposed in the application can be made without unlawful impairment of existing water rights or domestic wells. Although there was significant information pertaining to the SDDENR water rights applications and permits and their bases in the record (and therefore subject to challenge under NEPA), this information was not challenged by the Intervenors.

In addition, we find that although the NRC Staff relied on the SDDENR water rights applications and permits for the Inyan Kara and Madison aquifers to a significant extent in determining that the environmental impacts of the proposed project to groundwater were small,[422] the NRC Staff did not place complete or undue reliance on the SDDENR analysis in making that determination.[423] In addition to numerous references to the NRC Staff's generic assessments of the impacts to groundwater, including consumptive use, of ISL projects in

[417] *Id.* at 71-73.
[418] *Id.* at 73-76.
[419] *Id.* at 77-78.
[420] *Id.* at 78.
[421] *Id.* at 79.
[422] FSEIS, Ex. NRC-008-A-2, § 4.6, Table 4.5-2.
[423] Based on the Board's analysis, Intervenors' allegations regarding *South Fork Band Council* and NEPA tiering do not accurately portray how water quantity conclusions in the FSEIS were reached.

general,[424] there are also many examples in the FSEIS of the NRC Staff's analysis of consumptive use and groundwater quantity impacts above and beyond the SDDENR's water rights permit application.[425]

At the hearing, Dr. Moran acknowledged that he could not identify another NRC-led EIS that included the kind of detailed water balances to which he had alluded in his initial testimony.[426] Further, in response to questions on FSEIS Figure 2.1-14,[427] while maintaining that there were some missing items such as water loss from evaporation and water pumped from the Inyan Kara and injected into other aquifers,[428] Dr. Moran acknowledged that he had not gone through the flows to see if they balanced. In contrast, both Powertech and NRC Staff witnesses testified with detailed reference and specific citations to the FSEIS and other items in the record on the workings and adequacy of the water balance. As a result, the Board finds that FSEIS Figure 2.1-14[429] and the accompanying text is a reasonable and appropriate water balance, which accounts for all significant project water uses, including (in effect) water lost to evaporation.

Accordingly, we conclude the NRC Staff took the required hard look at the relevant groundwater quantity impacts and find for Powertech and the NRC Staff on Contention 4.

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[424] FSEIS, Ex. NRC-008-A-2, § 4.5.2.

[425] For example, the NRC Staff considered the "results of numerical groundwater simulations . . . [in assessing] the potential impact to shallow local aquifers and domestic and livestock wells from consumptive water use during the construction phase of the proposed project." FSEIS, Ex. NRC-008-A-2, § 4.5.2.1.1.1. The NRC Staff also "analyzed the hydrogeologic characteristics of the Fall River and Chilson aquifers (*i.e.,* formation thicknesses and potentiometric surfaces)" in determining that water consumptive use during operations "will have a SMALL impact on nearby wells located in the Fall River and Chilson aquifers." FSEIS, Ex. NRC-008-A-2, § 4.5.2.1.1.2.2. The NRC Staff also relied on Powertech's commitment to appropriately handling wells in and near the project boundaries in concluding that "the overall environmental impacts on local aquifers, production aquifers, and domestic and livestock wells from consumptive use during operations for the Class V injection well disposal option at the proposed project will be SMALL." FSEIS, Ex. NRC-008-A-2, § 4.5.2.1.1.2.2. The NRC Staff "reviewed the applicant's numerical groundwater model and calibration, and it determined that the model was appropriately developed and sufficiently calibrated." *Id.* Finally, we note that in the Safety Evaluation Report the NRC Staff indicated it "constructed a simple 3-layer model to study the effects of a large withdrawal from the Madison Formation" and concluded that "the proposed maximum Madison withdrawals at the Dewey-Burdock project do not appear to affect water supplies in the City of Edgemont, South Dakota." SER (Revised) (Apr. 2014), Ex. NRC-134, § 3.1.3.5. We did not find reference to that study in the FSEIS.

[426] Tr. at 1143.

[427] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.4, Figure 2.1-14.

[428] Tr. at 1143-44.

[429] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.4, Figure 2.1-14.

E. Contention 6: The FSEIS Fails to Adequately Describe or Analyze Proposed Mitigation Measures

In Contention 6[430] Intervenors assert that "the FSEIS violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and [NEPA] and implementing regulations by failing to include the required discussion of mitigation measures."[431] Specifically, Intervenors contend that the NRC Staff violated NEPA by (1) not adequately discussing or evaluating mitigation measures that are incorporated in the FSEIS, and (2) wrongly deferring the development of further mitigation measures until after the FSEIS and Record of Decision were issued. We consider both of these concerns in turn.

1. Legal Standards

Mitigation under NEPA is defined as (a) avoiding an impact by not taking an action, (b) minimizing an impact by limiting the degree or magnitude of an action, (c) rectifying the impact of an action by repairing, rehabilitating, or restoring the impacted area, (d) reducing or eliminating the impact over time by preservation and maintenance operations, or (e) compensating for the impact or replacing or substituting resources or environments.[432] For a project requiring a NEPA analysis, the statute itself,[433] CEQ regulations,[434] NRC implementing regulations,[435] and Supreme Court precedent[436] require agencies to discuss and consider how possible environmental effects can be mitigated. Merely listing possible mitigation options does not satisfy NEPA.[437] Though mitigation measures must be discussed in an EIS, the statute "does not guarantee that federally approved projects will have no

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[430] LBP-14-5, 79 NRC at 401.

[431] Oglala Sioux Tribe Statement of Position at 27. Consolidated Intervenors adopt the Contention 6 arguments forwarded by the Oglala Sioux Tribe. Consolidated Intervenors' Opening Statement at 9 (July 7, 2014) [hereinafter Consolidated Intervenor Statement of Position].

[432] 40 C.F.R. § 1508.20.

[433] NEPA documents must include "a detailed statement by the responsible official on . . . any adverse environmental effects which cannot be avoided should the proposal be implemented." 42 U.S.C. § 4332(2)(C)(ii).

[434] "The environmental impacts of the proposal and the alternatives . . . shall . . . include appropriate mitigation measures." 40 C.F.R. § 1502.14. The scientific and analytical section backing up the proposal and alternatives section must also discuss any "means to mitigate adverse environmental impacts" not previously covered. 40 C.F.R. § 1502.16(h). An agency's Record of Decision also must include a concise discussion of mitigation measures. 40 C.F.R. § 1505.2(c).

[435] 10 C.F.R. Part 51.

[436] "A reasonably complete discussion of possible mitigation measures" must be included in a NEPA document, to allow the agency and the public a chance to "properly evaluate the severity of the adverse effects." *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 352 (1989).

[437] *Okanogan Highlands Alliance v. Williams,* 236 F.3d 468, 476 (9th Cir. 2000).

adverse impacts."[438] NEPA does not "demand the presence of a fully developed plan that will mitigate environmental harm before an agency can act."[439]

Judicial precedent indicates that when the adequacy of an EIS mitigation strategy is challenged, the determining issue is whether the agency took a sufficiently hard look at environmental consequences, and ensured that its decision was supported by a completely informed record.[440] A court may not substitute its own judgment for that of an agency, and agencies are not constrained by NEPA to select only "the most environmentally benign option."[441] Courts decide whether a mitigation plan was adequately or inadequately discussed, but the line between these two options "is not well defined."[442] Here, in judging whether the NRC Staff took the NEPA-mandated hard look in licensing Powertech's ISL facility, the Board reviewed the proposed mitigation programs to ensure that "sufficient detail" was provided on mitigation measures to show a fair agency evaluation of mitigation and environmental consequences, and that the NRC Staff has not "ignored or minimized pertinent environmental effects."[443]

At the evidentiary hearing in this proceeding, the Oglala Sioux Tribe did not offer witnesses in support of Contention 6. Consolidated Intervenors did not adopt Contention 6, which was advanced by the Oglala Sioux Tribe, and so could not present their own evidence or witnesses.[444] But, as an admitted party to the proceeding, Consolidated Intervenors were allowed to make arguments and otherwise participate as a party in the proceeding.[445] Powertech offered witnesses Hal Demuth, Errol Lawrence, and Doyl Fritz. The NRC Staff offered witnesses Haimanot Yilma, Kellee Jamerson, and James Prikryl.

2. Parties' Positions on Lack of Adequate Discussion of Mitigation Measures

The Oglala Sioux Tribe argues that each proposed mitigation measure "must

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[438] *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, NM 87313), CLI-06-29, 64 NRC 417, 429 (2006).

[439] *Robertson,* 490 U.S. at 353; *see also Hydro Resources,* CLI-06-29, 64 NRC at 427.

[440] *See Theodore Roosevelt Conservation Partnership v. Salazar,* 616 F.3d 497, 517 (D.C. Cir. 2010); *see also Claiborne,* CLI-98-3, 47 NRC at 88.

[441] *Claiborne,* CLI-98-3, 47 NRC at 88.

[442] *Okanogan Highlands Alliance,* 236 F.3d at 476.

[443] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-03-17, 58 NRC 419, 431-32 (2003).

[444] Licensing Board Order (Ruling on Motions in Limine: Motions to Strike and for Cross-Examination) (Aug. 1, 2014) at 7.

[445] *Id.* at 5. Consolidated Intervenors adopted the evidence, authority, and argument of the Oglala Sioux Tribe. Consolidated Intervenor Statement of Position at 9.

be detailed with specific description, supporting data, and analysis of process and effectiveness;"[446] and that NEPA requires an agency to fully review whether the mitigation strategy will be effective.[447] Intervenors allege that mitigation measures regarding Powertech's application have not been discussed with sufficient detail to ensure that environmental consequences have been fairly evaluated.[448] While the Oglala Sioux Tribe recognizes that impacts need not actually be mitigated to grant Powertech an NRC license, the Oglala Sioux Tribe contends that the FSEIS discussion of mitigation measures simply listed the measures and asserted they might be successful, "with no scientific evidence or analysis to support those claims," and that the FSEIS did not adequately assess the measures' effectiveness in the context of the proposed action and proposed alternatives.[449]

In a general sense, the Oglala Sioux Tribe alleges that the NRC Staff's "reliance on license conditions to mitigate impacts" without discussion of their effectiveness violated NEPA requirements.[450] Specifically, the Oglala Sioux Tribe claims "no discussion or analysis is provided" on the effectiveness of identifying and plugging abandoned holes in the permit area.[451] The Oglala Sioux Tribe also asserts that the FSEIS does not assess the plan to review groundwater restoration for only 12 months without support for this time period or analyzing any alternative time periods.[452] The Oglala Sioux Tribe also faults a proposed, but allegedly unevaluated, monitoring well network "because leakage may occur through the Fuson Shale and draw-down induced migration of radiological contaminants from abandoned open pit mines in the Burdock area."[453] Various other specific examples of insufficient analysis alleged by the Oglala Sioux Tribe include references to BLM guidelines, sound abatement controls, evaporation pond impacts, and groundwater mitigation and restoration.[454]

In response, the NRC Staff and Powertech defended the adequacy of the FSEIS discussion of mitigation measures. The NRC Staff argues that while the

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[446] Oglala Sioux Tribe Statement of Position at 38.

[447] *Id.* at 28.

[448] Oglala Sioux Tribe Statement of Position at 30; Consolidated Intervenor Statement of Position at 9.

[449] Oglala Sioux Tribe Statement of Position at 30-31.

[450] Tr. at 1197-98. The Oglala Sioux Tribe alleged that the mitigation discussion consisted of a chart simply listing "a series of proposed mitigation measure[s], with no elaboration or other analysis." Oglala Sioux Tribe Statement of Position at 37. This claim seems to have been abandoned in later briefing following explanations from the NRC Staff that the chart in FSEIS Chapter 6, titled "Mitigation," was simply a compilation of mitigation measures, the specifics of which are detailed across other chapters of the FSEIS.

[451] Oglala Sioux Tribe Statement of Position at 33.

[452] *Id.*

[453] *Id.* at 33-34.

[454] *Id.* at 35-36.

effectiveness of mitigation measures must be discussed, this discussion need not be highly detailed.[455] The NRC Staff gives several examples of the level of detail it provided in describing mitigation measures, which it asserts was sufficient. In one example, the NRC Staff quotes the FSEIS as saying, "impacts of surface land disturbance will be minimized by mitigation measures, including concurrently reclaiming and revegetating surface disturbed areas, limiting construction of new access roads, and restricting vehicular traffic in wellfields and land application areas."[456] While the NRC Staff admits that the Oglala Sioux Tribe provided an accurate recitation of NEPA mitigation requirements, the NRC Staff asserts that it met these requirements, and fully considered the effectiveness of mitigation measures.

Powertech also defends the NRC Staff's work in analyzing mitigation measures in the FSEIS. Powertech contends that mitigation measures in the SER, along with those in the FSEIS, must be taken into account, as the Record of Decision incorporates the findings of both documents.[457] Powertech further contends that all plans were reviewed and approved by the NRC Staff, and that they are consistent with past practices at ISL facilities.[458] Regarding specific mitigation measures, Powertech represents that for those associated with historical mine pits and groundwater restoration, the FSEIS does outline a variety of mitigation measures that will be approved before operation.[459] Powertech also defends the avian and wildlife mitigation plans as proposing specific mitigation strategies developed based on expert recommendations.[460]

3. Board Ruling on Lack of Adequate Discussion of Mitigation Measures

After a thorough review of the Record of Decision, FSEIS, and associated documents, the Board finds that the NRC Staff's discussion and evaluation of mitigation measures is adequate. The Oglala Sioux Tribe correctly claims that mitigation measures must provide a specific description, supporting data, and an analysis of process and effectiveness, but the Board concludes that the NRC Staff has adequately satisfied this burden. The Oglala Sioux Tribe's arguments overlook extensive mitigation analysis in the FSEIS. Specifically, Chapter 4 of the FSEIS contains sufficiently detailed information on mitigation measures of Powertech's

[455] NRC Staff Statement of Position at 43-44.

[456] *Id.* at 45.

[457] Powertech Statement of Position at 51.

[458] *Id.* at 54.

[459] *Id.* at 52.

[460] *Id.* at 55-56 (referencing "limiting noise and vehicular traffic and wildlife access to wastewater ponds, adherence to timing and distance restrictions from appropriate agencies to protect active raptor nests during breeding seasons, and following appropriate land application requirements").

permitted activities.[461] The NRC Staff has not ignored the mitigation of potential environmental effects associated with this ISL licensing action. Rather, the FSEIS provides extensive mitigation discussions in which risks to the environment have been thoroughly analyzed and license conditions imposed to mitigate those risks.

The NRC Staff's final NEPA document, the Record of Decision, provides the mandated references to mitigation measures detailed in the FSEIS.[462] The Record of Decision also states that license condition 9.2 binds Powertech to all the "commitments, representations, and statements includ[ing] the mitigation measures and monitoring programs described" throughout its license, the Record of Decision, and the FSEIS.[463] From surface disturbance,[464] facility construction,[465] operation,[466] to decommissioning,[467] the NRC Staff discusses and analyzes substantial mitigation strategies. Regarding issues outside of the NRC's expertise, it is appropriate for the agency to incorporate the mitigative controls incorporated in permits granted by other expert agencies. The Board finds that the NRC Staff appropriately relied on restrictions present in other federal and state permits as mitigation measures.[468] In *South Fork Band Council v. BLM,* 588 F.3d at 726, the Ninth Circuit rejected the Bureau of Land Management's argument that some "impacts need not be evaluated because the Goldstrike facility operates pursuant to a state permit under the Clean Air Act." Here, however, the NRC Staff did not

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[461] For example, regarding the impact on geology and soils, mitigation strategies are discussed in the FSEIS in sections 4.4 and 4.4.1.2. Mitigation strategies are also discussed and analyzed regarding water resources, ecological resources, air quality, noise, historical and cultural resources, visual and scenic resources, socioeconomics, environmental justice, public and occupational health and safety, and waste management.

[462] Ex. NRC-011, Record of Decision for Dewey-Burdock Project at 3-4 (Apr. 8, 2014) [hereinafter Record of Decision, Ex. NRC-011]; *see also* 10 C.F.R. § 51.103(a)(4) (requiring the Record of Decision to summarize any license conditions and monitoring programs adopted in connection with mitigation measures).

[463] Record of Decision, Ex. NRC-011, at 4.

[464] Revegetation and restricting vehicular traffic are discussed in the FSEIS, Ex. NRC-008-A-2, § 4.2.1.2.

[465] The plant will be constructed on concrete slabs with protective berms to mitigate and contain accidental spills. FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.2.

[466] Class V deep well injection permit requirements were, in part, considered by the NRC as mitigation measures during operation of the ISL facility. FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.2.

[467] Mitigation measures to control erosion, stormwater runoff, sedimentation, and National Pollutant Discharge Elimination System permit requirements were cited to "ensure that stormwater runoff will not contaminate surface water." FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.3.

[468] For instance, Powertech must comply with EPA injection well permits (FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.2) and SDDENR SWMP (FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.2) and National Pollutant Discharge Elimination System permit (FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.2.1), and U.S. Army Corps of Engineers section 404 permitting requirements must be complied with before conducting work in project area wetlands (FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.2.1).

disregard impacts considered under other agencies' permits. Instead, the FSEIS fully evaluated the impacts and mitigation strategies detailed under other permits. The NRC Staff also adequately considered the impacts to birds and wildlife in the FSEIS, not just in associated documents.[469] The Board thus finds the NRC Staff adequately considered the effectiveness of mitigation measures.[470]

4. Parties' Positions on Developing Mitigation Measures After FSEIS Completion

The Oglala Sioux Tribe also alleges that the NRC Staff has violated NEPA by relying on "future, as yet-unsubmitted, mitigation to prevent/mitigate adverse impacts" from Powertech's ISL operation.[471] Regarding cultural resources, the Oglala Sioux Tribe alleges that mitigation for cultural resources impacts should have been included in the FSEIS, and not "deferred into a post-FSEIS programmatic agreement phase."[472] Other future mitigation plans the Oglala Sioux Tribe labels as nothing more than "plans to make plans at some point in the future" including the proposed monitoring well network, historical well hole plugging, and wildlife protections and monitoring.[473] Consolidated Intervenors also claim that the draft avian monitoring and mitigation plan should be completed and incorporated into the FSEIS.[474] In sum, the Intervenors allege that any mitigation measures developed outside the FSEIS do not fulfill the agency's responsibility under NEPA to consider mitigation measures.[475]

The NRC Staff defends its NEPA cultural resources analysis by stressing that although the FSEIS was issued before the Programmatic Agreement was finalized,

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[469] FSEIS, Ex. NRC-008-A-2, § 4.6.1.1.1.1.2. Associated Powertech documents expand on the plans and commitments referenced in the FSEIS. Ex. APP-071, 2013 Wildlife Monitoring Report (July 2, 2014); Ex. OST-023, Draft Avian Monitoring and Mitigation Plan (Sept. 2013); Ex. OST-022, BLM Correspondence (July 8, 2014); Ex. OST-024, January 10, 2014 USFWS Take Permit Application (Jan. 10, 2014).

[470] For example, based explicitly on the implementation of mitigation measures, the NRC Staff found that the impact of the preferred Class V injection well disposal would be SMALL, and that the impact of consumptive use on local aquifers, production aquifers, and domestic and livestock wells would also be SMALL. FSEIS, Ex. NRC-008-A-2, §§ 4.5.2.1.1.2.1, 4.5.2.1.1.2.2. The NRC Staff also found that groundwater quality impacts to the production and surrounding aquifers as a result of ISL operations for the Class V injection well disposal option would be SMALL. FSEIS, Ex. NRC-008-A-1, § 4.5.2.1.1.2.2.

[471] Oglala Sioux Tribe Statement of Position at 28.

[472] Tr. at 1197; *see also* Oglala Sioux Tribe Statement of Position at 32.

[473] Oglala Sioux Tribe Statement of Position at 33-34. The Oglala Sioux Tribe alleges that even though the avian monitoring and mitigation plan was submitted before the FSEIS was finalized, it was not discussed in the FSEIS. Tr. at 1198.

[474] Consolidated Intervenor Statement of Position at 10.

[475] Tr. at 1200-01.

the Record of Decision was not issued until after the Programmatic Agreement was finalized.[476] According to the NRC Staff, it separated its NHPA and NEPA reviews in November 2013 to lessen delays in issuing the FSEIS.[477] The NRC Staff indicated the FSEIS was nearly complete at that time, but the NHPA § 106 process was not. But the NRC Staff declared that it would not take any licensing action until the Programmatic Agreement was completed, so tribal comments on the Programmatic Agreement were considered before a Record of Decision was released.[478] The NRC Staff also asserts that the continued development of mitigation measures after the completion of the NEPA process is fully supported by NRC NEPA precedent.[479]

Powertech also defends the timing of the NRC Staff's treatment of mitigation measures, claiming that an ongoing development of mitigation items is a necessary process.[480] Powertech also states that the Record of Decision and license include mitigation measures reviewed in the SER, and not just the FSEIS.[481] Regarding monitoring and mitigation measures for groundwater, Powertech claims that NRC regulations establish a system in which post-license pump tests are necessary in order to develop the appropriate mitigation techniques depending on the presence or absence of abandoned boreholes.[482] Powertech witness Mr. Demuth offered testimony that monitor well networks will be established for every wellfield, as well as a general monitoring well network for the Fall River aquifer.[483] Powertech also stressed that wildlife impacts will be mitigated by specific measures outlined in the FSEIS.[484] While the FSEIS mentions the avian monitoring and mitigation plan that Powertech is developing, this plan is required by South Dakota rules, not NRC rules.[485] Therefore Powertech contends that the avian monitoring and mitigation plan did not need to be finalized before issuance of the Record of Decision.

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[476] NRC Staff Statement of Position at 47.

[477] Ex. NRC-070, Letter from Kevin Hsueh, Chief, Environmental Review Branch, NRC, to John M. Fowler, Executive Director, Advisory Council on Historic Preservation at 1.

[478] *Id.* at 2.

[479] NRC Staff Statement of Position at 49; *see also* NRC Staff's Initial Testimony, Ex. NRC-001, at 82-83.

[480] Powertech Statement of Position at 50 (claiming that mitigation measures cannot be implemented pre-license issuance).

[481] *Id.* at 51.

[482] *Id.* at 53.

[483] Demuth Testimony, Ex. APP-013, at 28-29.

[484] Powertech Statement of Position at 55.

[485] *Id.* at 56.

5. Board Ruling on Developing Mitigation Measures After FSEIS Completion

To justify and memorialize a permitting decision, agencies must release a Record of Decision at the conclusion of every EIS process.[486] The release of an FSEIS does not mark the completion of the NEPA review process. Here, the Programmatic Agreement was not included in the FSEIS, but the FSEIS does explain that a separate Programmatic Agreement was yet to be released.[487] The FSEIS further explains that mitigation measures adopted in the Programmatic Agreement "could reduce an adverse impact to a historic or cultural resource."[488] In *Hydro Resources,* CLI-99-22, 50 NRC at 14, the Commission approved the NRC Staff completion of some NHPA documents after the EIS process was complete, but before the license was issued.[489] Therefore, the Board finds that the NRC Staff completing the Programmatic Agreement after the FSEIS was released, but before the issuance of the Record of Decision or the license, adequately satisfied NEPA. The NRC Staff's decision to grant Powertech License SUA-1600 necessarily incorporated the results of, and comments on, the Programmatic Agreement into the decision.[490]

The Board also finds that the other mitigation measures designated in the FSEIS for post-licensing development, including monitoring well networks, historical well hole plugging, and wildlife protections and monitoring, have been adequately explained and satisfy NEPA requirements. The FSEIS "need not . . . contain 'a complete mitigation plan,'"[491] and the "mitigation plan 'need not be . . . in final form to comply with NEPA's procedural requirements.'"[492] Although the mitigation and monitoring plans discussed in the FSEIS are not all in final form, they still contain the level of detail required to comply with NEPA.[493]

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[486] "At the time of its decision . . . each agency shall prepare a concise public record of decision." 40 C.F.R. § 1505.2.

[487] FSEIS, Ex. NRC-008-A-1, § 3.9.4.

[488] FSEIS, Ex. NRC-008-A-2, § 4.9.

[489] "Even if one assumes that the FEIS did not contain all the information considered by the Staff in its decision, the overall record for the licensing action includes a complete analysis of the cultural resources." *Hydro Res.,* CLI-99-22, 50 NRC at 14.

[490] The Board's findings, and the adjudicatory record, are now also, in effect, part of the FSEIS. *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 53 (2001) (quoting *Claiborne,* CLI-98-3, 47 NRC at 89). Mitigation measures were discussed throughout the evidentiary hearing. *See* Tr. at 1197-1312.

[491] *Hydro Resources,* CLI-06-29, 64 NRC at 427 (quoting *Robertson,* 490 U.S. at 352).

[492] *Hydro Resources,* CLI-06-29, 64 NRC at 427 (quoting *Okanogan Highlands Alliance,* 236 F.3d at 473).

[493] For instance, it is acceptable for initial wildlife mitigation strategies to be discussed in the FSEIS,

(Continued)

We add that we have no reason to doubt that Powertech will fully and faithfully implement the mitigation and monitoring measures and commitments detailed in the FSEIS, License SUA-1600, and associated documents. Nor do we have any reason to doubt that the NRC Staff will fully and faithfully ensure that these mitigation measures are actually implemented. In setting license conditions, the NRC Staff may assume that a licensee will comply with all requirements imposed by the license.[494] However, should any material reason arise suggesting that Powertech has shirked its mitigation or monitoring commitments, the Board trusts that either the agency, as an enforcement action, or public citizens, per the 10 C.F.R. § 2.206 process, will pursue the matter.[495]

A principal aid to the agency in that regard is the monitoring programs for all applicable mitigation measures.[496] Monitoring serves to alert the licensee and/or the agency whether the prescribed mitigation efforts are effective and producing the expected outcomes. Monitoring programs were described or incorporated by reference in the FSEIS and the ROD, and to the degree Powertech has been authorized to perform self-monitoring, the NRC is responsible for establishing and implementing an effective monitoring oversight program. Confirmation should be provided to the NRC Staff, through monitoring results, that mitigation is proceeding as expected by the NEPA documents. If mitigation is unsuccessful, additional environmental analysis may be necessary. Moreover, monitoring information must also be available to the public, as appropriate.[497] It seems reasonable to the Board that NEPA monitoring information, to the extent discoverable under the Freedom of Information Act (FOIA), can be made available to the public and that it would be preferable for such information to be made available proactively.[498]

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but further fleshed out in detail in subsequent documents. *Compare* FSEIS, Ex. NRC-008-A-2, § 4.6.1.1.1.1.2, *with* Ex. APP-071, 2013 Wildlife Monitoring Report, Ex. OST-023, Draft Avian Monitoring and Mitigation Plan, Ex. OST-022, BLM Correspondence, *and* Ex. OST-024, January 10, 2014 U.S. Fish and Wildlife Service Take Permit Application.

[494] *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-03-2, 57 NRC 19, 29 (2003) ("We assume that our licensees will comply with this agency's safety regulations."); *see also U.S. Department of Energy* (High-Level Waste Repository), LBP-09-6, 69 NRC 367, 467 (2009) ("[T]he NRC generally presumes that licensees will comply with its regulations.").

[495] *See* Volume 8 — Licensee Oversight Programs, 8.8 Management of Allegations (2010), *available at* http://www.nrc.gov/reading-rm/doc-collections/management-directives/volumes/vol-8.html.

[496] "A monitoring and enforcement program shall be adopted . . . where applicable for any mitigation." 40 C.F.R. § 1505.2(c).

[497] "Upon request, [the lead agency shall] make available to the public the results of relevant monitoring." 40 C.F.R. § 1505.3(c). More broadly, the NRC must make a diligent effort to involve the public in implementation of NEPA procedures. 40 C.F.R. § 1506.6.

[498] 5 U.S.C. § 552; *see also* Office of Management & Budget, Executive Office of the President, "Open Government Directive" (Dec. 8, 2009), *available at* www.whitehouse.gov/open/documents/open-government-directive.

Regarding monitoring, the NRC Staff's Response to Post-Hearing Order drastically misrepresents the agency's role in monitoring the Powertech project.[499] The NRC Staff writes:

> In its 2011 guidance, the CEQ also addresses when an agency must confirm that mitigation measures will be effective. The CEQ first notes that, under its regulations, agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 76 Fed. Reg. at 3,849 (citing 40 C.F.R. § 1505.3). The CEQ next states:
>
> > Accordingly, an agency should also commit to mitigation monitoring in important cases *when relying upon an EA and mitigated FONSI.* Monitoring is essential in those important cases where the mitigation is necessary to support a FONSI and thus is part of the justification for the agency's determination not to prepare an EIS.
>
> *Id.* (emphasis added). The requirement that the agency confirm whether mitigation measures are effective therefore applies only where the agency relies on a mitigated FONSI. This requirement does not apply where, as for the Dewey-Burdock Project, the agency prepares an EIS for its proposed action.[500]

However, the citation provided by the NRC Staff entirely ignores the preceding sentence in the CEQ's guidance, which states, "for agency decisions based on an EIS, the CEQ Regulations explicitly require that 'a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.'"[501] Nothing could more clearly contradict the NRC Staff's assertion. The NRC Staff is required to confirm whether mitigation measures are effective through a monitoring program, which is recognized in Powertech license conditions.

Specifically, License Condition 9.10 states that Powertech's monitoring results must be documented and maintained, and that the results are "subject to NRC review and inspection."[502] Further, monitoring results must be submitted to the NRC on various time tables, quarterly, semiannually, or annually.[503] The NRC already maintains a website containing public information regarding Powertech's Dewey-Burdock project site.[504] The Board suggests that all raw monitoring information gathered from Powertech and reviewed by the NRC Staff could be

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[499] NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015) at 33-34.

[500] *Id.*

[501] 76 Fed. Reg. at 3849 (citing 40 C.F.R. § 1505.2(c)).

[502] Powertech Materials License, Ex. NRC-012, § 9.10.

[503] *Id.* § 11.

[504] U.S. NRC, Dewey Burdock Site, http://www.nrc.gov/info-finder/materials/uranium/licensed-facilities/dewey-burdock.html (last visited Apr. 27, 2015).

publicly posted, except to the extent it may be withheld by exemption from FOIA, on the Dewey-Burdock NRC website.

We conclude that the FSEIS adequately describes proposed mitigation measures and find for the NRC Staff and Powertech on Contention 6.

F. Contention 9: The FSEIS Fails to Consider Connected Actions

1. Legal Standards

When drafting an EIS, an agency's scope of review must include analysis of any connected or cumulative actions to the central proposed action.[505] Actions are connected[506] when they "(i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification."[507] To determine when an action is connected, courts use an "independent utility" test. An action lacks independent utility when it would be irrational or unwise to pursue the action without the presence of the EIS-generating central action.[508] Once connected actions have been identified, the agency must evaluate any potential effects in the EIS.[509]

Even actions not directly encompassed by the scope of the proposed action may still be relevant in an EIS. "Cumulative impacts" are impacts resulting "from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[510] All aspects of the FSEIS, including the connected and cumulative actions discussions, must have been subjected to a hard look by the NRC.[511]

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[505] 40 C.F.R. § 1508.25. This regulation has been officially adopted by the NRC. 10 C.F.R. § 51.14(b).

[506] The scope of an EIS includes "connected actions, which means that they are closely related and therefore should be discussed in the same impact statement." 40 C.F.R. § 1508.25(a)(1).

[507] 40 C.F.R. § 1508.25(a)(1)(i)-(iii).

[508] *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-14-9, 80 NRC 15, 41 (2014) (citing *Society Hill Towers Owners' Association v. Rendell,* 210 F.3d 168, 181 (3d Cir. 2000); *Northwest Resource Information Center, Inc v. National Marine Fisheries Service,* 56 F.3d 1060, 1067-69 (9th Cir. 1995)).

[509] 10 C.F.R. §§ 51.71(d), 51.90; 40 C.F.R. § 1508.25(a)(1).

[510] 40 C.F.R. § 1508.7.

[511] "The principal goals of an FEIS are twofold: to force agencies to take a 'hard look' at the environmental consequences of a proposed project, and, by making relevant analyses openly available, to permit the public a role in the agency's decision-making process." *Claiborne,* CLI-98-3, 47 NRC at 87 (citing *Robertson,* 490 U.S. at 349-50).

Before Powertech may commence ISL mining, it is obligated to obtain several permits from agencies other than the NRC. For instance, the underground injection control program, administered by the EPA, regulates injection wells.[512] This program includes Class III wells, used to inject fluids to dissolve and extract minerals such as uranium, and Class V wells, used to dispose of nonhazardous fluids underground.[513] Powertech may need to acquire permits for both classes of wells to operate its ISL facility.[514] The Safe Drinking Water Act (SDWA), also administered by the EPA, provides the method by which all or a portion of an aquifer is exempted, and thus allowed to be used in uranium ore recovery.[515] A National Pollutant Discharge Elimination System (NPDES) permit, issued by the SDDENR, sets the amount of pollutants that can enter surface water.[516] A radon emission standard is part of the EPA's national emission regulations under 40 C.F.R. Part 61, Subpart W, and Powertech may need EPA approval under this subpart before beginning operations.[517]

2. Parties' Positions

At the evidentiary hearing, neither the Oglala Sioux Tribe nor the Consolidated Intervenors offered witnesses for Contention 9.[518] Powertech offered witnesses Hal Demuth, Gwyn McKee,[519] and Doyl Fritz. The NRC Staff offered witnesses Haimanot Yilma, Kellee Jamerson, and James Prikryl.

The Oglala Sioux Tribe alleges in Contention 9[520] that the NRC Staff's FSEIS inappropriately defers to the EPA and South Dakota in the determination that environmental impacts of the proposed project will be SMALL, and that this inadequacy "violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and [NEPA] and implementing regulations."[521] Specifically, the Oglala Sioux Tribe claims that "the FSEIS fails to conduct any NEPA analysis of" the impacts of EPA-permitted Class III and Class V injection wells, which are connected actions that must be

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[512] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.2.3.1.

[513] *Id.*

[514] *Id.*

[515] An aquifer can be exempted "if it does not currently serve as a source of drinking water and it cannot now and will not in the future serve as a source of drinking water because it is mineral, hydrocarbon, or geothermal energy producing." *Id.* § 3.5.3.5.

[516] FSEIS, Ex. NRC-008-A-1, § 1.7.3.6.

[517] *Id.* § 2.1.1.2.

[518] Consolidated Intervenors adopted the Oglala Sioux Tribe's evidence, authority, and arguments regarding deferral of NEPA's required analysis of environmental and waste disposal impacts from Powertech's proposal. Consolidated Intervenor Statement of Position at 10.

[519] Ex. APP-054, Gywn McKee Curriculum Vitae.

[520] LBP-14-5, 79 NRC at 401.

[521] Oglala Sioux Tribe Statement of Position at 38.

analyzed in the NRC Staff's FSEIS.[522] In the alternative, the Oglala Sioux Tribe argues that, even if judged not to be connected actions, impacts from the wells still must be fully analyzed in the FSEIS either in the cumulative impacts analysis, or as part of the NRC Staff's comprehensive hard look.[523] Additionally, the Oglala Sioux Tribe claims that other issues that have been insufficiently analyzed include EPA permits under the SDWA, Subpart W radon controls, and the South Dakota NPDES permit, none of which are subject to a NEPA analysis on their own.[524]

When the FSEIS does discuss non-NRC permits, the Oglala Sioux Tribe alleges that the NRC has not conducted its own analysis, and instead refers and defers to other agencies' future analysis.[525] Asserting that such a deferral is a violation of NEPA, the Oglala Sioux Tribe relies on *South Fork Band Council v. BLM,* 588 F.3d at 726 for the principle that non-NEPA documents, especially when prepared by a state government, cannot satisfy a NEPA obligation.[526] The Oglala Sioux Tribe also relies on 10 C.F.R. § 51.71, which states that environmental impacts will be considered "irrespective of whether a certification or license from the appropriate authority has been obtained."[527] The Oglala Sioux Tribe contends that these legal authorities prohibit the NRC from unreviewed reliance on other agencies' work relative to baseline, potential impacts, and mitigation associated with the project.[528]

Finally, the Oglala Sioux Tribe claims that a Class V well covers only shallow injection of waste material, and Powertech has proposed deep injection, below the lower-most Underground Source of Drinking Water aquifer, which is a Class I well.[529] The Oglala Sioux Tribe claims that South Dakota prohibits Class I wells.[530] The Oglala Sioux Tribe also contends that the FSEIS lacks an adequate discussion of this concern by deferring to the EPA's analysis without review of impacts or the effectiveness of mitigation.[531]

The NRC Staff claims the Oglala Sioux Tribe misread the FSEIS and has failed to show that NEPA was violated.[532] According to the NRC Staff, the very purpose of the FSEIS was to evaluate as a whole Powertech's proposal to inject lixiviant into underground aquifers, using a Class III injection permit, and disposal through

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[522] *Id.*
[523] *Id.*
[524] *Id.* at 40; Oglala Sioux Tribe Post-Hearing Initial Brief at 77.
[525] Oglala Sioux Tribe Statement of Position at 39.
[526] *Id.* at 40.
[527] *See* Oglala Sioux Tribe Statement of Position at 40 (quoting 10 C.F.R. § 51.71).
[528] Oglala Sioux Tribe Post-Hearing Initial Brief at 78.
[529] Oglala Sioux Tribe Statement of Position at 41.
[530] *Id.*
[531] *Id.*
[532] NRC Staff Statement of Position at 52.

possible use of a Class V injection permit.[533] Regarding deferral to EPA analysis, the NRC Staff argues that the FSEIS merely cites the permitting process of other agencies to aid its explanation of how the NRC Staff itself determined the likely impacts in a particular area, and not to substitute for its own analysis.[534] The NRC Staff also states that the FSEIS analyzes both disposal through a Class V well and the possibility that Powertech will not be able to obtain a Class V permit.[535]

Powertech supports the NRC Staff's review of connected actions relative to Powertech's application.[536] Powertech argues that, instead of deferring to the EPA, the NRC Staff consulted with the EPA, and both agencies worked together on multiple drafts throughout the EIS stages.[537] Powertech describes the NRC Staff's process when using another agency's procedure as "evaluat[ing] the characteristics and protective nature of these procedures to determine if they are adequate to satisfy NRC's AEA mission of adequately protecting public health and safety."[538]

Regarding a specific challenge to the FSEIS, Powertech labels the charge that radioactive waste will be disposed of through a Class I well a "false presumption."[539] Powertech comments that the company will treat wastewater, and that any liquid injected into a Class V well would not be hazardous material.[540] Concerning all connected actions, Powertech concludes that the NRC Staff "conducted its own evaluation of the potential impacts" and adequately assessed potential impacts.[541]

3. Board Ruling

All non-NRC permits discussed above are interdependent parts of Powertech's proposed action,[542] and there would be no utility to these permits without the NRC licensing at issue in this proceeding. These are connected actions, and the Board finds that the FSEIS adequately considered them as such. The FSEIS does refer to the analyses done in other permitting schemes and requirements, but this does not constitute an improper deferral to current or future EPA or SDDENR analysis. Instead, it is not only permissible, but necessary, for the NRC Staff to be able to review the interconnected analyses and standards used by other agencies.

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[533] *Id.*
[534] *Id.*
[535] *Id.* at 53.
[536] Powertech Statement of Position at 57.
[537] *Id.* at 58.
[538] *Id.* at 59.
[539] *Id.*
[540] *Id.*
[541] *Id.* at 60.
[542] 40 C.F.R. § 1508.25.

Further, after a review of the FSEIS, the Board finds that though the NRC Staff references the EPA's analysis, the NRC Staff also undertook its own independent review. The NRC Staff does not merely state that Powertech must comply with EPA regulations. Instead, the NRC Staff considers the requirements and effects of other permitting schemes as one aspect of its overall analysis in the FSEIS.

Regarding injection well permits, in Chapter 4 of the FSEIS, when discussing groundwater impacts from construction, the FSEIS indicates that "as part of the applicant's Class III Underground Injection Control permit, all production, injection, and monitoring wells will be cased and cemented to prevent the migration of fluids into and between [Underground Sources of Drinking Water] USDWs."[543] The FSEIS further lists the requirement that all wells "undergo mechanical integrity tests of the casing to ensure against well leakage."[544] Class V wells are also thoroughly discussed both as they "must meet EPA requirements" but also through separate analysis of their design and use, and potential impact on aquifers.[545] And the Board finds no support for the Oglala Sioux Tribe's premise that Class I wells will be used.[546] The FSEIS also considers and evaluates the alternative that "land application for liquid waste disposal" is used instead of or in addition to Class V wells.[547] Class V injection wells are intertwined with the relevant SDWA regulations, and Chapter 4 of the FSEIS relies on SDWA regulations to conclude that Class V injection well impacts to geology and soils will be SMALL.[548] However, the FSEIS also separately analyzes these potential impacts, and states that the NRC also requires releases into any deep aquifers below the production aquifers "to be treated and monitored to verify they meet NRC release standards."[549]

The FSEIS also indicates that the NRC Staff coordinated with the SDDENR on the issues surrounding a NPDES permit.[550] We find that coordinating with a state agency does not constitute deferring to a state agency, and note that the FSEIS separately analyzes the NPDES permit requirements.[551]

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[543] FSEIS, Ex. NRC-008-A-2, § 4.5.2.1.1.1.

[544] *Id.*

[545] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.2.4.1; *see also* FSEIS, Ex. NRC-008-A-2, § 4.5.2.1.1.2.1.

[546] FSEIS, Ex. NRC-008-B-1, § 7.6 ("Class V deep injection wells are being used for disposal rather than Class I wells.").

[547] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.2.4.3; FSEIS, Ex. NRC-008-A-2, § 4.2.1.1.

[548] FSEIS, Ex. NRC-008-A-2, § 4.4.1.1.2.

[549] *Id.* § 4.5.2.1.1.2.3.

[550] FSEIS, Ex. NRC-008-A-1, § 1.7.3.6.

[551] *Id.* § 2.1.1.2.2 (analyzing controls needed for surface water discharge if Powertech is or is not granted an NPDES permit); FSEIS, Ex. NRC-008-A-2, § 4.5.1.1.1.1 (analyzing construction impacts of surface waters in the context of the required NPDES permit, but also stipulating three additional mitigation strategies).

Radon emissions, regulated by the EPA under 40 C.F.R. Part 61, Subpart W, are also evaluated both in the context of and independent of Subpart W. The NRC Staff reviewed radon emission modeling, and "verified that appropriate exposure pathways were modeled and reasonable input parameters were used."[552] The NRC Staff then reviewed the model results in detail, and determined "potential radiation doses to occupationally exposed workers and members of the public during operations will be SMALL."[553] Retention pond siting and design considerations in the FSEIS also included an analysis of Subpart W requirements.[554] And the FSEIS indicates that, in addition to Subpart W requirements, Powertech may also be subject to additional necessary radon-related "license conditions" to ensure requirements are met.[555]

Analysis of this type continues throughout the FSEIS in sections too numerous to reference in full. The Board thus concludes that this comprehensive analysis of connected actions satisfies NEPA's connected action and hard look requirements. Further, since the Board finds that these related permits are treated directly as connected actions to the proposed action, they need not also be reviewed as cumulative actions. Finally, because the NRC Staff did not defer to other agencies' analyses to satisfy NEPA obligations, the *South Fork Band Council* case cited by the Oglala Sioux Tribe is inapposite to this contention. Based on the above, we conclude that the FSEIS adequately considers connected actions and find for Powertech and the NRC Staff on Contention 9.

G. Motion for Leave to File New or Amended Contentions

Having addressed all admitted contentions that were the subject of the Board's August 2014 evidentiary hearing, we next turn to the Oglala Sioux Tribe's pending November 7, 2014 motion for leave to file new or amended contentions.[556] The Oglala Sioux Tribe states that the two new contentions pertain to: "1) the NRC Staff's recent testimony related to its review of the new Powertech borehole data disclosed pursuant to the Board's September 8, 2014 Post-Hearing Order; and, 2) the recently released documents from the [EPA] under its [CERCLA] authority."[557] The Oglala Sioux Tribe alleges the borehole data were reviewed outside of the NEPA process and that the NRC Staff did not submit this material

[552] FSEIS, Ex. NRC-008-A-2, § 4.13.1.2.2.1.

[553] *Id.*

[554] FSEIS, Ex. NRC-008-A-1, § 2.1.1.1.2.4.2.

[555] FSEIS, Ex. NRC-008-A-2, § 4.14.1.4.1.

[556] Motion for Leave to File New or Amended Contention on Behalf of the Oglala Sioux Tribe (Nov. 7, 2014) [hereinafter Oglala Sioux Tribe New Contention Motion].

[557] *Id.* at 1-2.

to the required hard look.[558] The Oglala Sioux Tribe further alleges that the EPA documents should have been but were not reviewed or analyzed in the FSEIS.[559]

On August 21, 2014, the evidentiary hearing concluded.[560] The record, however, was held open to facilitate disclosure by Powertech of certain well log data on September 13, 2014, and to permit the filing by the parties of additional testimony and/or exhibits based on these well log data.[561] Additional testimony and exhibits were filed by the Oglala Sioux Tribe[562] and the NRC Staff,[563] and on November 13, 2014, the Board admitted into evidence Exhibits OST-025 and OST-026, on which these new contentions are based.[564]

As the Oglala Sioux Tribe acknowledges, to gain the admission of a new or amended contention at this stage of the proceeding, a party must meet the requirements of both 10 C.F.R. § 2.309(c) and 2.309(f).[565] Section 2.309(c) states that a request to admit new or amended contentions must satisfy three specific requirements: "(i) The information upon which the filing is based was not previously available; (ii) The information upon which the filing is based is materially different from information previously available; and (iii) The filing has been submitted in a timely fashion based on the availability of the subsequent information."[566] Each of these requirements must be satisfied for a new or amended contention to be admitted. Further, even if contentions are based on an NRC Staff's FSEIS, an intervenor still bears the responsibility of demonstrating that a new contention merits admission and meets all six requirements of 10 C.F.R. § 2.309.[567] A contention cannot be admitted in an NRC hearing unless it meets the criteria in 10 C.F.R. § 2.309(f)(1), which requires that each contention:

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[558] *Id.* at 2.

[559] *Id.* at 3.

[560] Tr. at 1328.

[561] Licensing Board Post Hearing Order (Sept. 8, 2014).

[562] Oglala Sioux Tribe Motion to Admit Additional Exhibits (Oct. 14, 2014); Oglala Sioux Tribe Motion to Admit Additional Exhibits (Nov. 7, 2014); Oglala Sioux Tribe Motion to Admit Additional Testimony and Exhibits (Nov. 21, 2014).

[563] NRC Staff's Motion to Admit Testimony and Exhibits Addressing Powertech's September 14, 2014 Disclosures (Oct. 14, 2014).

[564] Licensing Board Order (Admitting New Exhibits and Closing the Evidentiary Record on Contentions 1A, 1B, 2, 4, 6, and 9) (Nov. 13, 2014).

[565] Oglala Sioux Tribe New Contention Motion at 1.

[566] 10 C.F.R. § 2.309(c)(1)(i)-(iii).

[567] *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-00-28, 52 NRC 226 (2000). The intervenors carry the burden of showing that any late-filed contentions are admissible. *See AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 260-61 (2009).

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
>
> (ii) Provide a brief explanation of the basis for the contention;
>
> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
>
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
>
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue . . . ;
>
> (vi) Provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.

Additionally, with respect to the need to supplement an issued final EIS, the party offering the new contention has the burden of presenting information sufficient to show that there is a genuine issue regarding whether the NRC Staff should supplement its document.[568] The party offering the contention thus must explain why the new information is sufficiently significant to present "a *seriously* different picture of the environmental landscape."[569] The new information must point to impacts that affect "the quality of the human environment in a significant manner or to a significant extent not already considered."[570]

1. New Contention 1: The NRC Staff's Review of Newly Disclosed Borehole Data Was Inadequate Under, and Failed to Comply with, the National Environmental Policy Act and Implementing Regulations

In proposed New Contention 1 the Oglala Sioux Tribe argues that NEPA requires that the record be reopened and the NRC Staff give the newly disclosed borehole data a hard look. The Oglala Sioux Tribe further alleges that the NRC Staff cannot ignore these data and that the review they were given by the NRC Staff was "without a scientifically valid and sourced methodology."[571]

We conclude that New Contention 1 is inadmissible. It does not meet the standard in 10 C.F.R. § 2.309(c)(2) in that it relies on information that is not materially different from information previously available (and in this case already

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[568] *See* 10 C.F.R. § 51.92; *see also Hydro Resources, Inc.* (Crownpoint Uranium Project), CLI-04-33, 60 NRC 581, 659 (2004).

[569] *Southern Nuclear Operating Co.* (Vogtle Electric Generating Plant, Units 3 and 4), CLI-12-11, 75 NRC 523, 533 n.53 (2012) (quoting *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-06-3, 63 NRC 19, 28 (2006)).

[570] *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), LBP-04-23, 60 NRC 441, 448 (2004) (quoting *Marsh,* 490 U.S. at 374).

[571] Oglala Sioux Tribe New Contention Motion at 8.

in the record). Further, it fails to raise a genuine dispute as required by 10 C.F.R. § 2.309 (f)(1)(vi), and does not meet the requirements in 10 C.F.R. § 51.92 for demonstrating the need to supplement a FSEIS.

In particular, the Oglala Sioux Tribe has not shown that the well log data or the NRC Staff's analysis of those well log data would lead to any new or materially different information or conclusions. The NRC Staff's "spot check" of Powertech's additional borehole log data led the NRC Staff to conclude that its initial analysis was accurate.[572] Similarly, the Oglala Sioux Tribe's review of these same data led them to conclude their original conclusions were correct.[573]

Initially, we note that the process of reviewing representative borehole logs is not new or a materially different approach relative to this proceeding. This review methodology has been practiced by the NRC Staff since the submission of Powertech's license application and throughout its review, culminating in the issuance of Powertech's NRC license. This methodology was reasonable to support issuance of the license application, and is reasonable for review of the additional borehole log data. As such, the use of this methodology does not rise to the level of new and significant or materially different information.

The results of the review by both the NRC Staff and the Oglala Sioux Tribe of Powertech's newly disclosed well log data did not "paint a seriously different picture of the environmental landscape."[574] Consequently, it does not give rise to a genuine issue in dispute, and the proposed contention does not meet the admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi).

2. *New Contention 2: The NRC Staff NEPA Analysis Fails to Adequately Address or Review the Findings in the EPA's CERCLA Preliminary Assessment or the EPA's Reasonably Foreseeable CERCLA Removal Action*

The Oglala Sioux Tribe contends that certain "newly-released EPA documents include findings and conclusions that were not reviewed or analyzed in the FSEIS or any other public NEPA forum, in violation of NEPA and NRC implementing regulations."[575] Specifically, the Oglala Sioux Tribe argues:

> the EPA found that sources of radiological contamination associated with the unreclaimed uranium mines on the Dewey-Burdock property are not just impacting the soil and surface waters at the site, but are also leaking into and through the

[572] NRC Staff's Brief in Support of Answering Testimony (Dec. 9, 2014) at 5.
[573] LaGarry Supplemental Testimony, Ex. OST-029, at 4.
[574] *Vogtle,* CLI-12-11, 75 NRC at 534.
[575] Oglala Sioux Tribe New Contention Motion at 11.

> groundwater so as to contaminate ground water wells at the site, and have [the] potential to impact additional ground water wells at the site.[576]

According to the Oglala Sioux Tribe, "these are issues that should have been, but were not, analyzed in the NRC Staff's NEPA review."[577]

New Contention 2 refers to a Preliminary Assessment recently released by the EPA for the abandoned Darrow/Freezeout/Triangle mine area, which is partially within the Dewey-Burdock site.[578] The Oglala Sioux Tribe alleges that this Preliminary Assessment is new information or contains new information which should be analyzed as part of the FSEIS.

New Contention 2 is inadmissible. It fails to present sufficient information to show a genuine dispute exists on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi), and ignores the fact that the environmental concerns related to the abandoned mines are discussed in the FSEIS. Both the FSEIS and the Preliminary Assessment report that: (1) surface soils near the abandoned uranium mines contain levels of radionuclides above health-based standards; (2) surface and water samples taken from the mine pits and nearby streams contain radionuclides; (3) air samples collected at the uranium mines have elevated levels of radionuclides; and (4) groundwater samples contain levels of radionuclides that exceed drinking water standards.[579] The Preliminary Assessment acknowledges that the NRC Staff evaluated these issues in the FSEIS, and the EPA refers to the NRC Staff's conclusions throughout its Preliminary Assessment.[580]

The Oglala Sioux Tribe fails to show that the Preliminary Assessment is or contains significant new information requiring that the NRC Staff supplement the FSEIS. The Oglala Sioux Tribe therefore fails to raise a genuine issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

H. Ruling on Motions to Strike Filed July 22, 2014

On July 22, 2014, all parties to this proceeding filed various procedural motions in advance of the scheduled August 19-21, 2014 evidentiary hearing. The Oglala Sioux Tribe moved to strike portions of NRC Staff and Powertech prefiled testimony by claiming that this testimony included analysis and information that purportedly supports the FSEIS, but was not included in the FSEIS itself.[581] The Oglala Sioux Tribe asked the Board to strike this material under the theory that

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[576] *Id.*
[577] *Id.*
[578] Preliminary Assessment, Ex. OST-026.
[579] Ex. NRC-174, NRC Staff's Responsive Testimony at 5 (Oct. 24, 2014).
[580] *See* Preliminary Assessment, Ex. OST-026, at 11, 13, 29-30.
[581] Oglala Sioux Tribe's Motion to Strike (July 22, 2014).

an FSEIS cannot be supplemented or rehabilitated by information not included in the FSEIS, and so this material goes beyond the scope of NEPA. The Oglala Sioux Tribe then pointed to a nonexclusive list of examples that it sought to strike from the record in Exhibits NRC-001, APP-003, APP-005, APP-010, APP-064, APP-053, and APP-070. On July 29, 2014, the NRC Staff and Powertech filed answers in opposition to this motion.[582] The NRC Staff claims that the Oglala Sioux Tribe misunderstands the administrative record rule and its conclusion only stands once the NRC has completed a final agency action, which will not be achieved until after the hearing is complete.[583] Powertech responded that its testimony is not intended to supplement the FSEIS, but instead serves to explain why the FSEIS does not need supplementation.

The Consolidated Intervenors moved to limit and exclude Powertech's witness testimony where its technical witnesses offer legal opinions or conclusions.[584] Specifically, Consolidated Intervenors moved to strike portions of two Powertech exhibits.[585] The NRC Staff and Powertech opposed Consolidated Intervenors' motion. The NRC Staff submits that there is a connection between each witness's experience and testimony, and that the Board will ensure the testimony carry weight only to the extent it is supported by other evidence in the record. Powertech responds that its witnesses are not offering legal opinions, but rather their own interpretations of regulations and agency guidance in support of Powertech's counsel's legal opinions. In our August 1, 2014 order[586] we deferred ruling on these two motions. We stated we would "be better able to resolve the disputes surrounding the Oglala Sioux Tribe and Consolidated Intervenor motions upon consideration of the full evidentiary record."[587]

The Board now denies both motions. The Oglala Sioux Tribe's motion is denied because the evidentiary hearing is a part of the review of the FSEIS. In an NRC adjudicatory proceeding, even if a Board finds an environmental impact statement prepared by the NRC Staff inadequate in certain respects, the Board's findings, as well as the adjudicatory record, "become, in effect, part of the [final EIS]."[588] Thus, the Board's ultimate NEPA judgments can be made on

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[582] Powertech (USA), Inc. Response to NRC Staff's, Consolidated Intervenors' and the Oglala Sioux Tribe's Motions in Limine, Motion for Cross-Examination, and Motion to Strike/Exclude (July 29, 2014); NRC Staff's Response to Prehearing Motions (July 29, 2014).

[583] NRC Staff's Response to Prehearing Motions (July 29, 2014) at 2-3.

[584] Consolidated Intervenors' Motion in Limine (July 22, 2014).

[585] Consolidated Intervenors moved to strike portions of Lynn Sebastian's testimony in Ex. APP-001, Written Testimony of Lynne Sebastian, and portions of Mr. Lawrence's testimony in Lawrence Testimony, Ex. APP-037.

[586] Licensing Board Order (Ruling on Motions in Limine: Motions to Strike and for Cross-Examination) (Aug. 1, 2014) (unpublished).

[587] *Id.* at 12.

[588] *Hydro Res.,* CLI-01-4, 53 NRC at 53 (quoting *Claiborne,* CLI-98-3, 47 NRC at 89).

the basis of the entire adjudicatory record in addition to the NRC Staff's FSEIS.[589] The Consolidated Intervenors' motion is also denied. The witnesses' testimony challenged is admitted in its entirety and has been given the weight it is due based on the qualifications and background of the witnesses. Any legal conclusions in the testimony at issue are accepted as the technical witnesses' understanding of legal requirements.

V. CONCLUSION AND BOARD ORDER

Pursuant to 10 C.F.R. § 2.1210, the Atomic Safety and Licensing Board assigned to hear the contentions raised in this case resolves all issues pending before it and terminates this proceeding as follows:

A. Contention 1A is resolved in favor of the Oglala Sioux Tribe and the Consolidated Intervenors. The Board finds that the NRC Staff has not carried its burden of demonstrating that its FSEIS complies with NEPA and with 10 C.F.R. Part 40. The environmental documents do not satisfy the requirements of NEPA, as they do not adequately address Sioux tribal cultural, historic, and religious resources. The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic, or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary. The FSEIS and Record of Decision in this case must be supplemented, if necessary, to include any cultural, historic, or religious sites identified and to discuss any mitigation measures necessary to avoid any adverse effects.

B. Contention 1B is resolved in favor of the Oglala Sioux Tribe. Meaningful consultation as required by statute has not occurred. The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic, or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary.

C. Contention 2 is resolved in favor of the NRC Staff and Powertech. The NRC Staff has carried its burden of demonstrating that the FSEIS com-

[589] *See National Enrichment Facility,* LBP-05-13, 61 NRC at 404, *aff'd,* CLI-06-22, 64 NRC 37 (2006).

plies with NEPA and with 10 C.F.R. Part 40 and that the collection of baseline/background groundwater data in a phased manner as outlined in NUREG-1569 is not a violation of NEPA.

D. Contention 3 is resolved in favor of the NRC Staff and Powertech with an additional license condition. With the addition of a license condition the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and includes adequate hydrogeological information. NRC License No. SUA-1600 is *revised* to include a new requirement that:

> Prior to conducting tests for a wellfield data package, the licensee will attempt to locate and properly abandon all historic drill holes located within the perimeter well ring for the wellfield. The licensee will document, and provide to the NRC, such efforts to identify and properly abandon all drill holes in the wellfield data package.

E. Contention 4 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately analyzed groundwater quantity impacts.

F. Contention 6 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately described and analyzed proposed mitigation measures.

G. Contention 9 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately considered connected actions.

H. New Contention 1 is *not admitted* because it does not meet the standard in 10 C.F.R. § 2.309(c)(2) and fails to raise a genuine dispute as required by 10 C.F.R. § 2.309 (f)(1)(vi). It also does not meet the requirements in 10 C.F.R. § 51.92 for supplementing a FSEIS.

I. New Contention 2 is *not admitted* because it fails to present sufficient information to show a genuine dispute exists on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

J. The Oglala Sioux Tribe Motion to Strike filed July 22, 2014, is *denied.*

K. The Consolidated Intervenors' Motion in Limine filed July 22, 2014, is *denied.*

L. Pursuant to 10 C.F.R. § 2.1207(a)(3)(iii) the Board, by separate order,

is providing to the Commission's Secretary a copy of all questions submitted by the parties prior to and during the course of the evidentiary hearing.

M. The Licensing Board retains jurisdiction over the final resolution of Contentions 1A and 1B. The NRC Staff shall file a monthly report, beginning June 2015, with the Board on its progress in addressing the outstanding issues in Contentions 1A and 1B. The NRC Staff's final monthly report shall demonstrate that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and include an agreement reflecting the parties' settlement of their dispute regarding the contentions or a motion for summary disposition of Contentions 1A and 1B.

In accordance with 10 C.F.R. § 2.1210, as to Contentions 2, 3, 4, 6, and 9, this Partial Initial Decision will constitute a final decision of the Commission 120 days from the date of issuance (or the first agency business day following that date if it is a Saturday, Sunday, or federal holiday, *see* 10 C.F.R. § 2.306(a)), i.e., on August 28, 2015, unless a petition for review is filed in accordance with 10 C.F.R. § 2.1212, or the Commission directs otherwise. Any party wishing to file a petition for review regarding the Board's rulings on Contenions 2, 3, 4, 6, and 9 on the grounds specified in 10 C.F.R. § 2.341(b)(4) must do so within twenty-five (25) days after service of this Partial Initial Decision. The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before seeking judicial review. Within 25 days after service of a petition for review, parties to the proceeding may file an answer supporting or opposing Commission review. Any petition for review and any answer shall conform to the requirements of 10 C.F.R. § 2.341(b)(2)-(3).

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD[590]

William J. Froehlich, Chairman
ADMINISTRATIVE JUDGE

Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
April 30, 2015

[590] Dr. Richard F. Cole, who served with distinction as a full-time technical member of the Atomic Safety and Licensing Board Panel beginning in 1973, was a member of this Licensing Board from its inception. He participated in the September 19-20, 2013 site visit, the August 18, 2014 limited appearance sessions, and the August 19-21, 2014 evidentiary hearing. Judge Cole passed away on December 11, 2014, before this decision was finalized.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Richard F. Cole
Dr. Mark O. Barnett

In the Matter of	Docket No. 40-9075-MLA
POWERTECH USA, INC.	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	May 20, 2014

ORDER
(Removing Temporary Stay and
Denying Motions for Stay of Materials License Number SUA-1600)

I. INTRODUCTION

On April 8, 2014 the NRC Staff issued NRC Source Materials License No. SUA-1600[1] to Powertech (USA), Inc. (Powertech) pursuant to 10 C.F.R. § 2.1202(a).[2] The license allows Powertech to possess and use source and byproduct material in connection with the Dewey-Burdock Project.[3] On April 14, 2014 the Oglala Sioux Tribe and the Consolidated Intervenors

[1] Materials License, NRC Form 374 (Apr. 8, 2014) (ADAMS Accession No. ML14043A392). See also, ADAMS Accession Package Number ML14043A052, which includes the license transmittal letter, the license, and the Final Safety Evaluation Report. The NRC Staff also issued its Record of Decision for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Project at ADAMS Accession No. ML14066A466. The Final Programmatic Agreement was executed April 7, 2014 and is available in ADAMS Accession Package No. ML14066A344.

[2] Under 10 C.F.R. § 2.1202(a) the NRC Staff may issue a license "during the pendency of any hearing under this subpart."

[3] Materials License, NRC Form 374 (Apr. 8, 2014) (ADAMS Accession No. ML14043A392) at 1.

filed timely applications for a stay of the effectiveness of the NRC staff's licensing action on a matter involved in this hearing.[4] On April 24, 2014 the NRC Staff and Powertech filed oppositions to Intervenors' motions.[5] The Oglala Sioux Tribe filed an answer in support of the Consolidated Intervenors' motion on April 24, 2014.[6]

On April 30, 2014 the Board granted a temporary stay of Powertech's NRC license, pending an oral argument among the parties.[7] The temporary stay was issued to prevent any immediate and irreparable harm to any cultural or historic resources caused by earthwork or ground disturbance within the Dewey-Burdock sites and to preserve the status quo until the Board was able to hold an oral argument on the motions for a stay. The oral argument was held by telephone on Tuesday, May 13, 2014.[8]

II. LEGAL STANDARDS

The purpose in granting a stay is to preserve the status quo until a decision can be made on the merits of the underlying controversy. The grant of a stay is an extraordinary

[4] Oglala Sioux Tribe's Motion for Stay of Effectiveness of License (Apr. 14, 2014) [hereinafter OST Stay Motion]; Consolidated Intervenors' Application for a Stay of the Issuance of License No. SUA-1600 Under 10 CFR Section 2.1213 (Apr. 14, 2014) [hereinafter CI Stay Motion].

[5] NRC Staff's Opposition to Applications for a Stay (Apr. 24, 2014) [hereinafter Staff Opposition]; Powertech (USA) Inc's Response to Consolidated Intervenors and the Oglala Sioux Tribe Motions for Stay of the Effectiveness of NRC License No. SUA-1600 (Apr. 24, 2014) [hereinafter Powertech Response].

[6] Oglala Sioux Tribe's Answer in Support of Consolidated Intervenors' Motion for Stay of Effectiveness of License (Apr. 24, 2014).

[7] Order (Temporarily Granting Stay of Materials License Number SUA-1600) (Apr. 30, 2014) (unpublished).

[8] Tr. at 578–637.

remedy, and a rare occurrence in NRC practice.[9] In determining whether to grant or deny an application for a stay, a Board must balance:

> (1) Whether the requestor will be irreparably injured unless a stay is granted; (2) Whether the requestor has made a strong showing that it is likely to prevail on the merits; (3) Whether the granting of a stay would harm other participants; and (4) Where the public interest lies.[10]

Discussing these four factors in the context of 10 C.F.R. § 2.342(e), the Commission has stated that "of these factors, irreparable injury is the most important."[11] And for a potential injury to be irreparable, it must be shown to be "imminent . . . certain and great."[12] If a strong showing of irreparable injury can be shown, "a movant need not always establish a high probability of success on the merits."[13] But if a party moving for a stay fails to show irreparable injury, a Board may still grant a stay if the movant has made "an overwhelming showing" or a demonstration of "virtual certainty" that it will prevail on the merits.[14] If the movant cannot show either irreparable injury or that it is likely to prevail on the merits, a Board "need not consider the

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[9] U.S. Dep't of Energy (High-Level Waste Repository), CLI-05-27, 62 NRC 715, 718 (2005) (treating a stay as "an extraordinary equitable remedy" (quoting Pub. Serv. Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-27, 6 NRC 715, 716 (1977))).

[10] 10 C.F.R. § 2.1213(d).

[11] S. Nuclear Operating Co. (Vogtle Electric Generating Plant, Units 3 and 4), CLI-12-11, 75 NRC 523, 529 (2012) (citing Shieldalloy Metallurgical Corp. (Decommissioning of the Newfield, New Jersey Site), CLI-10-8, 71 NRC 142, 151 (2010) and David Geisen, CLI-09-23, 70 NRC 935, 936 & n.4 (2009)).

[12] Vogtle, CLI-12-11, 75 NRC at 529 (quoting Entergy Nuclear Vermont Yankee, LLC (Vermont Yankee Nuclear Power Station), CLI-06-8, 63 NRC 235, 237 (2006)).

[13] Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Units 1 and 2), ALAB-820, 22 NRC 743, 746 n.8 (1985) (quoting Cuomo v. NRC, 772 F.2d 972, 974 (D.C. Cir. 1985).

[14] Vogtle, CLI-12-11, 75 NRC at 529 (quoting AmerGen Energy Co., LLC (Oyster Creek Nuclear Generating Station), CLI-08-13, 67 NRC 396, 400 (2008) and Shieldalloy Metallurgical Corp. (Decommissioning of the Newfield, New Jersey Site), CLI-10-8, 71 NRC 142, 154 (2010)).

remaining factors."[15] In addressing the stay criteria in a Subpart L proceeding, "a litigant must come forth with more than general or conclusory assertions in order to demonstrate its entitlement" to relief.[16] On a motion for a stay, the burden of persuasion on the four factors of listed in 10 C.F.R. § 2.1213, supra, is on the movant.[17]

III. DISCUSSION

A. Irreparable Injury

To qualify as an irreparable injury, the potential harm cited by the moving party first "must be related" to the underlying claim that is the focus of the adjudication.[18] Here, the Oglala Sioux Tribe and Consolidated Intervenors both base their motions for a stay on potential destruction of the Tribe's cultural resources and alleged continuing violations of NEPA and NHPA compliance.[19] These issues are the contentions at issue in the upcoming evidentiary hearing. Contention 1A concerns the protection of historical and cultural resources, and Contentions 1B, 2, 3, 4, 6, 9, and 14B concern alleged failures in the FSEIS and NHPA processes.[20]

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[15] Vogtle, CLI-12-11, 75 NRC at 529. This Order will discuss irreparable injury and the likelihood to prevail on the merits, but will not consider the remaining factors.

[16] Babcock and Wilcox (Apollo, Pennsylvania Fuel Fabrication Facility), LBP-92-31, 36 NRC 255, 263 (1992) (citing United States Dep't of Energy (Clinch River Breeder Reactor Plant), ALAB-721, 17 NRC 539, 544 (1983)).

[17] Public Serv. Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 & 2), ALAB-493, 8 NRC 253, 270 (1978); Alabama Power Co. (Joseph M. Farley Nuclear Plant Units 1 and 2), CLI-81-27, 14 NRC 795, 797 (1981).

[18] Vogtle, CLI-12-11, 75 NRC at 530–31 (quoting United States v. Green Acres Enters., Inc., 86 F.3d 130, 133 (8th Cir. 1996).

[19] OST Stay Motion at 2–4; CI Stay Motion at 6–7.

[20] LBP-14-5, 79 NRC at __ (slip op. at Appendix A) (Apr. 28, 2014).

A party seeking a stay must also specifically and "reasonably demonstrate [an injury], not merely allege" generalized harm.[21] The Oglala Sioux Tribe and Consolidated Intervenors both attach declarations purporting to demonstrate the specific irreparable injury that may be suffered.[22] These declarations allege that a comprehensive cultural resource study has not been adequately conducted, and that the FSEIS is "not sufficient to identify cultural and historic resources significant to the Oglala Sioux Tribe."[23] The Tribe alleges that "construction activities slated for the site" before the evidentiary hearing will cause irreparable harm by not ensuring adequate mitigation techniques are used.[24] Consolidated Intervenors claim cultural resources are at risk if construction, including "earthwork, massive ground disturbance, roadmaking, and other preparations" begins at the site.[25]

The NRC Staff counters that the Programmatic Agreement, with which the Intervenors find fault, is sufficient to protect cultural resources, and that the Intervenors' motions lack specificity.[26] Powertech argues that Consolidated Intervenors' and the Oglala Sioux Tribe's claims are nothing more than conclusory statements, and unsupported conjecture that historic and cultural resources will be damaged or destroyed within the scope of the NRC licensed activities.[27]

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[21] Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2), ALAB-814, 22 NRC 191, 196 (1985).

[22] See OST Stay Motion, Decl. of Michael CatchesEnemy and Decl. of Wilmer Mesteth; CI Stay Motion, Exs. 1–11 and A1–A2.

[23] OST Stay Motion, Decl. of Michael CatchesEnemy ¶ 9.

[24] OST Stay Motion at 3–4.

[25] CI Stay Motion at 6.

[26] Staff Opposition at 3.

[27] Powertech Response at 8–10; 12–14.

Harm to tribal cultural resources does constitute irreparable injury.[28] In a District Court case granting a preliminary injunction enjoining a solar energy project, the Quechan Tribe claimed that the project would not avoid most of the 459 cultural sites identified, and that the NEPA and NHPA process had been insufficient.[29] In determining that the irreparable harm element of the test for issuance of injunctive relief was met, the court found that the Tribe's evidence showed that phase one of the project would involve damage to at least one known site, and "virtually ensure[d] some loss or damage."[30]

Here, however, the intervenors' allegations and their supporting declarations lack the specificity needed to demonstrate a serious, immediate, and irreparable harm to cultural and historic resources. As the Eighth Circuit has said, "[A] party must show that the harm is certain and great and of such imminence that there is a clear and present need for equitable relief."[31] In this case, the intervenors have not shown that the activities proposed at the Dewey Burdock site are imminent nor that the harm is certain. Indeed, the intervenors have not shown that a clear and present need exists for a stay nor have they addressed the argument that the Programmatic Agreement protects the cultural and historic resources in the area.

Even if it was certain that irreparable harm would result from Powertech's pre-construction activities, staying the effectiveness of the NRC materials license will not forestall these injuries. The NRC license, for which a stay is sought, was issued pursuant to 10 C.F.R. Part 40. It authorizes Powertech to receive, acquire, possess, transfer, use, and deliver

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[28] United States v. Jenkins, 714 F. Supp. 2d 1213, 1222 (S.D. Ga. Dec. 5, 2008) ("Harming Native American artifacts would constitute an irreparable injury because artifacts are, by their nature, unique, and their historical and cultural significance make them difficult to value monetarily.").

[29] Quechan Tribe v. U.S. Dep't of the Interior, 755 F. Supp. 2d 1104, 1106–07 (S.D. Cal. Dec. 15, 2010).

[30] Id. at 1120.

[31] Iowa Util. Bd. v. FCC, 109 F.3d 418, 425 (8th Cir. 1996).

byproduct, source, and special nuclear material.[32] Further, the license permits Powertech to commence construction, as construction is defined in 10 C.F.R. § 40.4. Construction is defined as:

> the installation of wells associated with radiological operations (e.g., production, injection, or monitoring well networks associated with in-situ recovery or other facilities), the installation of foundations, or in-place assembly, erection, fabrication, or testing for any structure, system, or component of a facility or activity subject to the regulations in this part that are related to radiological safety or security.[33]

The term "construction" in Part 40 specifically excludes site exploration, including necessary borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site, the environmental impacts of construction or operation, or the protection of environmental values.[34] It also excludes excavation and preparation of the site for construction of the facility, including clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas.[35]

At oral argument, counsel for Powertech stated, without contradiction, that the ground disturbing work contemplated for the next few months could be accomplished without the NRC license.[36] Therefore, staying the license would not address the intervenors' concerns nor would it protect any cultural or historic sites. Indeed, counsel for the NRC Staff observed that in its view having the license remain in effect was more protective because the staff could then take

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[32] Materials License, NRC Form 374 (Apr. 8, 2014) at 1 (ADAMS Accession No. ML14043A392).

[33] 10 C.F.R. § 40.4.

[34] Id.

[35] Id.

[36] Tr. at 592–93.

enforcement actions should it find violations of the NRC license or the Programmatic Agreement.[37]

Based on the C.F.R. definitions, staying the effectiveness of Powertech's NRC issued license would have a very limited and incomplete effect on preventing the irreparable injuries the Intervenors claim Powertech may cause. Even if its NRC license is stayed by the Board, Powertech will still be permitted to engage in the earth moving activities on which the irreparable injury claim is premised. As a result, the injuries alleged in the Intervenors' motions are not redressable by the Board granting a stay of Powertech's license. The Board declines to issue an Order which would have no practical effect.[38]

B. Likelihood to Prevail on the Merits

At its heart, the dispute over a stay boils down to a disagreement over the NHPA consultation process. Intervenors argue that the process by which the Programmatic Agreement was created was inadequate, and therefore fails to fully protect the Tribe's sensitive and significant historic and cultural resources. Powertech and the NRC Staff disagree and believe the Programmatic Agreement memorialized a fair and adequate process that fully protects all potential cultural and historic resources at the Dewey-Burdock sites.

This issue will be adjudicated by this Board at the upcoming evidentiary hearing.[39] At this hearing, and in the prefiled statements of position and testimony, all parties will have the

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[37] Tr. at 620.

[38] In Pacific Gas and Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-03-10, 58 NRC 127, 129 (2003) the Commission held a stay request in abeyance during settlement negotiations, basing the delay, in part, on the rationale that "in practical terms, [the stay request would have] no current effect." See also Philadelphia Electric Co. (Peach Bottom Atomic Power Station, Unit 3), LBP-74-42, 7 AEC 1022, 1037 (1974) (declining to take a "meaningless" action and allow a hearing request when that hearing had already been held). In the context of Article III standing, a court may only hear a case when the relief requested is likely to redress the injury. Lujan v. Defenders of Wildlife, 504 U.S. 555, 590 (1992).

[39] Memorandum (Summarizing the February 12, 2014 Teleconference) (Feb. 20, 2014) at Appendix A (unpublished) (setting the evidentiary hearing to begin on August 19, 2014).

opportunity to present specific and detailed evidence supporting their respective positions to the Board. The Board will then make its decision based on this specific and detailed evidence. Since the potential harm is not redressable by the Board, we decline to make any estimation as to the Intervenors' likelihood of success on the merits at this point in time.

IV. BOARD ORDER

The Board rules that:

A. The temporary stay of Materials License Number SUA-1600, issued April 30, 2014[40] is lifted.

B. The motions for a stay of the effectiveness of Materials License Number SUA-1600 filed by Consolidated Intervenors and the Oglala Sioux Tribe on April 14, 2014[41] are denied.

C. As the Board ruled during the May 13, 2014 teleconference,[42] the unopposed Joint Motion to Clarify Filing Deadlines filed on April 30, 2014[43] is granted.

D. Consolidated Intervenors' Motion to Strike Pages 11-21 of Powertech Response to Stay filed May 13, 2014[44] was untimely[45] and is therefore denied.[46]

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[40] Order (Temporarily Granting Stay of Materials License Number SUA-1600) (Apr. 30, 2014) (unpublished).

[41] OST Stay Motion; CI Stay Motion.

[42] Tr. at 635.

[43] Joint Motion to Clarify Filing Deadlines (Apr. 30, 2014).

[44] Consolidated Intervenors' Motion to Strike Pages 11-21 of Powertech Response to Stay (May 13, 2014).

[45] 10 C.F.R. § 2.323(a)(2) requires all motions to be filed within ten days from the occurrence which triggers the motion. This motion to strike was filed eight days after this ten day period ended on May 5, 2014. Tr. at 636.

[46] The Board, however, notes that it finds Powertech's answer in violation of the Commission's regulations because it exceeded the ten-page reply length intended by 10 C.F.R. § 2.342(d). The regulation permits an answer to be filed "opposing the granting of a stay. This answer may

E. No specific section of the Commission's regulations, including 10 C.F.R. § 2.1210 and 10 C.F.R. § 2.1212, permits appeals from an order ruling on a request for a stay of the effectiveness of the NRC staff's action on a matter involved in a hearing under Subpart L. Nonetheless, interlocutory review of decisions and actions of a presiding officer may be available pursuant to § 2.341(f)(2) of the Commission's regulations.

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

_____
William J. Froehlich, Chair
ADMINISTRATIVE JUDGE

/RA/

_____
Richard F. Cole
ADMINISTRATIVE JUDGE

/RA/

_____
Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
May 20, 2014

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not be longer than ten (10) pages." The regulation contemplates a single ten-page opposition to a stay, not ten pages of opposition to each motion filed.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
(Dewey-Burdock In Situ Recovery Facility)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600)** have been served upon the following persons by Electronic Information Exchange, and by electronic mail as indicated by an asterisk*.

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POWERTECH (USA) INC., DEWEY-BURDOCK IN SITU RECOVERY FACILITY
DOCKET NO. 40-9075-MLA
ORDER (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600)

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[Original signed by Clara Sola]
Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 20th day of May 2014.

CERTIFICATE OF SERVICE

I, Jeffrey C. Parsons, hereby certify that the foregoing Joint Appendix was served on all counsel of record in case number 17-1059 through the electronic filing system (CM/ECF) of the U.S. Court of Appeals for the District of Columbia Circuit.

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[ORAL ARGUMENT NOT YET SCHEDULED]

No. 17-1059

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

OGLALA SIOUX TRIBE,

Petitioner,

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and the UNITED STATES OF AMERICA,

Respondents,

and

POWERTECH (USA), INC.,

Intervenor.

PETITION FOR REVIEW OF FINAL ORDER OF THE UNITED STATES NUCLEAR REGULATORY COMMISSION

JOINT APPENDIX – VOLUME 2

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U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-1910, Vol. 1

Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities

Chapters 1 through 4

Final Report

Manuscript Completed: May 2009
Date Published: May 2009

Prepared by:

U.S. Nuclear Regulatory Commission
Office of Federal and State Materials and Environmental Management Programs

Wyoming Department of Environmental Quality
Land Quality Division

EXECUTIVE SUMMARY

BACKGROUND

The Atomic Energy Act of 1954 and the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) authorize the U.S. Nuclear Regulatory Commission (NRC) to issue licenses for the possession and use of source material and byproduct material. The statutes require NRC to license facilities that meet NRC regulatory requirements that were developed to protect public health and safety from radiological hazards. *In-situ* leach (ISL) uranium recovery facilities must m3eet NRC regulatory requirements in order to obtain this license to operate.

NRC designed the licensing process to assure the safe operation of ISL facilities. In addition to information for a safety evaluation review, license applicants must submit an environmental report as part of their license application. Under the NRC's environmental protection regulations in the Code of Federal Regulations, Title 10, Part 51 (10 CFR Part 51), which implement the National Environmental Policy Act (NEPA), issuance of a license to possess and use source material for uranium milling requires an environmental impact statement (EIS) or a supplement to an EIS.

Generic Environmental Impact Statement (GEIS)

A GEIS is an environmental impact statement that assesses the scope of the environmental effects that would be associated with an action (such as issuing a license for an ISL facility) at numerous sites. The Commission directed the NRC staff to prepare the GEIS to cover as many of the potential uranium recovery sites as possible.

Supplemental Environmental Impact Statement (SEIS)

A supplemental EIS updates or supplements an existing EIS (such as the GEIS). The Commission directed the NRC staff to issue site-specific supplements to the GEIS for each new license application.

NRC prepared the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities (GEIS) to help fulfill this requirement. The GEIS was prepared to assess the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISL facility in four specified geographic areas. The intent of the GEIS is to determine which impacts would be essentially the same for all ISL facilities and which ones would result in varying levels of impacts for different facilities, thus requiring further site-specific information to determine the potential impacts. As such, the GEIS provides a starting point for NRC's NEPA analyses on site-specific license applications for new ISL facilities, as well as for applications to amend or renew existing ISL licenses.

PURPOSE AND NEED

Commercial uranium recovery companies have approached NRC with plans to submit a number of license applications for new uranium recovery facilities and for the restart or expansion of existing facilities in the next several years. The large majority of these potential applications would involve use of the ISL process. The companies have indicated that these new, restarted, and expanded ISL facilities would be located in Wyoming, South Dakota, Nebraska, and New Mexico.

NRC is the regulatory authority responsible for issuing a source material license for an ISL facility in those four states. 10 CFR Part 51 regulations require evaluating the environmental impacts of the ISL facility as part of the licensing process. Recognizing that the technology for ISL uranium milling is relatively standardized, that the applications may be submitted over a relatively short period of time, and that the potential ISL facilities would be located in relatively

discrete regions in the western United States, NRC decided to prepare a GEIS to avoid unnecessary duplicative efforts and to identify environmental issues of concern to focus on in site-specific environmental reviews. In this way, NRC could increase the efficiency and consistency in its site-specific environmental review of license applications for ISL facilities and so provide an option for applicants to use and licensees to continue to use the ISL process for uranium recovery.

THE PROPOSED FEDERAL ACTION AND ALTERNATIVES

In states where NRC is the regulatory authority over the licensing of uranium milling (including the ISL process), NRC has a statutory obligation to assess each site-specific license application to ensure it complies with NRC regulations before issuing a license. The proposed federal action is to grant an application to obtain, renew, or amend a source material license for an ISL facility.

Under NRC's environmental protection regulations at 10 CFR 51.20(b)(8), issuing a license to possess and use source material to a uranium milling facility is identified as a major federal action that requires the preparation of an EIS or a supplement to an EIS. NRC will prepare a SEIS for new ISL facility license applications. NRC will prepare an EA, SEIS or EIS for applications to amend or renew an existing ISL facility license.

The Proposed Federal Action

To grant applications to obtain, renew, or amend source material licenses for an ISL facility.

Purpose for the Proposed Federal Action

To provide an option for an applicant to use or a licensee to continue to use ISL technology for uranium recovery

The environmental review requirements for a material license are in 10 CFR Part 51. NRC's public health and safety requirements for ISL facilities are found in 10 CFR Parts 20 and 40. Parts 20, 40, and 51 require applicants to provide NRC with sufficient information to evaluate the impacts to public health and safety and the environment during the life-cycle of the ISL facility. NRC then prepares safety and environmental reviews that are used by NRC officials to decide whether to grant the source material license.

In reviewing an ISL license application, NRC will use the GEIS as starting point for its site-specific environmental reviews. NRC will evaluate site-specific data and information to determine whether the applicant's proposed activities and the site characteristics are consistent with those evaluated in the GEIS. NRC will then determine which sections of the GEIS can be incorporated by reference and which impact conclusions can be adopted in the site-specific environmental review, and whether additional data or analysis is needed to determine the environmental impacts to a specific resource area. Additionally, the GEIS provides guidance in the evaluation for certain impact analyses (e.g., cumulative impacts, environmental justice) for which the GEIS did not make impact conclusions. No decision on whether to license an ISL facility will be made based on the GEIS alone. The licensing decision will be based, in part, on a site-specific environmental analysis that makes use of the GEIS.

Uranium milling techniques are designed to recover the uranium from uranium-bearing ores. Various physical and chemical processes may be used, and selection of the uranium milling technique depends on the physical and chemical characteristics of the ore deposit and the attendant cost considerations. Generally, the ISL process is used to recover uranium from low-grade ores or deeper deposits that are not economically recoverable by conventional mining and milling techniques. In the ISL process, a leaching agent, such as oxygen with sodium carbonate, is added to native groundwater and injected through wells into the subsurface ore body to mobilize the uranium. The leach solution containing the mobilized uranium is pumped from there to the surface processing plant, and then ion exchange separates the uranium from the solution. After additional purification and drying, the resultant product, a mixture of uranium oxides also known as "yellowcake," is placed in 55-gallon drums prior to shipment offsite for further processing.

A range of alternatives was evaluated for inclusion in the GEIS. As defined in the GEIS, the proposed federal action is NRC's determination to grant an application to obtain, renew, or amend a source material license for an ISL facility. Under the no-action alternative, NRC would deny the applicant's or licensee's request. As a result, the new license applicant may choose to resubmit the application to use an alternate uranium recovery method or decide to obtain the yellowcake from other sources. A licensee whose renewal application is denied would have to commence shutting down operations in a timely manner. Denials of license amendments would require the licensee to continue operating under its previously approved license conditions.

Alternative methods for milling uranium were considered as possible alternatives to the ISL process. As stated previously, not all uranium deposits are suitable for ISL extraction. For example, if the uranium mineralization is above the saturated zone (i.e., all of the pore spaces in the ore-bearing rock are not filled with water), ISL techniques may not be appropriate. Likewise, if the ore is not located in a porous and permeable rock unit, it will not be accessible to the leach solution used in the ISL process. Because ISL techniques may not be appropriate in these circumstances, conventional mining (underground or open-pit/surface mining) and milling techniques (conventional milling and heap leaching) are viable alternative technologies.

Inasmuch as the suitability and practicality of using alternative milling methodologies depends on site-specific conditions, a generic discussion of alternative milling methodologies is not appropriate. Accordingly, this GEIS does not contain a detailed analysis of alternative milling methodologies. A detailed analysis of alternative milling methodologies that can be applied at a specific site will be addressed in NRC's site-specific environmental review for individual ISL license applications.

ANALYTICAL APPROACH

The GEIS serves to increase efficiency and eliminate repetitive discussions in NRC's environmental review process by identifying and evaluating environmental impacts that are generic and common to ISL uranium recovery facilities. Information from the GEIS can be summarized and incorporated by reference into the subsequent site-specific environmental review documents. The GEIS also identifies resource areas that need site-specific information to more fully determine the environmental impact to particular resource areas. The site-specific environmental impact analysis also will include any new or significant information necessary to evaluate the ISL facility license application.

For the GEIS, NRC identified the potential environmental impacts associated with the ISL process and the resource areas that could be affected. The general methodology for doing so was to (1) describe the ISL process activity or activities that could affect the resource, (2) identify the resource(s) that can be affected, (3) evaluate past licensing actions and associated environmental review documents and other available information, (4) assess the nature and magnitude of the potential environmental impacts to the resource(s), (5) characterize the significance of the potential impacts, and (6) identify site conditions and mitigation measures that may affect the significance. For some types of impacts analyses (e.g., cumulative impacts, environmental justice evaluations), NRC recognized the difficulty in making determinations in the GEIS, given the location-specific nature of these analyses. For these categories, NRC collected information and conducted initial evaluations, which are documented in the GEIS. The purpose of this information gathering and initial evaluation is intended to provide background data and guidance for the site-specific analyses for these types of impact evaluations.

NRC developed this GEIS based on its experience in licensing and regulating ISL facilities gained during the past 30 years. In the GEIS, NRC does not consider specific facilities, but rather provides an assessment of potential environmental impacts associated with ISL facilities that might be located

EXECUTIVE SUMMARY (continued)

in four regions of the western United States. These regions are used as a framework for discussions in this GEIS and were identified based on several considerations, including

- Past and existing uranium milling sites are located within States where NRC has regulatory authority over uranium recovery;
- Potential new sites are identified based on NRC's understanding of where the uranium recovery industry has plans to develop uranium deposits using ISL technology; and
- Locations of previously identified uranium deposits within portions of Wyoming, Nebraska, South Dakota, and New Mexico.

Using these criteria, four geographic regions were identified (Figure ES–1). For the purpose of this GEIS, these regions are

- Wyoming West Uranium Milling Region
- Wyoming East Uranium Milling Region
- Nebraska-South Dakota-Wyoming Uranium Milling Region
- Northwestern New Mexico Uranium Milling Region

The foundation of the environmental impact assessment in the GEIS is based on (1) the historical operations of NRC-licensed ISL facilities and (2) the affected environment in each of the four regions. The structure of the GEIS is presented in Figure ES–2.

Chapter 2 of the GEIS provides a description of the ISL process, addressing construction, operation, aquifer restoration, and decommissioning of an ISL facility. This section also discusses financial assurance, whereby the licensee or applicant establishes a bond or other financial mechanism prior to operations to ensure that sufficient funds are available to complete aquifer restoration, decommissioning, and reclamation activities.

Chapter 3 of the GEIS describes the affected environment in each uranium milling region using the environmental resource areas and topics identified through public scoping comments on the GEIS and from NRC guidance to its staff in NUREG–1748, "Environmental Review Guidance for Licensing Actions Associated With NMSS Programs," issued in 2003.

Chapter 4 of the GEIS provides an evaluation of the potential environmental impacts of constructing, operating, aquifer restoration, and decommissioning at an ISL facility in each of the four uranium milling regions. In essence, this involves placing an ISL facility with the characteristics described in Chapter 2 of the GEIS within each of the four regional areas described in Chapter 3 and describing and evaluating the potential impacts in each region separately. The potential environmental impacts are evaluated for the different stages in the ISL process: construction, operation, aquifer restoration, and decommissioning. Impacts are examined for the resource areas identified in the description of the affected environment. These resource areas are

- Land use
- Transportation
- Geology and soils
- Water resources
- Ecology
- Air quality
- Noise
- Historical and cultural resources
- Visual and scenic resources
- Socioeconomic
- Public and occupational health

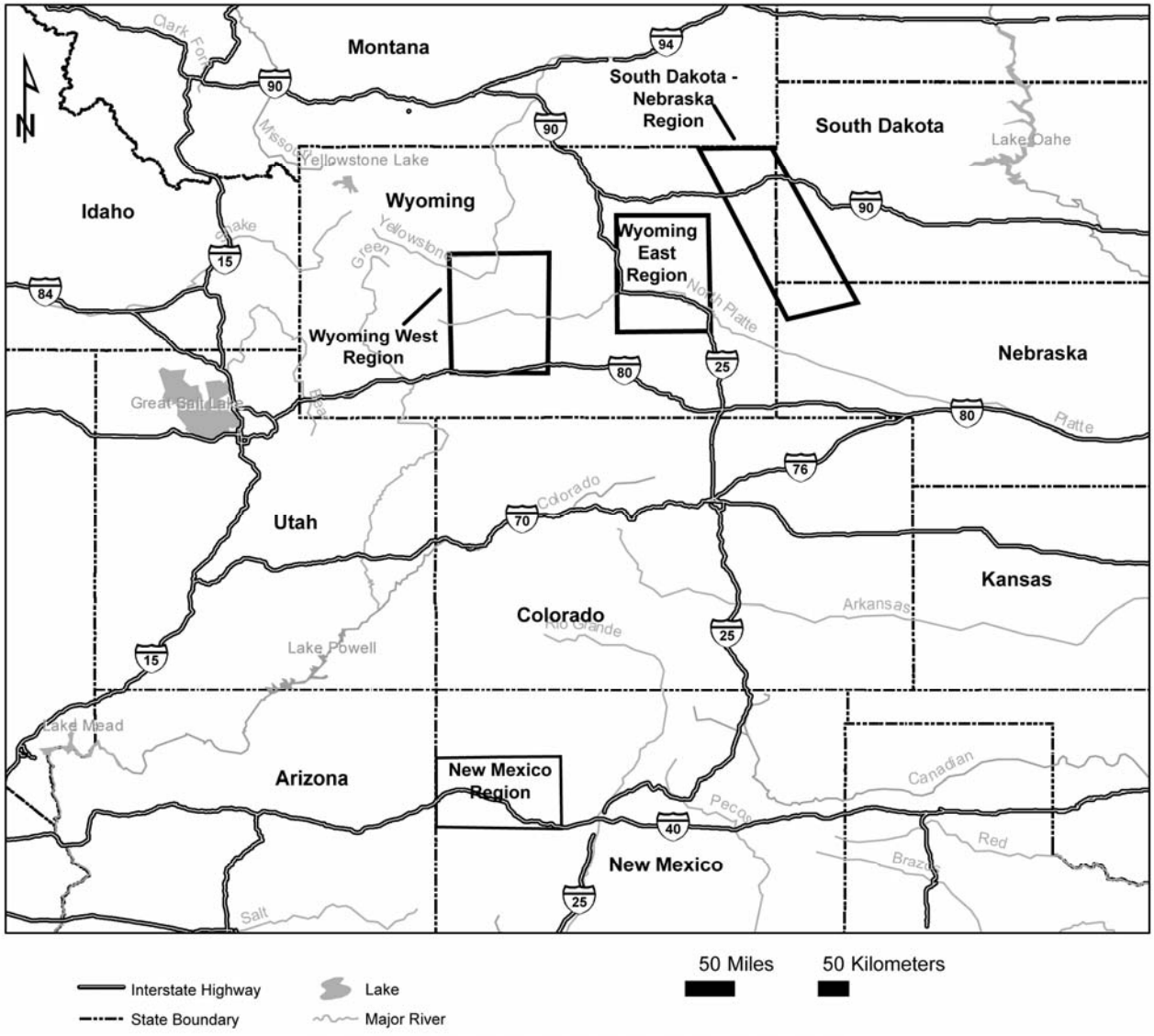

Figure ES–1. Location of Four Geographic Regions Used as a Framework for the Analyses Presented in This GEIS

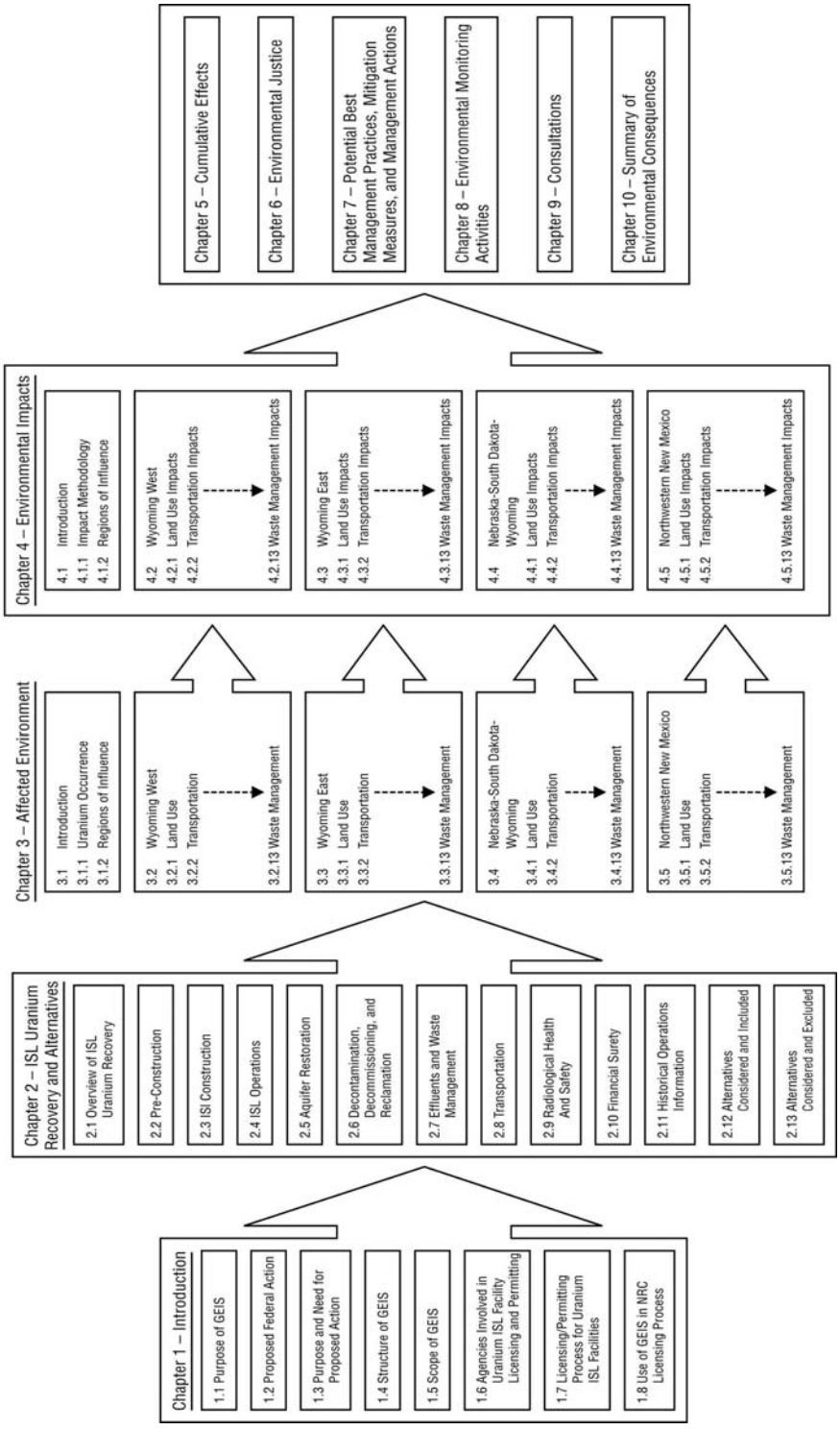

Figure ES–2. Structure of This GEIS

NRC identified a number of other issues that helped in the evaluation of the potential environmental impacts of an ISL facility. These issues include

- **Applicable Statutes, Regulations, and Agencies**. Various statutes, regulations, and implementing agencies at the federal, state, tribal, and local levels that have a role in regulating ISL facilities are identified and discussed.

- **Waste Management**. Potential impacts from the generation, handling, treatment, and final disposal of chemical, radiological, and municipal wastes are addressed.

- **Accidents**. Potential accident conditions are assessed in the GEIS. These include consideration of a range of possible accidents and estimation of their consequences, including well field leaks and spills, excursions, processing chemical spills, and ion-exchange resin and yellowcake transportation accidents.

- **Environmental Justice**. Although not required for a GEIS, to facilitate subsequent site-specific analyses, this GEIS provides a first order definition of minority and low income populations. Early consultations will be initiated with some of these populations, and the potential for disproportionately high and adverse impacts from future ISL licensing in the uranium milling regions will be evaluated in the event ISL license applications are submitted.

- **Cumulative Impacts**. The GEIS addresses cumulative impacts from proposed ISL facility construction, operation, groundwater restoration, and decommissioning on all aspects of the affected environment, by identifying past, present, and reasonably foreseeable future actions in the uranium milling regions.

- **Monitoring**. The GEIS discusses various monitoring methodologies and techniques used to detect and mitigate the spread of radiological and nonradiological contaminants beyond ISL facility boundaries.

SIGNIFICANCE LEVELS

In the GEIS, NRC has categorized the potential environmental impacts using significance levels. According to the Council on Environmental Quality, the significance of impacts is determined by examining both context and intensity (40 CFR 1508.27). Context is related to the affected region, the affected interests, and the locality, while intensity refers to the severity of the impact, which is based on a number of considerations. In this GEIS, the NRC used the significance levels identified in NUREG–1748:

- SMALL Impact: The environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource considered.

- MODERATE Impact: The environmental effects are sufficient to alter noticeably, but not destabilize, important attributes of the resource considered.

- LARGE Impact: The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource considered.

SUMMARY OF IMPACTS

Chapter 4 of the GEIS provides NRC's evaluation of the potential environmental impacts of the construction, operation, aquifer restoration, and decommissioning at an ISL facility in each of the four uranium milling regions. A summary of this evaluation by environmental resource area and phase of the ISL facility lifecycle is provided next.

Land Use Impacts

CONSTRUCTION—Land use impacts could occur from land disturbances (including alterations of ecological cultural or historic resources) and access restrictions (including limitations on other mineral extraction activities, grazing activities, or recreational activities). The potential for land use conflicts could increase in areas with higher percentages of private land ownership and Native American land ownership or in areas with a complex patchwork of land ownership. Land disturbances during construction would be temporary and limited to small areas within permitted boundaries. Well sites, staging areas, and trenches would be reseeded and restored. Unpaved access roads would remain in use until decommissioning. Competing access to mineral rights could be either delayed for the duration of the ISL project or be intermixed with ISL operations (e.g., oil and gas exploration). Changes to land use access including grazing restrictions and impacts on recreational activities would be limited due to the small size of restricted areas, temporary nature of restrictions, and availability of other land for these activities. Ecological, historical, and cultural resources could be affected, but would be protected by careful planning and surveying to help identify resources and avoid or mitigate impacts. For all land use aspects except ecological, historical, and cultural resources, the potential impacts would be SMALL. Due to the potential for unidentified resources to be altered or destroyed during excavation, drilling, and grading, the potential impacts to ecological, historical, or cultural resources would be SMALL to LARGE, depending on local conditions.

OPERATION—The types of land use impacts for operational activities would be similar to construction impacts regarding access restrictions because the infrastructure would be in place. Additional land disturbances would not occur from conducting operational activities. Because access restriction and land disturbance related impacts would be similar to, or less than, those for construction, the overall potential impacts to land use from operational activities would be SMALL.

AQUIFER RESTORATION—Due to the use of the same infrastructure, land use impacts would be similar to operations during aquifer restoration, although some operational activities would diminish—SMALL.

DECOMMISSIONING—Land use impacts would be similar to those described for construction with a temporary increase in land-disturbing activities for dismantling, removing, and disposing of facilities, equipment, and excavated contaminated soils. Reclamation of land to preexisting conditions and uses would help mitigate potential impacts—SMALL to MODERATE during decommissioning, and SMALL once decommissioning is completed.

Transportation Impacts

CONSTRUCTION—Low magnitude traffic generated by ISL construction relative to local traffic counts would not significantly increase traffic or accidents on many of the roads in the region. Existing low traffic roads could be moderately impacted by the additional worker commuting traffic during periods of peak employment. This impact would be expected to be more pronounced in areas with relatively lower traffic counts. Moderate dust, noise, and incidental

wildlife or livestock kill impacts would be possible on, or near, site access roads (dust in particular for unpaved access roads)—SMALL to MODERATE.

OPERATION—Low magnitude traffic relative to local traffic counts on most roads would not significantly increase traffic or accidents. Existing low traffic roads could be moderately impacted by commuting traffic during periods of peak employment including dust, noise, and possible incidental wildlife or livestock kill impacts on or near site access roads. High consequences would be possible for a severe accident involving transportation of hazardous chemicals in a populated area. However, the probability of such accidents occurring would be low owing to the small number of shipments, comprehensive regulatory controls, and use of best management practices. For radioactive material shipments (yellowcake product, ion-exchange resins, waste materials), compliance with transportation regulations would limit radiological risk for normal operations. Low radiological risk is estimated for accident conditions. Emergency response protocols would help mitigate long-term consequences of severe accidents involving release of uranium—SMALL to MODERATE.

AQUIFER RESTORATION—The magnitude of transportation activities would be lower than for construction and operations, with the exception of workforce commuting, which could have moderate impacts on, or in the vicinity of, existing low traffic roads—SMALL to MODERATE.

DECOMMISSIONING—The types of transportation activities, and therefore the types of impacts, would be similar to those discussed for construction and operations, except the magnitude of transportation activities (e.g., number and types of waste and supply shipments, no yellowcake shipments) from decommissioning could be lower than for operations. Accident risks would be bounded by the operations yellowcake transportation risk estimates—SMALL.

Geology and Soils Impacts

CONSTRUCTION—Disturbance to soil would occur from construction (clearing, excavation, drilling, trenching, road construction); however, such disturbances would be expected to be temporary, disturbed areas would be small (approximately 15 percent of the total site area), and potential impacts would be mitigated by using best management practices. A large portion of the well fields, trenches, and access roads would be restored and reseeded after construction. Excavated soils would be stockpiled, seeded, and stored onsite until needed for reclamation fill. No impacts to subsurface geological strata would be likely—SMALL.

OPERATION—Temporary contamination or alteration of soils would be likely from operational leaks and spills and possible from transportation, use of evaporation ponds, or land application of treated waste water. However, detection and response to leaks and spills (e.g., soil cleanup), monitoring of treated waste water, and eventual survey and decommissioning of all potentially impacted soils would limit the magnitude of overall impacts to soils—SMALL.

AQUIFER RESTORATION—Impacts to geology and soils from aquifer restoration activities would be similar to impacts from operations due to use of the same infrastructure and similar activities conducted (e.g., well field operation, transfer activities, liquid effluent treatment and disposal)—SMALL.

DECOMMISSIONING—Impacts to geology and soils from decommissioning would be similar to impacts from construction. Activities to clean up, recontour, and reclaim disturbed lands during decommissioning would mitigate long-term impacts to soils—SMALL.

EXECUTIVE SUMMARY (continued)

Surface Water Impacts

CONSTRUCTION—Impacts to surface waters and related habitats from construction (road crossings, filling, erosion, runoff, spills or leaks of fuels and lubricants for construction equipment) would be mitigated through proper planning, design, construction methods, and best management practices. Some impacts directly related to the construction activities would be temporary and limited to the duration of the construction period. U.S. Army Corps of Engineers permits may be required when filling and crossing of wetlands. Temporary changes to spring and stream flow from grading and changes in topography and natural drainage patterns could be mitigated or restored after the construction phase. Impacts from incidental spills of drilling fluids into local streams could occur, but would be temporary due to the use of mitigation measures. Impacts from roads, parking areas, and buildings on recharge to shallow aquifers would be SMALL, owing to the limited area of impervious surfaces proposed. Impacts from infiltration of drilling fluids into the local aquifer would be localized, small, and temporary—SMALL to MODERATE depending on site-specific characteristics.

OPERATION—Through permitting processes, federal and state agencies regulate the discharge of storm water runoff and the discharge of process water. Impacts from these discharges would be mitigated as licensees would operate within the conditions of their permits. Expansion of facilities or pipelines during operations would generate impacts similar to construction—SMALL to MODERATE depending on site-specific characteristics.

AQUIFER RESTORATION—Impacts from aquifer restoration would be similar to impacts from operations due to use of the same (in-place) infrastructure and similar activities conducted (e.g., well field operation, transfer of fluids, water treatment, storm water runoff)—SMALL to MODERATE depending on site-specific characteristics.

DECOMMISSIONING—Impacts from decommissioning would be similar to impacts from construction. Activities to clean up, recontour, and reclaim disturbed lands during decommissioning would mitigate long-term impacts to surface waters—SMALL to MODERATE depending on site-specific characteristics.

Groundwater Impacts

CONSTRUCTION—Water use impacts would be limited by the small volumes of groundwater used for routine activities such as dust suppression, mixing cements, and drilling support over short and intermittent periods. Contamination of groundwater from construction activities would be mitigated by best management practices—SMALL.

OPERATION—Potential impacts to shallow aquifers can occur from leaks or spills from surface facilities and equipment. Shallow aquifers are important sources of drinking water in some areas of the four uranium milling regions. Potential impacts to the ore-bearing and surrounding aquifers include consumptive water use and degradation of water quality (from normal production activities, off-normal excursion events, and deep well injection disposal practices). Consumptive use impacts from withdrawal of groundwater would occur because approximately 1 to 3 percent of pumped groundwater is not returned to the aquifer (e.g., process bleed). That amount of water lost could be reduced substantially by available treatment methods (e.g., reverse osmosis, brine concentration). Effects of water withdrawal on groundwater would be expected to be SMALL as the ore zone normally occurs in a confined aquifer. Estimated drawdown effects vary depending on site conditions and water treatment technology applied. Excursions of lixiviant and mobilized chemical constituents could occur from failure of well seals or other operational conditions that result in incomplete recovery of lixiviant. Well-seal-related

excursions would be detected by the groundwater monitoring system, and periodic well mechanical integrity testing, and impacts would be expected to be mitigated during operation or aquifer restoration. Other excursions could result in plumes of mobilized uranium and heavy metals extending beyond the mineralization zone. The magnitude of potential impacts from vertical excursions would vary depending on site-specific conditions. To reduce the likelihood and consequences of potential excursions at ISL facilities, NRC requires licensees to take preventative measures prior to starting operations, including well tests, monitoring, and development of procedures that include excursion response measures and reporting requirements. Impacts from the alterations of ore body aquifer chemistry would be SMALL, because the aquifer would (1) be confined, (2) not be a potential drinking water source, and (3) be expected to be restored during the restoration period. Potential environmental impacts to confined deep aquifers below the production aquifers from deep well injection of processing wastes would be addressed by the underground injection permitting process regulated by the states and NRC's approval process—SMALL to LARGE, depending on site-specific conditions.

AQUIFER RESTORATION—Potential impacts would be from consumptive use and potential deep disposal of brine slurries after reverse osmosis, if applicable. The volume of water removed from the aquifer and related impacts would be dependent on site-specific conditions and the type of water treatment technology the facility uses. In some cases, groundwater consumptive use for the aquifer restoration has been reported to be less than groundwater use during the ISL operation, and drawdowns due to aquifer restorations have been smaller than drawdown caused by ISL operations. Potential environmental impacts associated with water consumption during aquifer restorations are determined by (1) the restoration techniques chosen, (2) the volume of water to be used, (3) the severity and extent of the contamination, and (4) the current and future use of the production and surrounding aquifers near the ISL facility or at the regional scale—SMALL to MODERATE, depending on site-specific conditions.

DECOMMISSIONING—Potential impacts from decommissioning would be similar to construction (water use, spills) with an additional potential to mobilize contaminants during demolition and cleanup activities. Contamination of groundwater from decommissioning activities would be mitigated by implementation of an NRC-approved decommissioning plan and use of best management practices—SMALL.

Terrestrial Ecology Impacts

CONSTRUCTION—Potential terrestrial ecology impacts would include the removal of vegetation from the well fields and the milling site, the modification of existing vegetative communities, the loss of sensitive plants and habitats from clearing and grading, and the potential spread of invasive species and noxious weed populations. These impacts would be expected to be temporary because restoration and reseeding occur rapidly after the end of construction. Introduction of invasive species and noxious weeds would be mitigated by restoration and reseeding after construction. Shrub and tree removal and loss would take longer to restore. Construction noise could affect reproductive success of sage-grouse leks by interfering with mating calls. Temporary displacement of some animal species would also occur. Critical wintering and year-long ranges are important to survival of both big game and sage-grouse. Raptors breeding onsite may be impacted by construction activities or milling operations, depending on the time of year construction occurs. Wildlife habitat fragmentation, temporary displacement of animal species, and direct or indirect mortalities would be possible. Implementation of wildlife surveys and mitigation measures following established guidelines would limit impacts. The magnitude of impacts depends on whether a new facility is being licensed or an existing facility is being extended—SMALL to MODERATE, depending on site-specific habitat conditions.

OPERATION—Habitats could be altered by operations (fencing, traffic, noise), and individual takes could occur due to conflicts between species habitat and operations. Access to crucial wintering habitat and water could be limited by fencing. However, the State of Wyoming Game and Fish Department specifies fencing construction techniques to minimize impediments to big game movement. Migratory birds could be affected by exposure to constituents in evaporation ponds, but perimeter fencing and netting would limit impacts. Temporary contamination or alteration of soils would be likely from operational leaks and spills and possible from transportation or land application of treated waste water. However, detection and response to leaks and spills (e.g., soil cleanup) and eventual survey and decommissioning of all potentially impacted soil limit the magnitude of overall impacts to terrestrial ecology. Mitigation measures such as perimeter fencing, netting, alternative sites, and periodic wildlife surveys would reduce overall impacts—SMALL.

AQUIFER RESTORATION—Impacts include habitat disruption, but existing (in-place) infrastructure would be used during aquifer restoration, with little additional ground disturbance. Migratory birds could be affected by exposure to constituents in evaporation ponds, but perimeter fencing and netting would limit impacts. Contamination of soils could result from leaks and spills and land application of treated waste water. However, detection and response techniques, and eventual survey and decommissioning of all potentially impacted soils, would limit the magnitude of overall impacts to terrestrial ecology. Mitigation measures such as perimeter fencing, netting, and alternative sites would reduce overall impacts—SMALL.

DECOMMISSIONING—During decommissioning and reclamation, there would be a temporary disturbance to land (e.g., excavated soils, buried piping, removal of structures). However, revegetation and recontouring would restore habitat altered during construction and operations. Wildlife would be temporarily displaced, but are expected to return after decommissioning and reclamation are completed and vegetation and habitat are reestablished—SMALL to MODERATE, depending on site-specific conditions.

Aquatic Ecology Impacts

CONSTRUCTION—Clearing and grading activities associated with construction could result in a temporary increase in sediment load in local streams, but aquatic species would recover quickly as sediment load decreases. Clearing of riparian vegetation could affect light and thus the temperature of water. Construction impacts to wetlands would be identified and managed through U.S. Army Corps of Engineers permits, as appropriate. Construction impacts to surface waters and aquatic species would be temporary and mitigated by best management practices—SMALL.

OPERATION—Impacts could result from spills or releases into surface water. Impacts would be minimized by spill prevention, identification, and response programs, and National Pollutant Discharge Elimination System (NPDES) permit requirements—SMALL.

AQUIFER RESTORATION—Activities would use existing (in-place) infrastructure, and impacts could result from spills or releases of untreated groundwater. Impacts would be minimized by spill prevention, identification, and response programs, and NPDES permit requirements—SMALL.

DECOMMISSIONING—Decommissioning and reclamation activities could result in temporary increases in sediment load in local streams, but aquatic species would recover quickly as

sediment load decreases. With completion of decommissioning, revegetation, and recontouring, habitat would be reestablished and impacts would, therefore, be limited—SMALL.

Threatened and Endangered Species Impacts

CONSTRUCTION—Numerous threatened and endangered species and state species of concern are located in the four uranium milling regions. Small fragmentation of habitats would occur, but most species readapt quickly. The magnitude of impact would depend on the size of a new facility or extension to an existing facility and the amount of land disturbance. Inventory of threatened or endangered species would be developed during site-specific reviews to identify unique or special habitats, and Endangered Species Act consultations conducted with the U.S. Fish and Wildlife Service would assist in reducing impacts—SMALL to LARGE—depending on site-specific habitat and presence of threatened or endangered species.

OPERATION—Impacts could result from individual takes due to conflicts with operations. Small fragmentation of habitats would occur, but most species readapt quickly. The magnitude of impact would depend on the size of a new facility or extension to an existing facility and the amount of land disturbance. Impacts could potentially result from spills or permitted effluents, but would be minimized through the use of spill prevention measures, identification and response programs, and NPDES permit requirements. Inventory of threatened or endangered species developed during site-specific reviews would identify unique or special habitats, and Endangered Species Act consultations conducted with the U.S. Fish and Wildlife Service would assist in reducing impacts—SMALL to LARGE—depending on site-specific habitat and presence of threatened or endangered species.

AQUIFER RESTORATION—Impacts could result from individual takes due to conflicts with aquifer restoration activities (equipment, traffic). Existing (in-place) infrastructure would be used during aquifer restoration, so additional land-disturbing activities and habitat fragmentation would not be anticipated. Impacts may result from spills or releases of treated or untreated groundwater, but impacts would be minimized through the use of spill prevention measures, identification and response programs, and NPDES permit requirements. Inventory of threatened or endangered species would be developed during site-specific reviews to identify unique or special habitats, and Endangered Species Act consultations with the U.S. Fish and Wildlife Service would assist in reducing impacts—SMALL.

DECOMMISSIONING—Impacts resulting from individual takes would occur due to conflicts with decommissioning activities (equipment, traffic). Temporary land disturbance would occur as structures are demolished and removed and the ground surface is recontoured. Inventory of threatened or endangered species developed during site-specific environmental review of the decommissioning plan would identify unique or special habitats, and Endangered Species Act consultations with the U.S. Fish and Wildlife Service would assist in reducing impacts. With completion of decommissioning, re-vegetation, and re-contouring, habitat would be reestablished and impacts would, therefore, be limited—SMALL to LARGE.

Air Quality Impacts

CONSTRUCTION—Fugitive dust and combustion (vehicle and diesel equipment) emissions during land-disturbing activities associated with construction would be small, short-term, and reduced through best management practices (e.g., dust suppression). For example, estimated fugitive dust emissions during ISL construction are less than 2 percent of the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and less than 1 percent for PM_{10}. For NAAQS attainment areas, nonradiological air quality impacts would be SMALL. A Prevention of

Significant Deterioration Class I area exists in only one of the four regions (Wind Cave National Park in the Nebraska-South Dakota-Wyoming Region). More stringent air quality standards would apply to a facility that impacts the air quality of that area. If impacts were initially assessed at a higher significance level, permit requirements would impose conditions or mitigation measures to reduce impacts—SMALL.

OPERATION—Radiological impacts can result from dust releases from drying of lixiviant pipeline spills, radon releases from well system relief valves, resin transfer or elution, and gaseous/particulate emissions from yellowcake dryers. Only small amounts of low dose materials would be expected to be released based on operational controls and rapid response to spills. Required spill prevention, control, and response procedures would be used to minimize impacts from spills. HEPA filters and vacuum dryer designs reduce particulate emissions from operations, and ventilation reduces radon buildup during operations. Compliance with the NRC-required radiation monitoring program would ensure releases are within regulatory limits. Other potential nonradiological emissions during operations include fugitive dust and fuel from equipment, maintenance, transport trucks, and other vehicles. For NAAQS attainment areas, nonradiological air quality impacts would be SMALL. A Prevention of Significant Deterioration Class I area is located in the Nebraska-South Dakota-Wyoming Region (Wind Cave National Park). More stringent air quality standards would apply to a facility that impacts the air quality of that area. If impacts were initially assessed at a higher significance level, permit requirements would impose conditions or mitigation measures to reduce impacts—SMALL.

AQUIFER RESTORATION—Because the same infrastructure is used, air quality impacts are expected to be similar to, or less than, those during operations. For NAAQS attainment areas, nonradiological air quality impacts would be SMALL. Where a Prevention of Significant Deterioration Class I area exists, such as the Wind Cave National Park in the Nebraska-South Dakota-Wyoming Region, more stringent air quality standards would apply to a facility that impacts the air quality. If impacts were initially assessed at a higher significance level, permit requirements would impose conditions or mitigation measures to reduce impacts—SMALL.

DECOMMISSIONING—Fugitive dust, vehicle, and diesel emissions during land-disturbing activities associated with decommissioning would be similar to, or less than, those associated with construction, would be short-term, and would be reduced through best management practices (e.g., dust suppression). Potential impacts would decrease as decommissioning and reclamation of disturbed areas are completed. For NAAQS attainment areas, nonradiological air quality impacts would be SMALL. However, where a Prevention of Significant Deterioration Class I area exists (Wind Cave National Park in the Nebraska-South Dakota-Wyoming Region), more stringent air quality standards would apply to a facility that impacts the air quality of that area. If impacts were initially assessed at a higher significance level, permit requirements would impose conditions or mitigation measures to reduce impacts—SMALL.

Noise Impacts

CONSTRUCTION—Noise generated during construction would be noticeable in proximity to operating equipment, but would be temporary (typically daytime only). Administrative and engineering controls would be used to maintain noise levels in work areas below Occupational Health and Safety Administration (OSHA) regulatory limits and mitigated by use of personal hearing protection. Traffic noise during construction (commuting workers, truck shipments to and from the facility, and construction equipment such as trucks, bulldozers, and compressors) would be localized, and limited to highways in the vicinity of the site, access roads within the site, and roads in the well fields. Relative increases in traffic levels would be SMALL for the

larger roads, but may be MODERATE for lightly traveled rural roads through smaller communities. Noise may also adversely affect wildlife habitat and reproductive success in the immediate vicinity of construction activities. Noise levels decrease with distance, and at distances more than about 300 m [1,000 ft], ambient noise levels would return to background. Wildlife avoid construction areas because of noise and human activity. Generally, the uranium districts are located more than 300 m [1,000 ft] from the closest community. As a result, noise impacts would be SMALL to MODERATE.

OPERATION—Noise-generating activities in the central uranium processing facility would be indoors, reducing offsite sound levels. Well field equipment (e.g., pumps, compressors) would be contained within structures (e.g., header houses, satellite facilities), also reducing sound levels to offsite receptors. Administrative and engineering controls would be used to maintain noise levels in work areas below OSHA regulatory limits and mitigated by use of personal hearing protection. Traffic noise from commuting workers, truck shipments to and from the facility, and facility equipment would be expected to be localized, limited to highways in the vicinity of the site, access roads within the site, and roads in well fields. Relative increases in traffic levels would be SMALL for the larger roads, but may be MODERATE for lightly traveled rural roads through smaller communities. Most noise would be generated indoors and mitigated by regulatory compliance and best management practices. Noise from trucks and other vehicles is typically of short duration. Also, noise usually is not discernable to offsite receptors at distances of more than 300 m [1,000 ft.] Generally, the uranium districts are located more than 300 m [1,000 ft] from the closest community—SMALL to MODERATE.

AQUIFER RESTORATION—Noise generation is expected to be less than during construction and operations. Pumps and other well field equipment contained in buildings reduce sound levels to offsite receptors. Existing operational infrastructure would be used, and traffic levels would be expected to be less than those during construction and operations. There are additional sensitive areas that should be considered within some of the regions, but because of decreasing noise levels with distance, aquifer restoration activities would have only SMALL and temporary noise impacts for residences, communities, or sensitive areas, especially those located more than about 300 m [1,000 ft] from specific noise-generating activities. Noise usually is not discernable to offsite receptors at distances more than 300 m [1,000 ft]. Generally, the uranium districts are located more than 300 m [1,000 ft] from the closest community—SMALL to MODERATE.

DECOMMISSIONING—Noise generated during decommissioning would be noticeable only in proximity to equipment and temporary (typically daytime only). Administrative and engineering controls would be used to maintain noise levels in work areas below OSHA regulatory limits and mitigated by use of personal hearing protection. Noise levels during decommissioning would be less than during construction and would diminish as less and less equipment is used and truck traffic is reduced. Noise usually is not discernable to offsite receptors at distances more than 300 m [1,000 ft]. Generally, the uranium districts are located more than 300 m [1,000 ft] from the closest community—SMALL to MODERATE.

Historical and Cultural Resources Impacts

CONSTRUCTION—Potential impacts during ISL facility construction could include loss of, or damage and temporary restrictions on access to, historical, cultural, and archaeological resources. The eligibility evaluation of cultural resources for listing in the National Register of Historic Places (NRHP) under criteria in 36 CFR 60.4(a)–(d) and/or as Traditional Cultural Properties (TCP) would be conducted as part of the site-specific review and NRC licensing procedures undertaken during the NEPA review process. The evaluation of impacts to any

historic properties designated as TCPs and tribal consultations regarding cultural resources and TCPs also occurs during the site-specific licensing application and review process. To determine whether significant cultural resources would be avoided or mitigated, consultations with State Historic Preservation Offices (SHPO), other government agencies (e.g., U.S. Fish and Wildlife Service and State Environmental Departments), and Native American Tribes (the THPO) occur as part of the site-specific review. Additionally, as needed, the NRC license applicant would be required, under conditions in its NRC license, to adhere to procedures regarding the discovery of previously undocumented cultural resources during initial construction. These procedures typically require the licensee to stop work and to notify the appropriate federal, tribal, and state agencies with regard to mitigation measures—SMALL or MODERATE to LARGE depending on site-specific conditions.

OPERATION—Because less land disturbance occurs during the operations phase, potential impacts to historical, cultural, and archaeological resources would be less than during construction. Conditions in the NRC license requiring adherence to procedures regarding the discovery of previously undocumented cultural resources would apply during operation. These procedures typically require the licensee to stop work and to notify the appropriate federal, tribal, and state agencies with regard to mitigation measures—SMALL, depending on site-specific conditions.

AQUIFER RESTORATION—Because less land disturbance occurs during the aquifer restoration phase, potential impacts to historical, cultural, and archaeological resources would be less than those during construction. Conditions in the NRC license requiring adherence to procedures regarding the discovery of previously undocumented cultural resources would apply during aquifer restoration. These procedures typically require the licensee to stop work and to notify the appropriate federal, tribal, and state agencies with regard to mitigation measures—SMALL, depending on site-specific conditions.

DECOMMISSIONING—Because less land disturbance occurs during the decommissioning phase and because decommissioning and reclamation activities would be focused on previously disturbed areas, potential impacts to historical, cultural, and archaeological resources would be less than during construction. Conditions in the NRC license requiring adherence to procedures regarding the discovery of previously undocumented cultural resources would apply during decommissioning and reclamation. These procedures typically require the licensee to stop work and to notify the appropriate federal, tribal, and state agencies with regard to mitigation measures—SMALL, depending on site-specific conditions.

Visual and Scenic Impacts

CONSTRUCTION—Visual impacts result from equipment (drill rig masts, cranes), dust/diesel emissions from construction equipment, and hillside and roadside cuts. Most of the four uranium milling regions are classified as Visual Resource Management (VRM) Class II through IV by the U.S. Bureau of Land Management. A number of VRM Class II areas surround national monuments (El Morro and El Malpais), the Chaco Culture National Historic Park, and sensitive areas managed within the Mount Taylor district in the Northwestern New Mexico Uranium Milling District and would have the greatest potential for impacts to visual resources. Most of these areas, however, are located away from potential ISL facilities at distances greater than 16 km [10 mi]. Most potential facilities are located in VRM Class III and IV areas. The general visual and scenic impacts associated with ISL facility construction would be temporary and SMALL, but from a Native American perspective, any construction activities would likely result in adverse impacts to the landscape, particularly for facilities located in areas within view of tribal lands and areas of special significance such as Mount Taylor. As previously discussed,

a Prevention of Significant Deterioration Class I area (Wind Cave National Park) is located in the Nebraska-South Dakota-Wyoming Uranium Milling Region. Prevention of Significant Deterioration Class I areas require more stringent air quality standards that can affect visual impacts. Nevertheless, most potential visual impacts during construction would be temporary as equipment is moved and would be mitigated by best management practices (e.g., dust suppression). Because these sites are in sparsely populated areas and there is generally rolling topography of the region, most visual impacts during construction would not be visible from more than about 1 km [0.6 mi]. The visual impacts associated with ISL construction would be consistent with the predominant VRM Class III and IV—SMALL.

OPERATION—Visual impacts during operations would be less than those associated with construction. Most of the well field surface infrastructure has a low profile, and most piping and cables would be buried. The tallest structures include the central uranium processing facility {10 m [30 ft]} and power lines {6 m [20 ft]}. Because these sites are in sparsely populated areas and there is generally rolling topography of the regions, most visual impacts during operations would not be visible from more than about 1 km [0.6 mi]. Irregular layout of well field surface structures such as wellhead protection and header houses would further reduce visual contrast. Best management practices, and design (e.g., painting buildings) and landscaping techniques would be used to mitigate potential visual impact. The uranium districts in the four regions are all located more than 16 km [10 mi] from the closest VRM Class II region, and the visual impacts associated with ISL construction would be consistent with the predominant VRM Class III and IV—SMALL.

AQUIFER RESTORATION—Aquifer restoration activities would use in-place infrastructure. As a result, potential visual impacts would be the same as, or less than, those during operations—SMALL.

DECOMMISSIONING—Because similar equipment would be used and activities conducted, potential visual impacts during decommissioning would be the same as, or less than, those during construction. Most potential visual impacts during decommissioning would be temporary as equipment is moved and would be mitigated by best management practices (e.g., dust suppression). Visual impacts would be low, because these sites are in sparsely populated areas, and impacts would diminish as decommissioning activities decrease. An approved site reclamation plan is required prior to license termination, with the goal of returning the landscape to preconstruction conditions (predominantly VRM Class III and IV). Some roadside cuts and hill slope modifications, however, may persist beyond decommissioning and reclamation—SMALL.

Socioeconomic Impacts

CONSTRUCTION—Potential impacts to socioeconomics would result predominantly from employment at an ISL facility and demands on the existing public and social services, tourism/recreation, housing, infrastructure (schools, utilities), and the local work force. Total peak employment would be about 200 people, including company employees and local contractors, depending on timing of construction with other stages of the ISL lifecycle. During construction of surface facilities and well fields, the general practice would be to use local contractors (drillers, construction), as available. A local multiplier of 0.7 (U.S. Bureau of the Census) is used to indicate how many ancillary jobs could be created (in this case about 140). For example, local building materials and building supplies would be used to the extent practical. Most employees would live in larger communities with access to more services. Some construction employees, however, would commute from outside the county to the ISL facility, and skilled employees (e.g., engineers, accountants, managers) would come from outside the

local work force. Some of these employees would temporarily relocate to the project area and contribute to the local economy through purchasing goods and services and taxes. Because of the small relative size of the ISL workforce, net impacts would be SMALL to MODERATE.

OPERATION—Employment levels for ISL facility operations would be less than those for construction, with total peak employment depending on timing and overlap with other stages of the ISL lifecycle. Use of local contract workers and local building materials would diminish, because drilling and facility construction would diminish. Revenues would be generated from federal, state, and local taxes on the facility and the uranium produced. Employment types would be similar to construction, but the socioeconomic impacts would be less due to fewer employees—SMALL to MODERATE.

AQUIFER RESTORATION—In-place infrastructure would be used for aquifer restoration, and employment levels would be similar to those for operations—SMALL to MODERATE.

DECOMMISSIONING—A skill set similar to the construction workforce would be involved in dismantling surface structures, removing pumps, plugging and abandoning wells, and reclaiming/recontouring the ground surface. Employment levels and use of local contractor support during decommissioning would be similar to those required for construction. Employment would be temporary, however, as decommissioning activities are short in duration. Because of similar employment levels, other socioeconomic impacts would be similar to construction—SMALL to MODERATE.

Public and Occupational Health and Safety Impacts

CONSTRUCTION—Worker safety would be addressed by standard construction safety practices. Fugitive dust would result from construction activities and vehicle traffic, but would likely be of short duration and would not result in a radiological dose. Diesel emissions would also be of short duration and readily dispersed into the atmosphere—SMALL to MODERATE.

OPERATION—Potential occupational radiological impacts from normal operations would result from (1) exposure to radon gas from the well field, (2) ion-exchange resin transfer operations, and (3) venting during processing activities. Workers would also be exposed to airborne uranium particulates from dryer operations and maintenance activities. Potential public exposures to radiation could occur from the same radon releases and uranium particulate releases (i.e., from facilities without vacuum dryer technology). Both worker and public radiological exposures are addressed in NRC regulations at 10 CFR Part 20, which require licensees to implement an NRC-approved radiation protection program. (Measured and calculated doses for workers and the public are commonly only a fraction of regulated limits.) Nonradiological worker safety matters are addressed through commonly applied occupational health and safety regulations and practices. Radiological accident risks could involve processing equipment failures leading to yellowcake slurry spills, or radon gas or uranium particulate releases. Consequences of accidents to workers and the public are generally low, with the exception of a dryer explosion which could result in worker dose above NRC limits. The likelihood of such an accident would be low, and therefore the risk would also be low. Potential nonradiological accidents impacts include high consequence chemical release events (e.g., ammonia) for both workers and nearby populations. The likelihood, however, of such release events would be low based on historical operating experience at NRC-licensed facilities, primarily due to operators following commonly applied chemical safety and handling protocols—SMALL to MODERATE.

AQUIFER RESTORATION—Activities during aquifer restoration overlap with similar activities during operations (e.g., operation of well fields, waste water treatment and disposal). The resultant impacts on public and occupational health and safety would be bound by operational impacts. The reduction of some operational activities (e.g., yellowcake production and drying, remote ion exchange) will limit the relative magnitude of potential worker and public health and safety hazards—SMALL.

DECOMMISSIONING—Worker and public health and safety would be addressed in a NRC-required decommissioning plan. This plan details how a 10 CFR Part 20 compliant radiation safety program would be implemented during decommissioning, how ensuring the safety of workers and the public would be maintained, and how applicable safety regulations would be complied with—SMALL.

Waste Management Impacts

CONSTRUCTION—Relatively small-scale construction activities (Section 2.3) and incremental well field development at ISL facilities would generate low volumes of construction waste—SMALL.

OPERATION—Operational wastes primarily result from liquid waste streams including process bleed, flushing of depleted eluant to limit impurities, resin transfer wash, filter washing, uranium precipitation process wastes (brine), and plant wash down water. State permit actions, NRC license conditions, and NRC inspections ensure the proper practices would be used to comply with safety requirements to protect workers and the public. Waste treatments such as reverse osmosis and radium settling would be used to segregate wastes and minimize disposal volumes. Potential impacts from surface discharge and deep well injection would be limited by the conditions specified in the applicable state permit. NRC regulations address constructing, operating, and monitoring for leakage of evaporation ponds used to store and reduce volumes of liquid wastes. Potential impacts from land application of treated wastewater would be addressed by NRC review of site-specific conditions prior to approval and routine monitoring in decommissioning surveys. Offsite waste disposal impacts would be SMALL for radioactive wastes as a result of required preoperational disposal agreements. Impacts for hazardous and municipal waste would also be SMALL due to the volume of wastes generated. For remote areas with limited available disposal capacity, such wastes may need to be shipped greater distances to facilities that have capacity; however, the volume of wastes generated and magnitude of such shipments are estimated to be low—SMALL.

AQUIFER RESTORATION—Waste management activities during aquifer restoration would use the same treatment and disposal options implemented for operations. Therefore, impacts associated with aquifer restoration would be similar to operational impacts. While the amount of wastewater generated during aquifer restoration would be dependent on site-specific conditions, the potential exists for additional wastewater volume and associated treatment wastes during the restoration period. However, this would be offset to some degree by the reduction in production capacity from the removal of a well field. NRC review of future ISL facility applications would verify that sufficient water treatment and disposal capacity (and the associated agreement for disposal of byproduct material) are addressed. As a result, waste management impacts from aquifer restoration would be SMALL.

DECOMMISSIONING—Radioactive wastes from decommissioning ISL facilities (including contaminated excavated soil, evaporation pond bottoms, process equipment) would be disposed of as byproduct material at an NRC-licensed facility. A preoperational agreement with a licensed disposal facility to accept radioactive wastes ensures sufficient disposal capacity

EXECUTIVE SUMMARY (continued)

would be available for byproduct wastes generated by decommissioning activities. Safe handling, storage, and disposal of decommissioning wastes would be addressed in a required decommissioning plan for NRC review prior to starting decommissioning activities. Such a plan would detail how a 10 CFR Part 20 compliant radiation safety program would be implemented during decommissioning to ensure the safety of workers and the public and compliance with applicable safety regulations. Overall, volumes of decommissioning radioactive, chemical, and solid wastes would be SMALL.

The assessment of impacts considers potential environmental consequences at each stage in an ISL facility lifecycle—construction, operation, aquifer restoration, and decommissioning/reclamation—and presents them for each of the resource areas identified in Chapter 3.

According to the Council on Environmental Quality (CEQ), the significance of impacts is determined by examining both context and intensity (40 CFR 1508.27). Context is related to the affected region, the affected interests, and the locality, while intensity refers to the severity of the impact, which is based on a number of considerations. In describing the significance of potential impacts in this GEIS, the NRC used the significance levels identified in NUREG–1748 (NRC, 2003b) (see text box).

Considerations related to potential cumulative impacts are described in Chapter 5, and environmental justice is discussed in Chapter 6. Mitigation measures and best management practices that may reduce potential environmental impacts are identified and discussed in Chapter 7. Required monitoring programs are described in Chapter 8 and are included in the determination of significance. Chapter 9 discusses the process for NRC consultation with federal, tribal, state, and local agencies. In Chapter 10, impacts are summarized in a table for each of the four geographic regions. The structure of this GEIS is shown graphically in Figure 1.4-1.

1.5 Scope of the GEIS

The scoping process occurs early in the development of an EIS in accordance with NEPA. Scoping provides an opportunity for the public and other stakeholders to identify key issues and concerns that they believe should be addressed in the document. The NRC requirements for scoping are found at 10 CFR 51.26–29, while the general NRC approach to scoping is described in NUREG–1748 (NRC, 2003b, Section 4.2.3).

1.5.1 The GEIS Scoping Process

On July 24, 2007, NRC published in the *Federal Register* a notice of intent to prepare a GEIS to examine the potential impacts associated with ISL uranium recovery facilities (NRC, 2007b). In that notice, NRC described the scoping process for the GEIS and established a public comment period from July 24, 2007, to September 4, 2007. NRC also announced dates and times for two public scoping meetings to be held—one in Albuquerque, New Mexico, and the other in Casper, Wyoming. NRC published a revised notice of intent in the *Federal Register* on August 31, 2007, announcing a third public scoping meeting in Gallup, New Mexico, and extended the public comment period to October 8, 2007 (NRC, 2007c). Following the Gallup public meeting, NRC subsequently extended the comment period further to October 31, 2007, and finally to November 30, 2007 (NRC, 2007c). At each of the three public scoping meetings, NRC described its role and mission and reviewed NRC procedures and responsibilities. Tribal, state, and local government agencies; concerned local citizens; and other stakeholders were then invited to identify scoping issues and concerns and ask questions. Transcripts (NRC, 2008b, 2007d,e) were prepared for all three meetings and are available online at the NRC Agencywide Documents Access and Management System (ADAMS), which is accessible at www.nrc.gov or through the NRC website for the GEIS at http://www.nrc.gov/materials/uranium-recovery/geis.html.

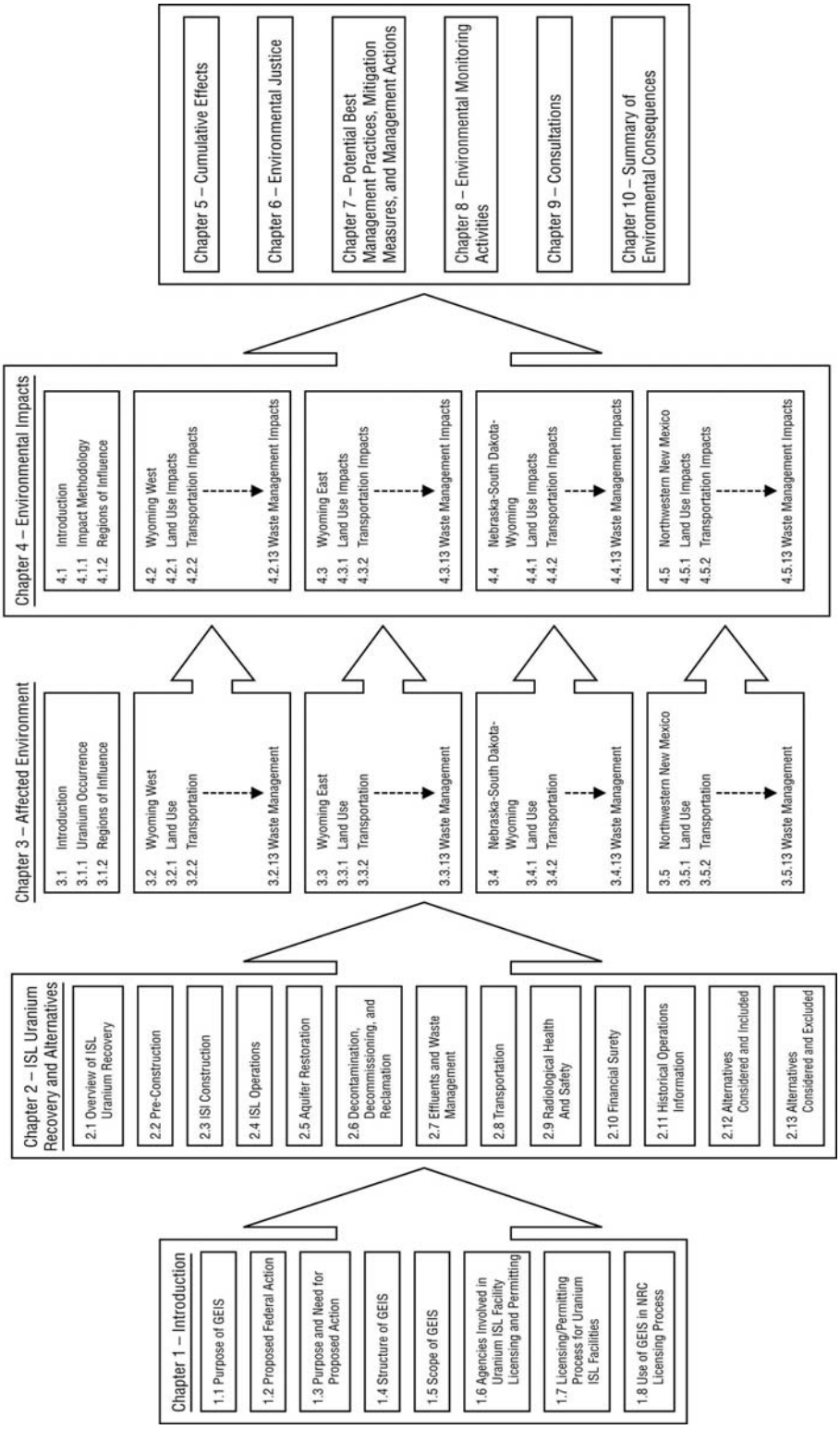

Figure 1.4-1. Structure of This GEIS

In addition to the comments received at the public meetings, NRC accepted written comments submitted either by regular mail or electronically. Using these varied methods, comments were received from approximately 1,600 entities (i.e., federal, state, and local agencies; industry organizations; public advocacy groups; and individual members of the public). A summary of comments NRC received during scoping is provided in a scoping summary report included as Appendix A to this GEIS.

1.5.2 Issues Studied in Detail

From the scoping process, NRC determined that the following issues identified by the public and other stakeholders would be addressed in the GEIS.

- **Proposed Action and Alternatives.** Scoping comments recommended clarifying the scope of the proposed action. Commenters also suggested a variety of alternatives for consideration. The proposed action is described in Section 1.2, and alternatives are described in Sections 2.12 and 2.13.

- **Applicable Statutes, Regulations, and Agencies.** Scoping comments expressed a need to clarify applicable regulations and the roles of government agencies in regulating ISL facilities. Various statutes, regulations, and implementing agencies at the federal, state, and local levels that have a role in regulating ISL facilities are identified and discussed in Section 1.6. The roles of these agencies are also described, as appropriate.

- **Purpose of the GEIS and Use in Site-Specific Licensing Reviews.** A number of scoping comments conveyed various interpretations of the purpose and intended use of the GEIS, suggesting the purpose and intended use needed to be clarified. For example, some thought the GEIS was going to be the only NEPA analysis conducted for all ISL facilities, while others thought the GEIS would eliminate or substantially degrade the rigor of NRC site-specific environmental reviews. A statement of purpose is included in Section 1.3, the NRC licensing process is described in Section 1.7.1, and the ways NRC intends to use the GEIS to evaluate environmental impacts in site-specific licensing reviews are provided in Section 1.8.

- **Opportunities for Public Involvement.** Many scoping comments reflected a perception that the GEIS would limit public involvement in ISL licensing. Some requested the opportunities for public involvement be described. Section 1.8.4 describes opportunities for public participation in the ISL licensing process.

- **Applicable Rulemaking Activities.** Some scoping comments recommended a discussion of ongoing rulemaking activities that are applicable to ISL licensing or the GEIS. The GEIS is based on the regulations in effect at the time of writing.

- **Land Use.** Concerns regarding potential land use impacts on ranching operations and livestock were raised during the scoping process. Potential impacts to existing land uses in the ISL milling regions including potential impacts to ranching, grazing, recreation, industrial, and cultural activities are discussed in Sections 4.2.1, 4.3.1, 4.4.1, and 4.5.1.

- **Transportation.** Scoping comments addressed general concerns with the safety of shipping yellowcake, road construction, fugitive dust generation, infrastructure damage, and incidental livestock kills. Potential radiological and nonradiological impacts from ISL transportation activities are discussed in Sections 4.2.2, 4.3.2, 4.4.2, and 4.5.2. Impacts from shipment of supplies, yellowcake product, and wastes associated with each phase of the ISL facility lifecycle are discussed. Normal transportation and accident conditions are considered. Potential nonradiological impacts evaluated include dust and noise generation, impacts on infrastructure such as roads, incidental livestock and wildlife kills, and changes to local traffic conditions. Potential radiological impacts considered include direct radiation and potential release of radioactive material from accidents during shipment.

- **Geology.** Scoping comments were received regarding the extent of soil disturbance and the utility of a generic analysis of geology. The GEIS describes the geology of the ISL milling regions in sufficient detail to support the evaluation of impacts to geology and soils (Sections 4.2.3, 4.3.3, 4.4.3, and 4.5.3) and groundwater (Sections 4.2.4.2, 4.3.4.2, 4.4.4.2, and 4.5.4.2) from ISL activities. GEIS Chapter 2 describes soil-disturbing activities (e.g., clearing, excavation, drilling, trenching, road construction, leaks, spills) and the magnitude of surface area disturbed at existing ISL facilities.

- **Water Resources.** A variety of water resource issues was raised in scoping comments including concerns about potential groundwater and surface water contamination, water availability and consumptive use, groundwater protection requirements, and aquifer restoration goals and techniques. The GEIS addresses potential impacts to surface waters, groundwater, and wetlands from each phase of the ISL facility lifecycle in Sections 4.2.4, 4.3.4, 4.4.4, and 4.5.4. Specific topics addressed include permitted surface water discharges, leaks and spills, groundwater excursions, consumptive water use, aquifer restoration, deep well injection, and applicable regulations. Hydrologic conditions in uranium milling regions are considered, as well as available restoration technologies and methods. The restoration of the aquifer water quality in the production zone following operations is addressed. Data from aquifer restoration efforts at ISL sites inform the analysis. Regulatory requirements and the roles of various federal, state, and local agencies regarding aquifer restoration are also discussed. Potential for groundwater impacts, in particular, is a key concern that has been historically an area of focus in NRC ISL licensing reviews.

- **Ecology.** Scoping comments on ecology raised topics regarding surface disturbance impacts on wildlife and vegetation, practices for isolating wildlife from exposure to uranium and other metals, recommended construction guidelines, habitat loss and fragmentation, and avoiding establishment of invasive species. The GEIS assesses the potential impacts to ecology in the uranium milling regions from all phases of the ISL facility lifecycle in Sections 4.2.5, 4.3.5, 4.4.5, and 4.5.5. This assessment includes consideration of potential impacts to terrestrial, aquatic, and threatened and endangered species. Specific topics addressed include evaluating ecoregions and habitat for a variety of listed species and assessing potential impacts from surface disturbances, habitat loss and fragmentation, and incidental kills. Applicable regulations and various management practices designed to protect species or mitigate potential impacts are discussed.

- **Meteorology, Climatology, and Air Quality.** Scoping comments included general environmental and safety concerns about the potential for airborne contamination, the magnitude of facility airborne releases, and applicable regulations. GEIS Sections 4.2.6, 4.3.6, 4.4.6, and 4.5.6 consider the potential impacts of all phases of the ISL facility lifecycle on local and regional air quality from both radiological and nonradiological emissions. The radiological air emissions addressed in the GEIS include radon from well fields, processing, and waste treatment operations and the potential for uranium particulate emissions from yellowcake drying operations. Nonradiological emissions addressed in the GEIS include combustion engine exhausts from trucking and well drilling operations and fugitive dusts from a variety of activities.

- **Noise.** Scoping comments on noise were limited to a statement regarding the low levels of noise ISL facilities generate. NRC recognizes that some activities in the ISL facility lifecycle can potentially generate additional noise, and impacts are evaluated in the GEIS Sections 4.2.7, 4.3.7, 4.4.7, and 4.5.7. This evaluation includes noise from well field development, uranium processing activities, and trucking activities associated with all phases of the ISL facility lifecycle.

- **Historic and Cultural.** Scoping comments were provided on historic and cultural resources including recommendations for documenting compliance with the National Historic Preservation Act requirements protecting historic properties on tribal lands, concerns about the notification process when cultural artifacts are found at an ISL facility, and opportunities for public participation regarding historic and cultural concerns. A number of individuals and organizations, primarily in New Mexico, expressed concerns on topics regarding proximity of uranium facilities to Native American communities and requested government-to-government consultations and documentation of consultations in the GEIS. The GEIS assesses potential impacts from all phases of the ISL facility lifecycle on historical and cultural resources in Sections 4.2.8, 4.3.8, 4.4.8, and 4.5.8. Local and regional historic and cultural properties and practices in ISL milling regions such as those involving Native American communities and governments are included. A description of NRC's process for consultation with Native American governments is provided in GEIS Chapter 9.

- **Visual Resources.** Scoping comments on visual resource impacts were varied. Potential impacts to visual resources in uranium milling regions from all phases of the ISL facility lifecycle are assessed in GEIS Sections 4.2.9, 4.3.9, 4.4.9, and 4.5.9. Assessments consider scenic vistas and sensitive viewsheds within uranium milling regions and ISL facility lifecycle impacts on these resources based on proximity.

- **Socioeconomics.** Scoping comments recommended evaluating social and economic impacts to local communities including job creation impacts; changes to tax base; and cumulative impacts on housing, roads, services, and labor to towns already overburdened by oil, gas, and coal development. The GEIS assesses potential impacts to socioeconomic conditions in uranium milling regions from all phases of the ISL facility lifecycle in Sections 4.2.10, 4.3.10, 4.4.10, and 4.5.10. Local and regional characteristics pertaining to demographics, income, tax structure and distribution, housing, employment, finances, education, and services are considered.

- **Public and Occupational Health.** A number of scoping comments expressed general public and worker safety concerns and more specific concerns about potential

contamination of soils, surface water, air, and groundwater; risks from radon gas and spills and from processing chemicals and resins; and emergency response and reporting. Potential impacts to public and occupational health from all phases of the ISL facility lifecycle are assessed in GEIS Sections 4.2.11, 4.3.11, 4.4.11, and 4.5.11. Both nonradiological (including chemical) and radiological effluents and releases under normal (routine) and accident conditions are assessed. Dose calculation results from previously licensed ISL facilities that include airborne uranium particulate and radon gas are provided. Hazards and risks for ISL processing chemicals are also considered. Potential soil contamination impacts from leaks and spills are discussed in Sections 4.2.3, 4.3.3, 4.4.3, and 4.5.3, and potential groundwater contamination is addressed in 4.2.4, 4.3.4, 4.4.4, and 4.5.4.

- **Waste Management.** Scoping comments expressed concerns about waste management in general and also about handling and disposal practices, deep well injection and permitted discharges, land application, disposal capacity, annual waste volumes, transportation, and applicable regulations. The GEIS considers impacts from waste management activities in all phases of the ISL facility lifecycle in Sections 4.2.12, 4.3.12, 4.4.12, and 4.5.12. Generation, handling, treatment, transportation, and final disposal of chemical, radiological, and municipal wastes are addressed. Constituents in various waste streams are identified, and volume estimates are provided.

- **Decontamination, Decommissioning, Reclamation.** A number of scoping comments expressed concerns about the site cleanup after operations end. The GEIS assesses impacts to the environment from terminating ISL operations, which include removal of facilities and equipment, disposal of waste materials, cleanup of contaminated areas, and reclamation of lands to pre-milling conditions. Decommissioning impacts are assessed for each resource area discussed in Chapter 4. Waste volume estimates by type of waste are provided, and applicable requirements are discussed.

- **Accidents.** Scoping comments requested consideration of credible accident scenarios. Potential accident conditions are assessed in various sections in the GEIS. This includes considering a range of possible accidents and off-normal operating conditions and estimating and evaluating consequences including well field leaks and spills, excursions, processing chemical spills, and ion-exchange resin and yellowcake transportation accidents.

- **Environmental Justice.** A range of opinions was provided in scoping comments on environmental justice in the GEIS. Some commenters thought it should be included in the GEIS, and others thought it should not be included. Still others provided various suggestions on how to do the analysis. GEIS Chapter 6 discusses the potential for disproportionately high and adverse environmental and health impacts on minority and low income populations from future ISL licensing in the specified uranium milling regions.

- **Cumulative Impacts.** Scoping comments on cumulative impacts offered a number of suggestions for reasonably foreseeable future actions to be included in the GEIS, including coal bed methane operations and oil and gas development. GEIS Chapter 5 describes past, present, and reasonably foreseeable future actions in the uranium milling regions and evaluates which resource areas would be potentially impacted by both ISL facilities and the types of reasonably foreseeable future actions identified in the regions. Due to the complex and site-specific nature of a cumulative impact assessment, the

GEIS provides useful information for understanding the potential for cumulative impacts when licensing future ISL facilities in the milling regions, but does not make conclusions regarding cumulative impacts for specific sites.

- **Monitoring.** Scoping comments on monitoring recommended the GEIS discuss monitoring programs designed to assess impacts from operations and waste management practices. The GEIS discusses various monitoring techniques and programs (Chapter 2, Chapter 8) used to detect radiological and nonradiological contaminants within and beyond ISL facility boundaries. This discussion includes effluent monitoring, workplace radiological monitoring, groundwater monitoring to detect potential excursions, and environmental monitoring at the facility boundary.

- **Financial Assurance.** Scoping comments recommended the GEIS discuss bonding for complete restoration of groundwater and land. Requirements and practices designed to ensure companies engaged in ISL recovery have sufficient funds to close down operations, restore aquifers, decontaminate and decommission facilities, and reclaim lands are described in GEIS Section 2.10.

1.5.3 Issues Eliminated From Detailed Study

The analyses presented in this GEIS focus on potential impacts within the four geographic regions described in Section 1.1 and illustrated in Figure 1.1-1; they are not intended to provide a detailed assessment of any specific site. Yellowcake transportation from uranium mills to the uranium hexafluoride (UF_6) conversion facility in Metropolis, Illinois, is anticipated to be by truck over existing highways. Access roads may need to be constructed to bring the yellowcake from the mill to the state and national (interstate) highway system. The existing national transportation routes are not expected to be altered. Because the environmental impacts of national transportation of yellowcake uranium have been previously analyzed, they are not studied in detail within this GEIS (NRC, 1977, 1980). These previous studies evaluated potential impacts by applying conservative risk assessment methods and assumptions to yellowcake transportation under conditions that remain applicable to present-day transportation conditions (see Section 3.2.2).

1.5.4 Issues Outside of the Scope of the GEIS

NRC has determined that comments received on topics in the following areas are outside the scope of this GEIS:

- NRC licensing process and the decision to prepare the GEIS
- General support or opposition for GEIS or uranium milling
- Requests for cooperation or agreements
- Matters that are regulated by Agreement States
- Impacts associated with conventional uranium milling past or present
- Requests for compensation for past mining impacts

- Resolution of dual regulation issues
- Consideration of human-induced climate change
- Analysis of all variations of ISL technology
- Alternative sources of uranium feed material
- Expanded cumulative impact analysis
- Energy debate
- NRC credibility

A discussion of why NRC determined that comments in these topic areas were outside the scope of the GEIS is provided in the Scoping Summary Report (Appendix A of the GEIS).

1.6 Agencies Involved in Uranium ISL Facility Licensing

A variety of federal, tribal, state, and local agencies potentially have a role in licensing and permitting an ISL uranium facility. Specific statues and regulations that may be applicable for uranium ISL facilities are detailed in Appendix B.

1.6.1 Federal Agencies

1.6.1.1 NRC

NRC responsibilities include regulating the nuclear industry in a manner that

- Protects public health and safety;
- Protects the environment; and
- Protects and safeguards materials and nuclear facilities in the interest of national security.

NRC is the federal agency with lead responsibility in licensing and regulating uranium ISL facilities through the statutory requirements of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 and the Atomic Energy Act of 1954, as amended. In part, these statutes require that NRC ensure source material, as defined in Section 11z of the Atomic Energy Act and byproduct material, as defined in Section 11e.(2) of the Atomic Energy Act, is managed to conform with applicable regulatory requirements. Congress authorized the U.S. Environmental Protection Agency (EPA) to promulgate standards of general application for 11e.(2) material in Section 275 of the Atomic Energy Act. EPA standards of general application for 11e.(2) byproduct material were established in 40 CFR Part 192. The UMTRCA and the Atomic Energy Act also require that the generally applicable standards EPA promulgates for nonradiological hazards under UMTRCA be consistent with the standards EPA promulgates under the Solid Waste Disposal Act/Resource Conservation and Recovery Act for such hazards. NRC conforming regulations are in 10 CFR Part 40, Appendix A.

2.4.1 Uranium Mobilization

During ISL operations, chemicals, such as sodium carbonate/bicarbonate, ammonia, sulfuric acid, gaseous oxygen, and hydrogen peroxide, are added to the groundwater to produce a leaching solution or lixiviant. The lixiviant is injected into the production zone to mobilize (dissolve) uranium from the underground formation and subsequently remove uranium from the deposit.

2.4.1.1 Lixiviant Chemistry

The lixiviant that is selected must leach uranium from the host rock and keep it in solution during groundwater pumping from the host aquifer. Based on experience with conventional uranium milling, early ISL facilities tended to use aggressive acid-based lixiviants, such as sulfuric acid (International Atomic Energy Agency, 2001). These acid-based systems generally achieved high yield and efficient, rapid uranium recovery, but they also dissolved other heavy metals associated with uranium in the host rock and other chemical constituents that required additional remediation. In the United States, acid-based lixiviants have been used only for small-scale research and development operations [e.g., Nine Mile Lake and Reno Ranch in Wyoming (Mudd, 2001)], but have not been used in commercial operations (Davis and Curtis, 2007; International Atomic Energy Agency, 2005). Licensees or applicants may propose the use of acid-based lixiviants in the future. Other technologies that used ammonia-based lixiviants experienced difficulties: the ammonia tended to adsorb onto clay minerals in the subsurface. The ammonia desorbs slowly from the clay during restoration, and therefore the system requires that much larger amounts of groundwater be removed and processed during aquifer restoration (Energy Information Administration, 1995; Davis and Curtis, 2007). Although applicants or licensees may decide to use different lixiviants for a given deposit (see text box "Lixiviant Selection" in Section 2.4.1.2), ISL operations in the United States are expected to use alkaline lixiviants that are based on sodium carbonate-bicarbonate as the complexing agent and gaseous oxygen or hydrogen peroxide as the oxidizing agents (Table 2.4-1). All currently active and proposed ISL facilities in Wyoming, Nebraska, and New Mexico use alkaline-based lixiviants (NRC, 2006, 2004, 1998a, 1997a; Energy Metals Corporation, U.S., 2007a). Therefore, for the purposes of the analyses presented in this GEIS, it is assumed that alkaline lixiviants will be used in ISL uranium recovery operations.

Table 2.4-1. Typical Lixiviant Chemistry (From NRC*, 1998b)

Species	Range (in mg/L)†	
	Low	High
Sodium (Na)	≤400	6,000
Calcium (Ca)	≤20	500
Magnesium (Mg)	≤3	100
Potassium (K)	≤15	300
Carbonate (CO_3)	≤0.5	2,500
Bicarbonate (HCO_3)	≤400	5,000
Chloride (Cl)	≤200	5,000
Sulfate (SO_4)	≤400	5,000
Uranium (as U_3O_8)	≤0.01	500
Vanadium (as V_2O_5)	≤0.01	100
Total Dissolved Solids	≤1,650	12,000
pH (in std unit)	≤6.5	10.5

*NRC = U.S. Nuclear Regulatory Commission
†1 mg/L is approximately equal to 1 part per million (ppm)

The principal geochemical reactions caused by the lixiviant are the oxidation and subsequent dissolution of uranium and other metals from the ore body (Davis and Curtis, 2007). These reactions are effectively the reverse of those that initially caused the uranium deposition. The oxidant (oxygen or hydrogen peroxide) in the lixiviant oxidizes uranium from the relatively insoluble tetravalent state (U^{4+}) to the more soluble hexavalent state (U^{6+}). Once the uranium is in the 6+ oxidation state, the dissolved carbonate/bicarbonate causes the formation of aqueous uranyl-carbonate complexes that maintain oxidized uranium in solution as uranyl ion (UO_2^{2+}).

2.4.1.2 Lixiviant Injection and Production

Dissolved carbonate/bicarbonate lixiviants are created by introducing reagents such as sodium carbonate/bicarbonate or by injecting carbon dioxide gas (CO_2) into the groundwater. Carbon dioxide can also be added for pH control (Table 2.4-1). Lixiviant is pumped down injection wells to the mineralized zones, where it oxidizes and dissolves uranium from the sandstone formation (Figure 2.4-1). The uranium-bearing solution migrates through the pore spaces in the sandstone and is recovered by production wells. This uranium-rich (pregnant) lixiviant is pumped to the processing plant or satellite ion-exchange facility, where the uranium is extracted through a series of chemical processes. Stripped of its uranium, the now-barren lixiviant is recharged with carbonate/bicarbonate and oxidant, and the solution is returned through the injection wells to dissolve additional uranium. This process continues until the operator determines that further uranium recovery is uneconomical.

Lixiviant Selection

The geology and groundwater chemistry determine the proper leaching techniques and chemical reagents ISL milling uses for uranium recovery. For example, if the ore-bearing aquifer is rich in calcium (e.g., limestone or gypsum), alkaline (carbonate) leaching might be used [e.g., as discussed by Hunkin (1977)], acid systems were generally considered unsuitable for Texas deposits because of higher carbonate]. Otherwise, acid (sulfate) leaching might be preferable. The leaching agent chosen for the ISL operation may affect the type of potential contamination and vulnerability of aquifers during and after ISL operations.

For example, acid leaching ISL uranium recovery at Nine Mile Lake and Reno Ranch, Wyoming, presented two major problems: (1) gypsum precipitated on well screens and within the aquifer during uranium recovery, plugging wells and reducing the formation permeability (critical for economic operation) and (2) the precipitated gypsum gradually dissolved after restoration, increasing salinity and sulfate levels in groundwater (Mudd, 2001).

Typical ISL uranium recovery operations in the United States use an alkaline sodium bicarbonate system to remove the uranium from ore-bearing aquifers. Alkaline lixiviants are used in all currently active and proposed ISL facilities in Wyoming, Nebraska, and New Mexico (NRC, 2006, 2004, 1998a, 1997a; Energy Metals Corporation, U.S., 2007) (see Table 2.4-1). Alkaline-based ISL operations are considered to be easier to restore than acid mine sites (Tweeton and Peterson, 1981; Mudd, 1998).

During the uranium recovery process, the groundwater in the production zone becomes progressively enriched in uranium and other metals that are typically associated with uranium in nature. The most common metals are arsenic, selenium, vanadium, iron, manganese, and radium. These and other constituents such as chloride, which is introduced by the ion-exchange resin system, are removed or precipitated from the groundwater during aquifer restoration after uranium recovery is completed. Aquifer restoration is detailed in Section 2.5.

The production wells are normally positioned to pump pregnant lixiviant from a number of injection wells. After processing for the uranium but before reinjection below ground, about 1–3 percent of the lixiviant, called the production bleed, is removed from the circuit and disposed (see Section 2.7.2). The purpose of the production bleed is to ensure that more groundwater is extracted than re-injected. Maintaining this negative water balance helps to ensure that there is a net inflow of groundwater into the well field to minimize the potential movement of lixiviant and its associated contaminants out of the well field.

risk, NRC recommends that delivery trucks meet safety certifications and that drivers hold appropriate licenses (NRC, 1997).

As described in Mackin, et al. (2001, Section 4.5), the potential radiological impacts associated with yellowcake transportation are SMALL.

Ion Exchange Resin Transport: Sites that include remote ion exchange processing will transport loaded ion exchange resins (usually by sole-use trucks) from the remote ion exchange processing sites to a central processing facility (one truck per day, 7 days per week). The radiological impacts of these shipments are expected to be lower than estimated risks from the finished yellowcake product because (1) ion exchange resins are less concentrated {about 50 g/L [0.009 oz/gal]} than yellowcake and therefore will contain less uranium per shipment than a yellowcake (about 85 percent uranium by weight) shipment, (2) the uranium in ion exchange resins is chemically bound to the resins; therefore, it is less likely to spread and easier to remediate in the event of a spill or release of shipped material, and (3) while the shipment distance for remote ion exchange varies for each ISL site, the total annual distance traveled by ion-exchange shipments is normally less than the same for yellowcake shipments. The NRC regulations at 10 CFR Part 71 and the incorporated U.S. Department of Transportation regulations for shipping ion exchange resins, which are enforced by NRC onsite inspections, also provide confidence that safety will be maintained and the potential for environmental impacts would be SMALL.

Radioactive Waste Transportation: Operational 11e.(2) byproduct wastes (as defined in the Atomic Energy Act of 1954, as amended) can be shipped offsite by truck for disposal at a licensed disposal site (Section 2.8). All radioactive waste shipments are shipped in accordance with the applicable NRC requirements in 10 CFR Part 71 and U.S. Department of Transportation requirements in 49 CFR Parts 171–189. Risks from transporting yellowcake shipments during operations bound the risks expected from waste shipments, owing to the concentrated nature of shipped yellowcake, the longer distance yellowcake is shipped relative to waste destined for a licensed disposal facility, and the relative number of shipments for each type of material. Therefore, impacts from transporting ISL facility byproduct wastes would be SMALL.

Hazardous Chemical Transportation: The number of operational chemical supply shipments is discussed in Section 2.8 (one facility reported 272 bulk chemical shipments per year). These shipments must follow U.S. Department of Transportation hazardous materials shipping regulations and requirements. Spill responses would be similar to the aforementioned for yellowcake transportation, although a spill of nonradiological materials is reportable to the appropriate state agency, the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Transportation. The Occupational Safety and Health Administration sets worker exposure limits for these chemicals. Mackin, et al. (2001) concluded that the risks associated with handling and transporting hazardous chemicals can be minimized by using accepted codes and standards and compliance with Occupational Safety and Health Administration Standards. The consequences of a chemical transportation incident, however, if it were to occur in a populated area, could have significant impacts. A chemical transportation incident at the ISL facility could also affect the impacts associated with radiological processes carried out at an ISL facility. However, given the precautions taken with such materials, the likelihood of an incident in a populated area is considered low and therefore the overall risk of a high consequence accident is considered small. As a result of the low frequency of shipments (<1 per day) and the low risk of high consequence accidents, the potential environmental

compared to the regional traffic counts provided in Section 3.4.2, most roads that would be used for construction transportation in the Nebraska-South Dakota-Wyoming Uranium Milling Region would not cause significant increases in daily traffic, and therefore traffic-related impacts would be SMALL. The roads with the lowest average annual daily traffic counts would have higher (MODERATE) traffic and potential infrastructure impacts, in particular, when facilities are experiencing peak (construction) employment. The limited duration of ISL construction activities (12–18 months) suggests impacts would be of short duration. Temporary SMALL to MODERATE dust, noise, and incidental livestock or wildlife impacts are possible on, or in the vicinity of, access roads used for construction transportation.

4.4.2.2 Operations Impacts to Transportation

The discussion of impacts in Section 4.2.2.2 for the Wyoming West Uranium Milling Region also applies to the Nebraska-South Dakota-Wyoming Uranium Milling Region because the same types of transportation activities would be conducted regardless of location, the same regulatory controls and safety practices apply, the same magnitude of transportation activities would be conducted, and the assessment of accident risks is generally applicable to all regions. Applicable transportation conditions for the Nebraska-South Dakota-Wyoming Uranium Milling Region are discussed in Section 3.4.2. With the magnitude of existing traffic conditions in the region somewhat less than in the other milling regions, the intensity of traffic-related impacts would be similar and range from SMALL to MODERATE considering potential peak employment commuting impacts to low traffic roads. The methods and assumptions considered in the accident analysis in Section 4.2.2.2 (Wyoming West Uranium Milling Region) for yellowcake shipments are applicable to the Nebraska-South Dakota-Wyoming Uranium Milling Region, and therefore the impact from yellowcake, resin transfer, and byproduct waste shipments would be similar (SMALL). The same practices and requirements that serve to limit the risks from chemical shipments also apply to the Nebraska-South Dakota-Wyoming Uranium Milling Region and would also result in SMALL impacts.

4.4.2.3 Aquifer Restoration Impacts to Transportation

Aquifer restoration transportation impacts are expected to be less than those described for construction and operations because transportation activities will be primarily limited to supplies (including chemicals), chemical waste shipments, onsite transportation, and employee commuting. No additional unique transportation activities are expected during aquifer restoration; therefore, no additional types of impacts associated with aquifer restoration are anticipated and impacts would be SMALL to MODERATE.

4.4.2.4 Decommissioning Impacts to Transportation

Decommissioning 11e.(2) byproduct wastes (as defined in the Atomic Energy Act) can be shipped offsite by truck for disposal at a licensed disposal site. Section 2.8 provides estimates of the number of decommissioning-related waste shipments, which are small compared to average annual daily traffic counts provided in Section 3.4.2. All radioactive waste shipments must be shipped in accordance with the applicable NRC safety requirements in 10 CFR Part 71. As shown in Section 2.8, the number of estimated decommissioning waste shipments is fewer than those needed to support facility operations, and therefore potential traffic and accident impacts are expected to decrease during the decommissioning period. Risks from transporting yellowcake shipments during operations bound the risks expected from waste shipments owing

7 POTENTIAL BEST MANAGEMENT PRACTICES, MITIGATION MEASURES, AND MANAGEMENT ACTIONS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

7.1 Introduction

This chapter describes potential best management practices, mitigation measures, and management actions that a licensee or facility operator might use to reduce potential adverse impacts associated with construction, operation, aquifer restoration, and decommissioning of an *in-situ* leach (ISL) milling facility. The Council on Environmental Quality (CEQ) defines mitigation as (40 CFR 1508.20):

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Potential mitigation measures can include general best management practices and more site-specific management actions.

How Are Adverse Impacts Mitigated?

Best Management Practices are techniques, methods, processes, activities, or incentives that are more effective at delivering a particular outcome. Best management practices can also be defined as efficient and effective ways of meeting a given objective based on repeatable procedures that have proven themselves over time. Well-designed best management practices combine existing managerial and scientific knowledge with knowledge about the resource being protected. The Wyoming Department of Environmental Quality (WDEQ) defines best practicable technology as "A technology based process determined by WDEQ as justifiable in terms of existing performance and achievability (in relation to health and safety) which minimizes, to the extent safe and practicable, disturbances and adverse impacts of the operation on human or animal life, fish, wildlife, plant life and related environmental values." (WDEQ, 2007).

Management Actions are active measures a licensee or facility operator implements to reduce potential adverse impacts to a specific resource area. These site-specific actions are sometimes related to environmental (or adaptive) management systems (CEQ, 2007).

7.2 Best Management Practices

Best management practices are processes, techniques, procedures, or considerations that can be used to cost-effectively avoid or reduce the potential environmental impacts. While best management practices are not regulatory requirements, they can overlap and support such requirements. Best management practices would not replace any U.S. Nuclear Regulatory Commission (NRC) requirements or other local, state, or federal regulations.

7.3 Management Actions

Management actions are those that the licensee specifically implements to reduce potential adverse impacts. These actions include compliance with applicable government agency

stipulations or specific guidance, coordination with government agencies or interested parties, and monitoring of relevant ongoing and future activities. If appropriate, corrective actions could be implemented to limit the degree or magnitude of a specific action leading to an adverse impact (reducing or eliminating the impact over time by preservation and maintenance operations) and repairing, rehabilitating, or restoring the affected environment.

Licensees may also minimize potential adverse impacts through specific management actions. These may be part of a broad, more formalized environmental (or adaptive) management system similar to those described in CEQ (2007), or they may be more focused on a particular impact. In establishing management actions, the licensee should create measurable environmental objectives with measurable goals and targets (for example, pollution prevention goals for reducing waste). The licensee then would implement these programs, procedures, and controls for monitoring and measuring progress; document progress; and, if appropriate, institute corrective actions. These management actions may be established through standard operating procedures that are reviewed and approved by the appropriate local, state, or federal agency (including NRC). NRC may also establish requirements for management actions by identifying license conditions. These conditions are written specifically into the NRC source and byproduct material license and then become commitments that are enforced through periodic NRC inspections. As part of this oversight, the NRC staff evaluates violations of specific license commitments to determine their impact on safety and the environment. Depending on significance, NRC may levy a written notice of violation and, in certain circumstances, a civil penalty such as a fine. In no case will licensees who cannot achieve and maintain adequate levels of safety be permitted to continue to conduct NRC-licensed activities. Specific aspects of inspection and enforcement of the terms and conditions of an NRC license for an ISL facility can only be addressed at the site-specific levels, and each enforcement action is dependent on the circumstances of the case. In addition, licensees will be subject to requirements and inspections associated with other necessary permits issued by other state and federal agencies for an ISL facility (see Sections 1.6 and 1.7).

The management actions should specifically describe how mitigation commitments would be implemented and reflect available information about these actions. In an environmental management system approach, planned mitigation actions can be revised as more specific and detailed information becomes available. Typically, monitoring activities could be conducted during all phases of the project to ensure the mitigation of potential adverse impacts.

7.4 Potential Best Management Practices, Management Actions, and Mitigation Measures

Potential best management practices and mitigation measures that are commonly used to minimize potential adverse impacts are listed in Table 7.4-1. The list is based on historical best management practices and mitigation measures used for existing and planned ISL uranium recovery facilities (NRC, 1997, 1998, 2006a,b; Energy Metals Corporation, U.S., 2007; WDEQ, 2007). The list in Table 7.4-1 is not comprehensive and does not imply that NRC endorses these measures. Because the practices, actions, and measures identified in Table 7.4-1 have been developed for a broad geographic area, each practice or mitigation measure described in the table may not apply to a specific project. The list provides a foundation for developing customized management and mitigation plans for a proposed facility or project.

Table 7.4-1. Summary of Potential Best Management Practices and Management Actions

Environmental Resource	Potential Best Management Practices and Management Actions
Land use	• Limit land disturbance to only what is necessary for operation. • Conduct historic and cultural resource surveys prior to land disturbance. • Conduct ecological resource surveys prior to land disturbance. • Reclaim lands disturbed during the construction process. • Decontaminate and decommission facilities. • Reclaim lands disturbed by surface facilities no longer needed. • Plug and abandon wells.
Transportation	• Use dedicated tanker trucks for transporting uranium-loaded and barren resins from satellite facilities. • Use accepted industry codes and standards for handling and transporting hazardous chemicals. • Maintain shipping records (bill of lading) to identify nature and quantity of shipped materials. • Conduct surveys of truck exterior and cab prior to each shipment of yellowcake or resin. • Establish an emergency response plan for yellowcake spill and other potential transportation accidents. • Implement safe driving and emergency response training for personnel and truck drivers. • Use check-in/check-out or global positioning satellite technology to track shipments. • Install communication systems to connect trucks to shipper/receiver/emergency responders.
Geology and soils	• Use structures to temporarily divert and/or dissipate surface runoff from undisturbed areas around the disturbed areas. • Retain sediment within the disturbed areas by using silt fencing, retention ponds, and hay bales. • Salvage and stockpile topsoil from the central plant facility area and from well field access roads so that wind and/or water erosion can be avoided (e.g., graded stockpiles, temporary vegetative cover, fencing and signs, sedimentation catchments). • Fill pipeline and cable trenches with excavated rock and soil soon after completion and regrade to surrounding topography. • Reestablish temporary or permanent native vegetation as soon as possible after disturbance. • Construct roads to minimize erosion (e.g., surface with a gravel road base, construct stream crossings at right angles with adequate embankment protection and culvert installation, and provide adequate road drainage with runoff control structures and revegetation). • Implement a spill prevention and cleanup plan to minimize soil contamination. • Collect and monitor soils and sediments for potential contamination including areas used for land application of treated waste water, transport routes for yellowcake and ion exchange resins, and well field areas where spills or leaks are possible.

Table 7.4-1. Summary of Potential Best Management Practices and Management Actions (continued)

Environmental Resource	Potential Best Management Practices and Management Actions
Surface water	• Follow construction practices to reduce potential impacts as defined by the U.S. Army Corps of Engineers permitting process. • Minimize disturbance of surface areas and vegetation, which would minimize changes in surface-water flow and soil porosity that would change infiltration and runoff rates. • Minimize physical changes to drainage channels by building bridges or culverts where roadways would intersect areas of intermittent water flow. • Use erosion and runoff control features such as proper placement of pipe, grading to direct runoff away from water bodies, and use of riprap at these intersections to make bridges or culverts more effective. • Use sediment-trapping devices such as hay or straw bales, fabric fences, and devices to control water flow and discharge to trap sediments moved by runoff. • Maintain natural contours as much as possible, stabilize slopes, and avoid unnecessary off-road vehicle travel to minimize erosion. • Train employees in the handling, storage, distribution, and use of hazardous materials. • Conduct fueling operations and store hazardous materials and other chemicals in bermed areas with proper set back distances from water bodies. • Provide rapid response cleanup and remediation capability, techniques, procedures, and training for potential spills. • Prepare and implement a Storm Water Pollution Prevention Plan consistent with state and federal standards for construction activities. • Implement a spill prevention and cleanup plan to minimize soil contamination. • Conduct land application of treated waste water activities in a manner consistent with local climate, soil, and vegetation conditions to ensure excess irrigation does not run off into surface water.
Groundwater	• Recycle water collected in subsurface areas for use in dust suppression and other activities. • Implement measures to minimize water use during operations. • Minimize surface disturbance, which will minimize changes in surface-water flow and subsequent infiltration. • Implement a spill prevention and cleanup plan to minimize soil contamination. • Provide rapid response cleanup and remediation capability, techniques, procedures, and training for potential spills. • Monitor to detect and define unanticipated surface spills, releases, or similar events that may infiltrate into the groundwater system. • Manage water balance to ensure hydraulic flow into production zone. • Monitoring well pressures to detect leaks. • Install monitoring wells in well field and near surface impoundments to monitor for potential lixiviant that travels beyond the production zone or for process solution leaks from impoundments. • Manage pumping and injection to control and recover excursions. • Monitor closest private domestic, livestock, and agricultural wells as appropriate during operations.

Table 7.4-1. Summary of Potential Best Management Practices and Management Actions (continued)

Environmental Resource	Potential Best Management Practices and Management Actions
Ecology	• Use measures to control erosion, dust, and particulates that may affect ecological resources from construction, operation, aquifer restoration, and decommissioning. • Use dust suppression measures to minimize wind and other erosion and aid recovery on disturbed areas. • Conduct pre-construction surveys to evaluate important ecological resources and habitats and to determine the reclamation potential of sites. • Implement measures to relocate or avoid sensitive species. • Minimize groundbreaking or land-clearing activities during the critical nesting period for migratory birds. • Collect data to plan to restore disturbed areas and minimize impacts to sensitive habitats before ground-disturbing activities. • Phase construction to the extent practicable. • Limit grading activities to the phase immediately under construction, and limit ground disturbance to areas necessary for project-related construction activities. • Revegetate with appropriate native species to minimize potential for invasive species. • Use weed control as necessary.
Air quality	• Reduce fugitive dust emissions using standard dust control measures (e.g., water application, speed limits). • Reduce maximum fugitive dust by coordinating dust-producing activities. • Use fossil-fuel vehicles that meet applicable emission standards. • Reclaim or re-vegetate disturbed areas. • Reduce diesel particulate matter emissions using measures such as particle traps and other technological or operational methods. • Ensure that diesel-powered construction equipment is properly tuned and maintained. • Use ultra-low sulfur diesel fuel. • Use newer, cleaner equipment. • Avoid leaving equipment unnecessarily idling or operating.
Noise	• Avoid construction activities at night. • Use sound controls on operating equipment and facilities. • Use personal hearing protection for workers in high noise areas.
Historic and cultural resources	• Consult with appropriate state and tribal historic preservation officers. • Ensure that onsite employees complete cultural resource sensitivity and protection training to reduce the potential for intentional or accidental harm to sites or artifacts. • Conduct pre-construction surveys to ensure that work would not affect important archaeological resources. • Develop additional mitigation measures such as documenting and collecting resources according to a cultural resource management plan if construction threatens important archaeological resources and modification or relocation of facilities and roads is not feasible.

Table 7.4-1. Summary of Potential Best Management Practices and Management Actions (continued)

Environmental Resource	Potential Best Management Practices and Management Actions
Visual and Scenic	• Use exterior lighting only where needed to accomplish facility tasks. • Limit the height of exterior lighting units. • Use shielded or directional lighting to limit lighting only to areas where it is needed.
Socioeconomics	• Purchase materials from local vendors as appropriate. • Hire local employees and contractors.
Occupational and public health and safety	• Use ventilation to keep radon levels as low as is reasonably achievable. • Use vacuum dryers, bag filters, and vapor filtration to reduce particulate emissions during yellowcake drying. • Use high-efficiency particulate air filters or similar controls for particulates. • Use personal monitoring devices and respirators as appropriate. • Design task procedures to reduce potential accidents. • Implement health and safety procedures and administrative controls to minimize worker risks during construction and operations.
Waste and hazardous materials	• Recycle wastewater to reduce the amount of water needed for facilities and the amount of wastewater that could require disposal. • Use decontamination techniques that reduce waste generation. • Institute preventive maintenance and inventory management programs to minimize waste from breakdowns and overstocking. • Recycle nonradioactive materials where appropriate. • Encourage the reuse of materials and use of recycled materials. • Avoid using hazardous materials when possible. • Develop a spill prevention plan for petroleum products and other hazardous materials. • Ensure that equipment is available to respond to spills, and identify the location of such equipment. • Inspect and replace worn or damaged components. • Salvage extra materials and use them for other construction activities or for regrading activities.
Utilities, energy, and materials	• Implement procedures and equipment that would minimize the use of utility services, energy, and materials. • Incorporate high-performance and sustainable building criteria into the design and construction of nonnuclear facilities.

7.5 References

CEQ. "Aligning National Environmental Policy Act Processes With Environmental Management Systems. A Guide for NEPA and EMS Practitioners." Washington, DC: CEQ. April 2007.

Energy Metals Corporation, U.S. "Application for USNRC Source Material License Moore Ranch Uranium Project, Campbell County, Wyoming: Environmental Report." Casper, Wyoming: Energy Metals Corporation, U.S. [ADAMS Accession Number: ML072851249] September 2007.

NRC. "Environmental Assessment for the Addition of the Reynolds Ranch Mining Area to Power Resources, Inc.'s Smith Ranch/Highlands Uranium Project Converse County, Wyoming." Source Material License No. SUA–1548. Docket No. 40-8964. Washington, DC: NRC. November 2006a.

NRC. "Environmental Assessment for Amendment to Source Materials License SUA-56: Ground Water Alternate Concentration Limits, Western Nuclear, Inc. Split Rock Uranium Mill Tailings Site, Jeffrey City, Fremont County, Wyoming." Source Materials License SUA–56. Docket No. 40-1162. Washington, DC: NRC. August 2006b.

NRC. "Environmental Assessment for Renewal of Source Material License No. SUA–1534. Crow Butte Resources Incorporated Crow Butte Uranium Project Dawes County, Nebraska." Docket No. 40-8943. Washington, DC: NRC. February 1998.

NRC. NUREG–1508, "Final Environmental Impact Statement To Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico." Washington, DC: NRC. February 1997.

WDEQ. "Guideline No. 4: *In-Situ* Mining." Cheyenne, Wyoming: WDEQ, Land Quality Division. 2007. <http://deq.state.wy.us/lqd/guidelns/Guide4=3-00.pdf> (18 December 2007).

PUBLIC COMMENTS ON THE DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT AND NRC RESPONSES

G1 OVERVIEW

On July 28, 2008, the U.S. Nuclear Regulatory Commission (NRC) staff published a notice in the *Federal Register* requesting public review of and comment on the Draft Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities (GEIS) (73 FR 43795) in accordance with Title 10, Parts 51.73, 51.74, and 51.117 of the *U.S. Code of Federal Regulations* (10 CFR 51.73, 51.74, and 51.117). The NRC staff initially established October 7, 2008, as the deadline for submitting public comments on the Draft GEIS. The NRC staff subsequently extended this deadline to November 7, 2008 (73 FR 57687). More than 1,650 comment documents (i.e., letters, facsimiles, and e-mails) were submitted to NRC. In addition, oral comments were received from approximately 158 individuals who spoke at the eight public meetings on the GEIS.

G2 PUBLIC PARTICIPATION

Public participation is an essential part of the NRC environmental review process. This section discusses the process for public participation during the NRC staff's development of the GEIS.

The NRC conducted an open, public GEIS development process consistent with the requirements of the National Environmental Policy Act of 1969 (NEPA) and the NRC's regulations. The NRC held three public scoping meetings early in the GEIS development process and eight public meetings to receive comments on the draft GEIS. Including extensions, the time period for agencies and the public to provide scoping comments to NRC on the GEIS was 129 days. NRC provided a 103-day public comment period, again including extensions, for agencies and the public to review the draft GEIS and provide comments. The GEIS addresses the nearly 2,200 comments the NRC staff identified from letters, facsimile transmittals, and e-mails received from more than 1,350 individuals and from oral comments given by approximately 158 individuals.

G2.1 Notice of Intent To Develop the GEIS

The NEPA public scoping process begins with publication of a notice of intent (NOI) in the *Federal Register*. The NRC staff published its NOI regarding preparation of the GEIS on July 24, 2007.

G2.2 Public Scoping

The NRC public scoping process for the GEIS began on July 24, 2007, with the publication in the Federal Register (72 FR 40344) of the NOI to prepare a GEIS. As part of this process, NRC conducted public scoping meetings to solicit both oral and written comments from interested parties on the scope of the GEIS. In addition to the description in the NOI in the aforementioned *Federal Register* notice, the scoping meetings were also advertised in local newspapers. During these meetings, the NRC staff briefly described the NRC's role and mission and its environmental and safety review processes and discussed how the public could effectively participate in the environmental review process. The remainder of each meeting was reserved for attendees to make oral comments. Table G2.2-1 lists these public scoping meetings.

Table G2.2-1 Public Scoping Meetings on the GEIS	
Date	**Location**
August 07, 2007	Casper, Wyoming
August 09, 2007	Albuquerque, New Mexico
September 27, 2007	Gallup, New Mexico

Scoping is an early and open process designed to achieve the following objectives:

- Determine the range of actions, alternatives, and potential impacts to be considered in the GEIS.
- Identify issues of concern to the general public.
- Identify significant issues for future analysis regarding the proposed action.
- Solicit information from the public and other stakeholders to more clearly focus the analysis on issues of genuine concern.
- Ensure that concerns are identified early and are properly studied.
- Identify alternatives to be examined.
- Eliminate issues not warranting detailed analysis.

G2.3 Issuance and Availability of the GEIS

On July 28, 2008, in accordance with NRC regulations, the NRC published a Notice of Availability of the draft GEIS in the *Federal Register* (73 FR 43795). In the notice, the NRC staff provided information on how to obtain a copy of the GEIS. Additionally, copies of the draft GEIS were mailed to approximately 100 individuals including federal, tribal, state, and local government officials as well as members of the general public. An electronic version of the document and supporting information was made accessible through the NRC's project-specific website (www.nrc.gov/materials/uranium-recovery/geis/pub-involve-process.html) and through NRC's Agencywide Documents Access and Management System (ADAMS) database on the NRC's website (http://www.nrc.gov/reading-rm/adams.html).

G2.4 Public Comment Period

In the publication of the Notice of Availability of the draft GEIS on July 28, 2008 (73 FR 43795), the NRC staff stated that the public comments on the draft GEIS should be submitted by October 7, 2008, and notified the public of the dates, times, and locations for the eight public comment meetings. Members of the public were invited and encouraged to submit related comments using an electronic comment form available on the NRC website and comments were also accepted via e-mail and the regular mail and orally at the public meetings held on the draft GEIS. On October 3, 2008, the NRC staff extended the public comment period to November 7, 2008 (73 FR 57687), in response to public requests for extension received at the public meetings and in submitted comment letters and e-mails. The 103-day period for public comment (i.e., from July 28, 2008 to November 7, 2008) exceeds the minimum 45-day comment

period required under NRC regulations. By letter, facsimile, and e-mail, approximately 1,350 individuals submitted nearly 2,200 individual comments on the GEIS.

G2.5 Public Comment Meetings

To facilitate public input on the draft GEIS, the NRC scheduled a series of public meetings at various locations in the regions where applications for future ISL milling are possible. The meeting locations were based, in part, on the availability of appropriate venues near locations where future ISL milling facilities may be located based on notices of intent received by the NRC from companies expecting to submit future ISL facility license applications. Table G2.5-1 provides the date and locations for each of the eight public comment meetings. The meetings were advertised in local and regional newspapers and in a nationwide press release issued on July 28, 2008 (NRC, 2008). Meeting attendance varied at each location from about 20 to about 150 individuals. A transcriber was present at each public meeting so the comments could be recorded. Full transcripts of each meeting are available on the NRC website. Each transcript is part of the public record of the GEIS, and all transcripts were used to identify individual public comments that are included in comment summaries in this appendix.

Table G2.5-1. Public Comment Meetings on the Draft GEIS

Date	Location
August 25, 2008	Spearfish, South Dakota
August 27, 2008	Chadron, Nebraska
August 29, 2008	Newcastle, Wyoming
September 08, 2008	Gallup, New Mexico
September 09, 2008	Grants, New Mexico
September 11, 2008	Albuquerque, New Mexico
September 23, 2008	Gillette, Wyoming
September 25, 2008	Casper, Wyoming

G2.6 References

NRC. "NRC Seeks Public Comment on Generic Environmental Study of *In-Situ* Leach Uranium Recovery Operations." *NRC News*, No. 08-139. 2008. <http://www.nrc.gov/reading-rm/doc-collections/news/2008/08-139.html> (9 February 2009).

G3 COMMENTS RECEIVED ON THE DRAFT GEIS

As discussed previously, the NRC staff received both oral and written comments on the draft GEIS during the comment period. The NRC staff identified nearly 2,200 comments from reviewing the more than 1,650 letters, facsimiles, and e-mails received; the transcripts of 158 formal commenters at the public meetings; and the transcripts of audience members who provided informal comments and questions to NRC at the public meetings. Informal comments refer to those that were not part of the designated public comment portion of the meeting, but were made at other times during the meeting. Each of these comments has been included in the following comment summaries and addressed in the responses provided.

G3.1 Comment Review Methods

Each comment was individually identified and responded to using a systematic approach. This approach involved identification of individual comments from the source documents, consolidation of comment information into a database, sorting of all comments by topic, and distribution to and review of all comments by the GEIS authors.

Comment documents included e-mails, comment letters, and meeting transcripts for those comments provided orally at public meetings. A numbering system was used to uniquely identify individual commenters and their unique comments within each comment document. Each e-mail or comment letter received by NRC was given a unique number based on the order in which the documents were received. E-mailed comment letters were automatically assigned numbers by the e-mail system when they were received, whereas letters received by facsimile or regular mail were manually assigned a unique consecutive number beginning with the letters HC (for "hard copy") to avoid duplication of numbers with e-mailed comment letters. Because the majority of these letters was sent by individuals, the comment document number also uniquely identifies the commenter, but commenters who submitted multiple comment letters or spoke at multiple meetings have multiple identification numbers (one for each document that contains their comments). For e-mails and letters signed by multiple individuals, a unique group number was assigned to allow identification of all the individuals associated with that letter's comments, but the unique letter identification number was still used to associate the comments with the source document.

Meeting transcripts required a modified identification approach where each meeting transcript was assigned a two-letter identification code associated with the meeting location. Meeting location identification codes used are listed in Table G3.1-1.

For all comment documents (i.e., e-mails, facsimiles, letters, transcripts), staff reviewed each individual comment document and identified, marked, and consecutively numbered individual unique comments in each document. Comment numbers follow a two-part numbering system separated by a hyphen. The part of the comment number to the left of the hyphen is either the unique identification number for an e-mail or hard copy letter (e.g., 001 for the first e-mail received; HC001 for the first letter sent by mail), or the meeting location code paired with a two-digit commenter identification number for comments identified from meeting transcripts (e.g., GR01 for the first commenter at the Grants, New Mexico, public meeting, GR02 for the second commenter at that meeting, and so forth). The number to the right of the hyphen is a consecutive unique count number for each comment identified in a specific comment document regardless of type. Tables G3.1-2 and G3.1-3 provide lists of all commenter names and affiliations by identification number and all identification numbers by commenter names, respectively. Table G3.1-4 identifies individuals who are associated with comment letters that were signed by multiple individuals and their unique group name (group name is used to associate multiple individuals to a single comment letter that is assigned a single identification number). These tables can be used by readers to electronically search the report to locate comments submitted by specific individuals or to find individuals associated with comments described in Section G.5.

Additionally, nearly 1,500 form letters were received from members of the public. Because all of these contained the same comment, they were addressed as one comment in the comment response report. These individuals are captured in Table G3.1-5.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-1910
Supplement 4, Vol. 1

Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota

Supplement to the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities

Final Report

Chapters 1 to 5

Manuscript Completed: January 2014
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Office of Federal and State Materials and
Environmental Management Programs

EXECUTIVE SUMMARY

BACKGROUND

By letter dated August 10, 2009, Powertech (USA), Inc. (Powertech) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for a new source material license for the Dewey-Burdock *In-Situ* Uranium Recovery Project, located in Fall River and Custer Counties, South Dakota. The applicant is proposing to recover uranium using the *in-situ* leach (ISL) [also known as *in-situ* recovery (ISR)] process. The proposed Dewey-Burdock ISR Project will include processing facilities and sequentially developed wellfields sited in two contiguous areas, the Burdock area and the Dewey area. Proposed facilities include a central processing plant in the Burdock area, a satellite facility in the Dewey area, wellfields, Class V deep injection wells and/or land application areas for disposal of liquid wastes, and the attendant infrastructure (e.g., pipelines and surface impoundments).

The Atomic Energy Act of 1954 (AEA), as amended by the Uranium Mill Tailings Radiation Control Act of 1978, authorizes NRC to issue licenses for the possession and use of source material and byproduct material. These statutes require NRC to license facilities, including ISR operations, in accordance with NRC regulatory requirements to protect public health and safety from radiological hazards. Under the NRC environmental protection regulations in 10 CFR Part 51, which implement the National Environmental Policy Act of 1969 (NEPA), preparation of an environmental impact statement (EIS) or supplement to an EIS is required for issuance of a license to possess and use source material for uranium milling [10 CFR 51.20(b)(8)].

In May 2009, the NRC staff issued NUREG–1910, the Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities (herein referred to as the GEIS) (NRC, 2009). In the GEIS, NRC assessed potential environmental impacts from the construction, operation, aquifer restoration, and decommissioning of an ISR facility located in four specified geographic regions of the western United States. The proposed Dewey-Burdock ISR Project is located within the Nebraska-South Dakota-Wyoming Uranium Milling Region identified in the GEIS. The GEIS provides a starting point for NRC NEPA analyses for site-specific license applications for new ISR facilities, as well as for applications that amend or renew existing ISR licenses. This Supplemental EIS (SEIS) incorporates by reference information from the GEIS and also uses information from the applicant's license application and other independent sources to fulfill the requirements set forth in 10 CFR 51.20(b)(8).

This SEIS includes the NRC staff analysis that considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures to either reduce or avoid adverse effects. It also includes the NRC staff's recommendation regarding the proposed action.

This SEIS was prepared in cooperation with the U.S. Bureau of Land Management (BLM). BLM has requested to be and is acting as a cooperating agency with NRC to evaluate the impacts of Powertech's Plan of Operations in accordance with the National Memorandum of Understanding with NRC. BLM manages 97 ha [240 ac] of land within the proposed Dewey-Burdock ISR Project area. Under 43 CFR Part 3809, BLM is required to review the environmental impacts of federal actions on surface lands to assure that there is no "unnecessary or undue degradation of public lands." To fulfill this requirement, the applicant submitted a Plan of Operations to BLM for the Dewey-Burdock ISR Project on August 26, 2009. Powertech modified the Plan of Operations and resubmitted it to BLM on January 28, 2011.

PURPOSE AND NEED FOR THE PROPOSED ACTION

NRC regulates uranium milling, as defined in 10 CFR 40.4, including the ISR process, under 10 CFR Part 40, "Domestic Licensing of Source Material." The applicant is seeking an NRC source material license to authorize commercial-scale ISR uranium recovery at the proposed Dewey-Burdock ISR Project. The purpose and need for the proposed federal action is to either grant or deny the applicant a license to use ISR technology to recover uranium and produce yellowcake at the proposed project site. Yellowcake is the uranium oxide product of the ISR milling process used to produce various products including fuel for commercially operated nuclear power reactors.

This definition of purpose and need reflects the Commission's recognition that, unless there are findings in either the AEA-required safety review or in the NEPA environmental analysis that would lead NRC to reject a license application, NRC has no role in a company's business decision to submit a license application to operate an ISR facility at a particular location.

The BLM purpose and need for the proposed action is to provide for orderly, efficient, and environmentally responsible mining of the uranium resource. The uranium resource is needed to fulfill market demands for this product for power generation and other needs. These public lands are open to mineral entry, and the applicant has filed mining claims on them. Within the proposed project area, Powertech maintains the mining claims associated with 1,708 ha [4,220 ac] of federal land that the U.S. Government reserved under the Stock-Raising Homestead Act. The BLM federal decision is to either approve the Powertech-modified Plan of Operations subject to mitigation included in the license application and this SEIS, or deny approval of the Plan of Operations. BLM's responsibility to respond to the Plan of Operations establishes the need for the action. The mining claimant has the right to mine and develop the mining claims as long as it can be done without causing unnecessary or undue degradation of the public lands and follows pertinent laws and regulations under 43 CFR Part 3800.

THE PROJECT AREA

The proposed Dewey-Burdock ISR Project is located in Custer and Fall River Counties, South Dakota, within the Great Plains physiographic province on the edge of the Black Hills uplift. The proposed site is located approximately 21 km [13 mi] north-northwest of the city of Edgemont, approximately 64 km [40 mi] west of the city of Hot Springs, and approximately 80 km [50 mi] southwest of the city of Custer. The total land area of the proposed Dewey-Burdock Project is 4,282 ha [10,580 ac]. Sections within the proposed project area are split estate, in which two or more parties own the surface and subsurface mineral rights. The surface rights are both publicly and privately owned. Approximately 4,185 ha [10,340 ac] of land is privately owned, and the remaining 97 ha [240 ac] of surface rights are owned by the U.S. Government and administered by BLM. The subsurface mineral rights are owned by various private entities and federally reserved by the U.S. Government.

The proposed Dewey-Burdock ISR Project will consist of processing facilities and sequentially developed wellfields in two contiguous areas: the Burdock area and the Dewey area. Planned facilities associated with the proposed project include buildings associated with a central processing plant in the Burdock area and a satellite facility in the Dewey area; surface impoundments; wellfields and their associated infrastructure (e.g., wells, header houses, and pipelines); Class V deep injection wells and/or land application areas for disposal of liquid wastes; and access roads. The applicant estimated that the land surface area that will be

affected by proposed ISR operations will be approximately 98 ha [243 ac] if Class V deep injection wells alone are used to dispose of process-related liquid wastes and approximately 566 ha [1,398 ac] if land application alone is used to dispose of liquid wastes.

IN-SITU RECOVERY PROCESS

During the ISR process, an oxidant-charged solution, called a lixiviant, is injected into the production zone aquifer (uranium orebody) through injection wells. Typically, a lixiviant uses native groundwater (from the production zone aquifer), carbon dioxide, and sodium carbonate/bicarbonate, with an oxygen or hydrogen peroxide oxidant. As the lixiviant circulates through the production zone, it oxidizes and dissolves the mineralized uranium, which is present in a reduced chemical state. The resulting uranium-rich solution is drawn to recovery wells by pumping and then transferred to a processing facility via a network of pipelines, which may be buried just below the ground surface. At the processing facility, the uranium is removed from solution (typically via ion exchange). The resulting barren solution is then recharged with the oxidant and reinjected to recover more uranium.

During production, the uranium recovery solution continually moves through the aquifer from injection wells to recovery wells. These wells can be arranged in a variety of geometric patterns depending on the location and orientation of the orebody, aquifer permeability, and operator preference. Wellfields are typically designed in a five-spot or seven-spot pattern, with each recovery (i.e., production) well located inside a ring of injection wells. Monitoring wells are installed in the production zone aquifer and surround the wellfield pattern area. Monitoring wells are screened (i.e., open to allow water to enter) in the appropriate stratigraphic horizon to detect the potential migration of lixiviant away from the production zone. Monitor wells are also installed in the overlying and underlying aquifers to detect the potential vertical migration of lixiviant outside the production zone. The uranium that is recovered from the solution is processed, dried into yellowcake, packaged into NRC- and U.S. Department of Transportation (USDOT)-approved 208-L [55-gal] steel drums, and trucked offsite to a licensed conversion facility.

An underground injection control (UIC) program regulates the design, construction, testing, operation, and closure of injection wells at ISR facilities. Before ISR operations begin, the portion of the aquifer(s) designated for uranium recovery must be exempted from the underground source of drinking water (USDW) designation, in accordance with the Safe Drinking Water Act (SDWA). Once production is complete, the production zone groundwater is restored to NRC-approved groundwater protection standards, which are protective of the surrounding groundwater. The site is decommissioned according to an NRC-approved decommissioning plan and in accordance with NRC-approved standards. Once decommissioning is approved, the site may be released for public use.

ALTERNATIVES

The NRC environmental review regulations that implement NEPA in 10 CFR Part 51 require NRC to consider reasonable alternatives, including the No-Action alternative, to a proposed action. The NRC staff considered a range of alternatives that would fulfill the underlying purpose and need for the proposed action. From this analysis, a set of reasonable alternatives was developed, and the impacts of the proposed action were compared with the impacts that would result if a given alternative was implemented. This SEIS evaluates the potential environmental impacts of the proposed action and the No-Action alternative and also considers

alternative wastewater disposal options to the proposed action. Under the No-Action alternative, the applicant would not construct and operate ISR facilities at the proposed site. Other alternatives considered at the proposed Dewey-Burdock ISR Project site but eliminated from detailed analysis include conventional mining and milling, conventional mining and heap leach processing, alternative lixiviants, alternative site locations, and alternative well completion methods. These alternatives were eliminated from detailed study because they either would not meet the purpose and need of the proposed project or would cause greater environmental impacts than the proposed action. This SEIS also discusses alternative wastewater disposal options (evaporation ponds and surface water discharge) that were not included in the proposed action.

SUMMARY OF ENVIRONMENTAL IMPACTS

This SEIS includes the NRC staff analysis that considers and weighs the environmental impacts from the construction, operation, aquifer restoration, and decommissioning of ISR operations at the proposed Dewey-Burdock ISR Project site and the No-Action alternative. This SEIS also describes mitigation measures for the reduction or avoidance of potential adverse impacts that (i) the applicant has committed to in its NRC license application, (ii) will be required under other federal and state permits or processes, or (iii) are additional measures NRC staff identified as having the potential to reduce environmental impacts but that the applicant did not commit to in its application. The SEIS uses the assessments and conclusions reached in the GEIS in combination with site-specific information to assess and categorize impacts.

As discussed in the GEIS and consistent with NUREG–1748 (NRC, 2003), the significance of potential environmental impacts is categorized as follows:

SMALL:	The environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
MODERATE:	The environmental effects are sufficient to alter noticeably, but not destabilize, important attributes of the resource.
LARGE:	The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Chapter 4 of this SEIS provides the NRC evaluation of the potential environmental impacts from the construction, operation, aquifer restoration, and decommissioning of the proposed Dewey-Burdock ISR Project. The significance of impacts from the ISR facility lifecycle is listed next, followed by a summary of impacts by environmental resource area and ISR phase for the proposed action.

Impacts by Resource Area and *In-Situ* Recovery Facility Phase

Land Use

Construction: Impacts will be SMALL. If deep well disposal via Class V injection wells alone is used to dispose of liquid wastes, approximately 98 ha [243 ac] or 2.3 percent of the proposed project area will be disturbed by the construction phase. If land application alone is used to dispose of liquid wastes, the construction phase will disturb approximately 566 ha [1,398 ac] or 13.2 percent of the proposed project area. Topsoil will be stripped and stockpiled prior to

building surface facilities, developing initial wellfields and attendant infrastructure, and constructing access roads. Livestock grazing and recreational activities will be excluded from fenced areas surrounding the central plant, satellite facility, surface impoundments, andwellfields.

Operation: Impacts will be SMALL. Land use impacts during the operations phase will be limited to the wellfields and will be similar to, or less than, those during the construction phase. Wellfields will be developed sequentially resulting in disturbance of approximately 57 ha [140ac]. Land disturbance and access restrictions will result from drilling new wells and constructing additional header houses and pipelines. Livestock grazing and recreational activities will continue to be restricted from the central plant, satellite facility, surface impoundments, and wellfields. Potential land application areas may also be fenced to control livestock access.

Aquifer Restoration: Impacts will be SMALL. Land use impacts will be similar to, or less than those described for the operations phase. Land use impacts will decrease as fewer wells and pump houses are used and overall equipment traffic and use diminish. Access to wellfields and surface facilities will continue to be restricted. No additional land will be disturbed to construct facilities.

Decommissioning: Impacts will be SMALL to MODERATE. Decommissioning the buildings, wellfields, storage ponds, and access roads and removing potentially contaminated soil will result in a temporary, short-term increase in land-disturbing activities. Upon completion of the plugging and abandonment of wells, the soil will be returned to areas in the wellfield where it had been removed and reseeded. At the end of decommissioning, because the reclaimed land will be released for other uses and no longer restricted, the land use impact in disturbed areas will be MODERATE until vegetation becomes reestablished. After vegetation is reestablished in reclaimed areas, the land will be returned to a condition that can support a variety of land uses; therefore, the impact will be SMALL.

Transportation

Construction: Impacts will be SMALL. Dewey Road, the unpaved gravel road nearest the proposed site, will experience a 42 percent increase over existing traffic considering both autos and trucks during the ISR construction phase. This increase in traffic will incrementally accelerate degradation of road surfaces, increase the generation of dust, and increase the potential for traffic accidents and wildlife or livestock kills. The well-traveled regional roads will not be impacted significantly by construction traffic.

Operation: Impacts will be SMALL. Dewey Road, the road nearest the proposed site, will experience a 24 percent increase in daily vehicle traffic during the ISR operations phase. This increase in traffic will incrementally accelerate degradation of road surfaces, increase the generation of dust, and increase the potential for traffic accidents and wildlife or livestock kills. Additionally, the transport of yellowcake product, hazardous materials, uranium-loaded resins from the Dewey Unit to the Burdock Unit, and wastes could result in spills or leakage if an accident occurred; however, this risk was determined to be low and will be further limited by compliance with existing NRC and USDOT transportation regulations and the implementation of best management practices (BMPs) for containing leakage and spills.

Aquifer Restoration: Impacts will be SMALL. Transportation impacts will be less than those estimated for the construction and operation phases because the need to transport yellowcake product, hazardous materials, and uranium-loaded resins between units will decrease as aquifer restoration progresses. The decrease in supply shipments, waste shipments, and employee commuting (because fewer workers will be involved) will reduce the potential for accidents and therefore for any spills or leakage.

Decommissioning: Impacts will be SMALL. Transportation impacts will be less than those during the construction and operation phases because the transport of yellowcake product and processing chemicals will end during decommissioning. Access roads will either be reclaimed or left in place for future use. Waste shipments will increase temporarily, but will still represent a small contribution to daily traffic. Fewer workers will be employed, further reducing the potential transportation impact during this phase.

Geology and Soils

Construction: Impacts will be SMALL. Earthmoving activities associated with construction of the Burdock central plant and Dewey satellite plant facilities, access roads, wellfields, pipelines, and surface impoundments will include topsoil clearing and land grading. Topsoil removed during these activities will be stored and reused later to restore disturbed areas. The limited areal extent of the construction area, the soil stockpiling procedures, the implementation of BMPs, the short duration of the construction phase, and mitigative measures such as reestablishment of native vegetation will further minimize the potential impact on soils.

Operation: Impacts will be SMALL. The uranium mobilization and recovery process will not remove rock matrix from production zone sandstones and will not dewater production zone aquifers. Therefore, no significant matrix compression or ground subsidence is expected. The occurrence of potential spills during transfer of uranium-bearing lixiviant to and from the Burdock central plant and Dewey satellite facility will be mitigated by implementing onsite standard procedures and by complying with NRC requirements for spill response and reporting of surface releases and cleanup of any contaminated soils. The U.S. Environmental Protection Agency (EPA) will determine the suitability of deep geologic formations for deep Class V disposal of liquid waste before issuing an UIC permit for Class V injection wells. Treated wastewater disposed of in Class V injection wells will be required to meet release standards as referenced in 10 CFR Part 20, Subparts D and K and Appendix B, Table 2, Column 2. Potential soil contamination in proposed land application areas will be monitored by implementing soil collection and sampling procedures. Treated wastewater applied to land application areas will be required to meet NRC release limit criteria, as referenced in 10 CFR Part 20, Appendix B, and applicable state groundwater quality standards under a Groundwater Discharge Plan (GDP) approved by South Dakota Department of Environment and Natural Resources (SDDENR).

Aquifer Restoration: Impacts will be SMALL. During aquifer restoration, the processes of groundwater sweep and groundwater transfer will not remove rock matrix from production zone sandstones. The formation groundwater pressure within the extraction zone will be decreased during restoration as groundwater is removed to ensure the direction of groundwater flow is into the wellfields to reduce the potential for offsite migration of constituents. However, the change in groundwater pressure will not result in collapse of overlying rock strata as it is supported by the rock matrix of the formation. The potential impact to soils from spills, leaks, and land application of treated wastewater will be comparable to that described for the operations phase.

The NRC requirements for spill response and recovery and routine monitoring programs will also apply.

Decommissioning: Impacts will be SMALL. Disruption or displacement of soils will occur during dismantling of the facilities and reclamation of the land; however, the disturbed lands will be restored to their preextraction land use. Topsoil will be reclaimed and the surface regraded to the original topography.

Surface Waters and Wetlands

Construction: Impacts will be SMALL. The occurrence of surface water at the proposed Dewey-Burdock site is limited, and surface water flow in channels is ephemeral except for perennial Beaver Creek. The applicant will construct ISR processing and support facilities on level areas and outside the 100-year floodplain. National Pollutant Discharge Elimination System (NPDES) permits issued by SDDENR will set limits to control the amount of pollutants that can enter surface water bodies. Implementation of a stormwater pollution management plan (SWMP) will control stormwater runoff during construction and ensure that surface water runoff from disturbed areas meets NPDES permit limits. U.S. Army Corps of Engineers permits under Section 404 of the Clean Water Act will be required before conducting work in jurisdictional wetlands identified in the project area.

Operation: Impacts will be SMALL. The applicant's SDDENR-approved NPDES permit and SWMP will be in place to mitigate impacts to surface water from erosion, runoff, and sedimentation. The applicant will implement an emergency response plan to identify and clean up accidental spills and leaks. Processing facilities and chemical and fuel storage tanks will have secondary containment to contain potential spills. Operations will create liquid wastes that will be contained in radium-settling and storage ponds for eventual Class V injection well disposal and/or land application. Radium settling ponds will be constructed with liners, underdrains, and leak detection systems and storage ponds that contain treated wastewater will be constructed with geosynthetic and clay liners. Liquid waste applied to land application areas will be required to meet NRC release limit criteria for radiological contaminants, as referenced in 10 CFR Part 20, Appendix B. SDDENR will require liquid waste applied to land application areas to meet applicable state discharge requirements under a GDP.

Aquifer Restoration: Impacts will be SMALL. Impacts will be similar to those during the operations phase because the same infrastructure will be used and the same activities will be conducted. The applicant's SDDENR-approved NPDES permit and SWMP will be in place to mitigate impacts to surface water from erosion, runoff, and sedimentation. Restoration of groundwater aquifers will create wastewater that will be contained in radium settling and storage ponds for eventual Class V injection well disposal and/or land application. Radium settling ponds will be constructed with liners, underdrains, and leak detection systems and storage ponds that contain treated wastewater will be constructed with geosynthetic and clay liners. Treated wastewater applied to land application areas will be required to meet NRC release limit criteria for radiological contaminants, as referenced in 10 CFR Part 20, Appendix B. SDDENR will require wastewater applied to land application areas to meet applicable state discharge requirements under a GDP.

Decommissioning: Impacts will be SMALL. The impacts will be similar to those during the construction phase. Activities to clean up, recontour, and reclaim the land surface during decommissioning will mitigate long-term impacts to surface water. The applicant's

SDDENR-approved NPDES permit and SWMP will be in place to mitigate impacts to surface water from erosion, runoff, and sedimentation.

Groundwater

Construction: Impacts will be SMALL. The primary impact to groundwater during the construction phase will be from the consumptive use of groundwater, introduction of drilling fluids into the environment during well installation, and from surface spills of fuels and lubricants. The applicant is required to obtain water appropriation use permits from SDDENR prior to withdrawing water from aquifers. During well installation, drilling fluids (mud) will have the potential to impact surficial aquifers; however, all wells will undergo mechanical integrity tests of the casing and therefore ensure against well leakage prior to entering service. Impacts to groundwater from surface spills of fuels and lubricants will be mitigated by the applicant's implementation of BMPs and by following a spill prevention program that will require an immediate cleanup response to prevent soil contamination or infiltration to groundwater.

Operation: Impacts will be SMALL. The operations phase may impact near-surface (alluvial) aquifers, production zone aquifers containing the orebodies and surrounding aquifers, and deep aquifers below the ore production zone used for the disposal of liquid wastes.

Alluvial aquifers are separated from production zone and surrounding aquifers by thick aquitards (confining units) and, therefore, are not hydraulically connected to production zone and surrounding aquifers. In addition, alluvial aquifers do not serve as a water supply for domestic use or livestock. The impacts from spills and leaks will be SMALL. The applicant's leak detection and cleanup program will include rapid response and remediation to minimize impacts to soils and groundwater. Liquid waste applied to land application areas will be required to meet NRC release limit criteria for radiological contaminants, as referenced in 10 CFR Part 20, Appendix B and applicable state discharge requirements under a GDP issued by SDDENR.

The applicant has committed to removing and replacing existing domestic wells drawing water from production zone aquifers within the project area from private use prior to ISR operations. In addition, the applicant will monitor all domestic wells within 2 km [1.2 mi] of the wellfields during operations and replace these wells in the event of significant drawdown or degradation of water quality. Water levels in affected wells will recover with time after ISR operations and aquifer restoration activities are complete.

The establishment of an inward hydraulic gradient during wellfield operations along with the applicant-installed groundwater monitoring network to detect potential vertical and horizontal excursions will limit the potential for undetected lixiviant excursions that could degrade groundwater quality. Because the ore production zones are overlain and underlain by impermeable shale layers, this further ensures the hydraulic isolation of the ore production zones, which helps to limit potential groundwater contamination in surrounding aquifers.

Liquid wastes generated from operation of the proposed Dewey-Burdock ISR Project will be disposed of via Class V deep well injection, land application, or a combination of Class V deep well injection and land application. The groundwater in deep formations targeted for Class V deep well injection must not be a potential underground source of drinking water. Class V injection wells will be permitted in accordance with the EPA Underground Injection Control Program. Liquid wastes injected into Class V injection wells may not be classified as hazardous under the Resource Conservation and Recovery Act. NRC will require the liquid waste pumped

into Class V injection wells to be treated and monitored to verify it meets NRC release standards in 10 CFR Part 20, Subparts D and K and Appendix B, Table 2, Column 2.

Aquifer Restoration: Impacts will be SMALL. Groundwater restoration will be initiated once a wellfield is no longer being used to produce uranium. Larger withdrawals will produce larger drawdowns in production aquifers during aquifer restoration, resulting in a greater impact on yields of nearby wells. As with operations, the applicant will monitor all domestic wells within 2 km [1.2 mi] of the wellfields during aquifer restoration and replace these wells in the event of significant drawdown or degradation of water quality. Water levels in affected wells will recover with time after ISR operations and aquifer restoration activities are complete. Natural recovery and the well monitoring measures established by the applicant will reduce impacts to nearby wells, ensuring the long-term environmental impact from consumptive use will be SMALL.

During aquifer restoration, hydraulic control for the former production zone will be maintained; this will be accomplished by maintaining an inward hydraulic gradient through a production bleed. During aquifer restoration activities, water will be pumped from the wellfield (without reinjection), resulting in an influx of "fresh" groundwater into the affected (mined) portion of the aquifer. Disposal of liquid wastes via Class V injection wells, land application, or a combination of Class V injection wells and land application will occur as described for ISR operations. The goal of aquifer restoration will be to restore groundwater quality in the ore production zone to Commission-approved background conditions under 10 CFR Part 40, Appendix A, Criterion 5B(5). If the aquifer cannot be restored to background conditions, then NRC will require that either the production zone be returned to maximum contaminant levels in 10 CFR Part 40, Appendix A, Table 5C or to NRC-approved alternate concentration limits. Post-restoration groundwater quality will be protective of public health and the environment.

Decommissioning: Impacts will be SMALL. The potential impact to groundwater quality during decommissioning and reclamation is comparable to that described in the construction phase. Groundwater consumptive use will be less than that of the operation and restoration phases. All monitoring, injection, and production wells will be plugged and abandoned in accordance with UIC program requirements. Wells will be filled with cement and clay to ensure groundwater does not flow through the abandoned wells. Abandoned wells will be properly isolated from the flow domain. NRC will review and approve the wellfield restoration efforts to ensure that restoration standards were followed and public health and safety is protected.

Ecological Resources

Construction: Impacts will be SMALL to MODERATE. Construction disturbance under current development plans, which require vegetative removal, will affect approximately 98 ha [243 ac] if deep well injection is used to dispose of treated wastewater or approximately 566 ha [1,398 ac] if land application or a combination of deep well injection and land application is used to dispose of treated wastewater. Some habitat loss or alteration, displacement of wildlife, and mortality due to encounters with vehicles or heavy equipment will occur, though wildlife species will likely disperse from the area once construction commences. Following recommended fencing and power line construction designs will minimize impediments to game and avian movement. Mitigation will control the introduction and spread of undesirable and invasive, nonnative plants; reduce the likelihood of injury or mortality to wildlife; and ensure no loss of aquatic habitat. Impacts to wildlife and habitat will be minimized with mitigation measures and the timely reseeding of disturbed areas following construction. Any trees with raptor nests will not be removed, and following U.S. Fish and Wildlife Service (FWS) and South Dakota Game, Fish,

and Parks (SDGFP) seasonal noise, vehicular traffic, and human proximity guidelines will help to ensure the continued nesting success of area raptors. No federally threatened or endangered species are known to occur within the proposed project area. Impacts to state-protected species will not noticeably affect species' populations within the vicinity of the proposed project site.

Operation: Impacts will be SMALL to MODERATE. Ecological impacts due to noise, vehicles, structures, and the presence of humans will be similar to, but less than, those experienced during construction for either disposal option because fewer earthmoving activities will occur. However, larger areas of habitat will be converted to crops and animals will be disturbed with irrigation activities during the land application disposal option. Wastewater solutions include levels of chemical constituents that are potentially harmful to wildlife; however, proposed practices and state regulatory controls including permit conditions, monitoring requirements, and action levels would limit direct contact and potential impacts. Monitoring and action levels for environmental concentrations of wastewater constituents in land application areas will allow regulators to impose mitigations if constituents accumulate above levels of concern. The applicant will reseed disturbed areas with SDDENR- or BLM-approved seed mixtures to restore habitat. Spill detection and response plans will reduce the potential impact to terrestrial and aquatic species. Fencing would further limit wildlife access to liquid waste holding ponds. Potential conflicts between active raptor nest sites and project-related activities will continue to be mitigated by annual raptor monitoring and mitigation plans.

Aquifer Restoration: Impacts will be SMALL to MODERATE. Impacts will be similar to those experienced during the operations phase with no major differences in type or degree of impact. The existing infrastructure will be used during this phase, and mitigation measures will continue to apply from the construction and operations phases.

Decommissioning: Impacts will be SMALL to MODERATE. Temporary disturbances to land and soils during decommissioning could displace vegetation and wildlife species that had recolonized the proposed project area since initiation of ISR activities. Shrubland vegetative communities will be more difficult to reestablish and achieve full site recovery. The applicant commits to vegetation reestablishment efforts to be ongoing throughout the ISR facility life cycle. However, new vegetative growth could be affected by future grazing, droughts, or intense winters, thus reducing the rate of plant productivity and delaying full recovery, Revegetation and recontouring will restore habitat previously altered during construction and operations.

Air Quality

Construction: Impacts will be SMALL to MODERATE. The proposed Dewey-Burdock ISR Project is located in the Black Hills-Rapid City Intrastate Air Quality Control Region, which is classified as being in attainment for all National Ambient Air Quality Standards (NAAQS) primary pollutants. Air emissions during the construction phase of the proposed project will consist primarily of combustion emissions from drill rigs and fugitive road dust. The magnitude of the pollutant concentrations from the construction phase combustion emissions are below NAAQS and Prevention of Significant Deterioration (PSD) Class II regulatory thresholds except for the particulate matter PM_{10} 24-hour PSD Class II allowable increment. This also holds true for the peak year pollutant emission levels. The peak year refers to periods during which all four phases occur simultaneously and represents the highest level of emissions the proposed action will generate in any one project year. Fugitive dust emissions, the primary source for the

particulate matter PM_{10}, are spread out over a large area and tend to generate emissions sporadically. Due to the level and nature of these fugitive emissions, there is potential for short-term, intermittent impacts to localized areas in and around the site particularly when vehicles travel on unpaved roads. Wind Cave National Park, a Class I area located about 47 km [29 mi] northeast of the proposed project area, has experienced visibility impacts from air pollution. However, project specific modeling results for the Wind Cave National Park (e.g., Class I PSD, visibility, and acid deposition) are below applicable thresholds.

The deep Class V injection well disposal option has more combustion emissions than the land application option due to the contribution of the deep well drill rig. The land application option has more fugitive emissions due to the greater area of land disturbed. However, these differences are relatively small and appreciable differences in the overall air emission levels between the two disposal options are not expected. Therefore, the impact magnitudes are expected to be similar.

Operation: Impacts will be SMALL. Fugitive dust emission pollutant levels will be less than those experienced during construction. ISR facilities are not major point source emitters of regulated pollutants. Combustion emissions in this phase are basically evenly divided between light duty vehicles and construction and field equipment. The combustion and fugitive dust emissions will be below NAAQS and PSD Class II regulatory thresholds. Project specific modeling results for the Wind Cave National Park (e.g., Class I PSD, visibility, and acid deposition) are below applicable thresholds.

The land application disposal option has more fugitive emissions than the Class V injection well option due to the greater area of land disturbed. However, this difference is relatively small and appreciable differences in the overall air emission levels between the two disposal options are not expected. Therefore, the impact magnitudes are expected to be similar.

Aquifer Restoration: Impacts will be SMALL. Combustion emission and fugitive emission levels for the aquifer restoration phases are the lowest relative to the other three phases. For the aquifer restoration phase, combustion emissions are primarily from light duty vehicles; wind erosion can generate more fugitive emissions than travel on unpaved roads. The combustion and fugitive dust emissions will be below NAAQS and PSD Class II regulatory thresholds. Project specific modeling results for the Wind Cave National Park (e.g., Class I PSD, visibility, and acid deposition) are below applicable thresholds. The proposed project can contribute to visibility impacts at Wind Cave National Park, but the impact magnitude will be minimal.

The land application disposal option can generate up to approximately two times the amount of fugitive emissions compared to the Class V injection well disposal option. Although there is some difference in the overall fugitive dust emissions levels between the two disposal options, the impact magnitude is expected to be similar.

Decommissioning: Impacts will be SMALL. The decommissioning phase pollutant sources and emission levels closely match those from the operation phase. Therefore, the decommissioning phase will produce a similar impact magnitude as the operation phase. As in the operation phase described previously, appreciable differences in the overall decommissioning phase air emission levels between the Class V injection well and land application disposal options are not expected.

Noise

Construction: Impacts will be SMALL. Increased traffic, as well as use of drill rigs, heavy trucks, bulldozers, and other equipment to construct and operate the wellfields, drill wells, access roads, and build the central plant and satellite facility, will generate noise audible above ambient (background) levels. The sound from construction activities will be indistinguishable from background levels at a distance of approximately 305 m [1,000 ft]. Two onsite dwellings will be impacted by noise above background levels from heavy equipment use. The Daniel residence is within 305 m [1,000 ft] of wellfields B-WF6 and B-WF7 in the Burdock area, and the Beaver Creek Ranch Headquarters is within 305 m [1,000 ft] of land application areas in the Dewey area. Increased noise levels at these residences during construction will be short term (1 to 2 years) and mitigated by using sound abatement controls on operating equipment. Administrative and engineering controls will be expected to maintain noise levels in work areas below Occupational Safety and Health Administration (OSHA) regulatory limits and be mitigated by use of personal hearing protection. Noise impacts to raptors will be mitigated by adhering to timing and spatial restrictions within specified distances of active raptor nests as determined by appropriate regulatory agencies (e.g., FWS, SDGFP, and BLM).

Operation: Impacts will be SMALL. Impacts from traffic-related noise will be similar to those during construction. Because wellfields will be developed and operated sequentially, potential noise impacts at the Daniels residence will be short term (1 to 2 years each for wellfields B-WF6 and B-WF7). In addition, the Daniel residence will not be occupied year round. Residents at the Beaver Creek Ranch Headquarters will only be exposed to noise from nearby land application areas during the growing season (May 11 to September 24). Noise impacts will be mitigated by using sound abatement controls on operating equipment. The central plant and satellite facility will generate indoor noise audible to workers. OSHA regulatory limits will be maintained and mitigated by use of personal hearing protection. Potential noise-related impacts to active raptor nest sites will continue to be mitigated by adherence to timing and spatial restrictions within specified distances of active raptor nests as determined by appropriate regulatory agencies (e.g., FWS, SDGFP, and BLM).

Aquifer Restoration: Impacts will be SMALL. Noise impacts will be similar to, or less than, those experienced during the operations phase. Pumps and other wellfield equipment contained in buildings would reduce the potential sound impact to an offsite individual. Because the aquifers in wellfields will be restored sequentially, potential noise impacts at the Daniel residence will be short term (1 to 2 years each for wellfields B-WF6 and B-WF7). In addition, the Daniel residence will not be occupied year round. During aquifer restoration, residents at the Beaver Creek Ranch Headquarters will only be exposed to noise from nearby land application areas during the growing season (May 11 to September 24). Noise impacts will be mitigated by using sound abatement controls on operating equipment. Noise impacts from traffic will be SMALL because there will be fewer vehicular trips than during the operations phase. Potential noise-related impacts to active raptor nest sites will continue to be mitigated by adherence to timing and spatial restrictions within specified distances of active raptor nests as determined by appropriate regulatory agencies (e.g., FWS, SDGFP, and BLM).

Decommissioning: Impacts will be SMALL. Noise impacts will either be similar to, or less than, those experienced during the construction phase. Noise during this phase will be temporary, and when decommissioning and reclamation activities are complete, the noise levels will return to baseline. Noise impacts from traffic will be SMALL because there will be fewer shipments to and from the proposed site as decommissioning progresses. Potential noise-related impacts to

active raptor nest sites will continue to be mitigated by adherence to timing and spatial restrictions within specified distances of active raptor nests as determined by appropriate regulatory agencies (e.g., FWS, SDGFP, and BLM).

Historic and Cultural Resources

Construction: Impacts will be SMALL to LARGE. Archaeological and historic sites have the potential to be disturbed during construction of ISR facilities and infrastructure. NRC's environmental review of historic and cultural resources included evaluating the results of (i) archaeological field investigations, (ii) tribal cultural surveys, and (iii) visual and auditory impacts assessments.

Archaeological field investigations identified 18 historic sites that are listed in the National Register of Historic Places (NRHP) or are eligible for listing in the NRHP. Six of these sites could experience LARGE potential impacts due to their location within the area of potential effect (APE) for facility construction and operations. Avoidance and mitigation measures, such as data recovery excavations and fencing, are recommended for these six NRHP-eligible sites. Avoidance of the remaining 12 sites during the construction phase is anticipated and for this reason no impacts are expected. Avoidance is also recommended for 15 unevaluated historic sites within or in close proximity to the APE for facility construction and operations, pending NRHP eligibility determination.

Tribal cultural surveys recommended 17 known archaeological sites as eligible for listing in the NRHP. Three of these sites could experience LARGE potential impacts due to their location within the APE for facility construction and operations. Avoidance is recommended for these three known archaeological sites. Avoidance of the remaining 14 sites during the construction phase is anticipated and for this reason no impacts are expected. Tribal cultural surveys recommended 12 newly discovered sites as eligible for listing in the NRHP. Four of these new discoveries could experience LARGE potential impacts due to their location within the APE for facility construction and operations. Avoidance of the remaining 8 new tribal sites during the construction phase is anticipated and therefore no impacts are expected.

NRC staff compiled a list of 31 historic properties that are either listed on the NRHP or considered eligible for listing on the NRHP under criteria A and/or C due in part to their integrity of setting. These sites are located within a 4.8-km [3-mi] radius of the Dewey satellite facility or the Burdock central processing plant. Based on a line-of-sight analysis which considered the site's significance and existing environmental factors and conditions, NRC determined that 19 historic properties could experience MODERATE potential visual impacts. All of the 31 historic properties are located more than 640 m [2,100 ft] from the nearest processing facility, which exceeds the estimated 305 m [1,000 ft] zone for potential auditory impacts. Therefore, NRC staff conclude that potential auditory impacts on historic properties during the construction phase will be SMALL.

Prior to construction, an agreement between NRC, South Dakota State Historic Preservation Office (SD SHPO), BLM, interested Native American tribes, the applicant, and other interested parties will be established outlining the mitigation process for each affected resource. By NRC license condition, the applicant is required to stop any work if historical or cultural resources are encountered during construction activities. All newly discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed.

Operation: Impacts will be SMALL to MODERATE. Minimal impacts will result during the operations phase because impacts to cultural resources will have been mitigated before facility construction and identified resources will be avoided. Potential visual and auditory impacts on historic properties will be the same as described for the construction phase (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If historical or cultural resources are encountered during operations, the applicant is required by license condition to stop work. The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed.

Aquifer Restoration: Impacts will be SMALL to MODERATE. Impacts to historical and cultural resources during the aquifer restoration phase will be similar to operational impacts. Potential impacts to identified historic and cultural resources will have been mitigated prior to facility construction. Potential visual and auditory impacts on historic properties will be the same as described for the construction and operations phases (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If historical or cultural resources are encountered during operations, the applicant is required by license condition to stop work. The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed.

Decommissioning: Impacts will be SMALL. Minimal impacts are expected during the decommissioning phase because impacts to cultural resources will have been mitigated prior to facility construction. Potential visual impacts will be reduced to SMALL after processing facilities are dismantled and removed. If historical or cultural resources are encountered during operations, the applicant is required by license condition to stop work. The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed.

Visual/Scenic Resources

Construction: Impacts will be SMALL. During facilities construction, short-term (1 to 2 years) visual and scenic impacts will result from construction equipment and fugitive dust emissions. Temporary and short-term visual impacts during the construction period in each wellfield will result from header house construction, well drilling, and construction of access roads and electrical distribution lines. Dust suppression and selecting building materials and paint that complement the natural environment will reduce overall visual and scenic impacts of project construction. Center pivot irrigation systems in proposed land application areas in the Dewey area will be visible to travelers on Dewey Road; however, Dewey Road is a lightly traveled county road with few residences. Proposed activities at the project will be consistent with the BLM visual classification of this area.

Operation: Impacts will be SMALL. Visual impacts will be similar to, or less than, those experienced during construction. Less heavy machinery will be used, and standard dust control measures (e.g., water application and speed limits) will be implemented to reduce visual impacts from fugitive dust. Wellfields will be developed sequentially, and there will be no large expanse of land undergoing development at one time. Buildings and other structures will be painted so they blend in to the natural landscape, and power lines and pipelines will be buried where appropriate. Center pivot irrigation systems in proposed land application areas in the Dewey area will be visible to travelers on Dewey Road; however, Dewey Road is a lightly

traveled county road with few residences. Proposed activities at the project will be consistent with the BLM visual classification of this area.

Aquifer Restoration: Impacts will be SMALL. Visual impacts will be similar to, or less than, those experienced during the operations phase. Aquifer restoration activities will use in-place infrastructure; therefore, no modifications to either scenery or topography will occur. There will be less vehicular traffic, creating less of a visual impact. The applicant identified mitigation measures, such as dust suppression, which will be used to further reduce visual impacts.

Decommissioning: Impacts will be SMALL. Temporary impacts to the visual landscape will be comparable to those during the construction phase. Reclamation will return the visual landscape to baseline contours and will reduce the visual impact by removing buildings and the associated infrastructure. Implementation of mitigation measures (e.g., dust suppression) will further reduce the visual impacts from decommissioning.

Socioeconomics

Construction: Impacts will be SMALL. Because of the small size of the construction workforce (86 workers) and because of the short duration of the ISR construction phase (1 to 2 years), the overall potential socioeconomic impact, including the effects of ISR facility construction on demographic conditions, income, housing, employment rate, local finance, education, and health and social services, will be SMALL.

Operation: Impacts will be SMALL. Because of the small size of the operations workforce (84 workers), the migration of workers and their families to nearby towns will have a SMALL impact on demographics. Although wage rates will be higher for Dewey-Burdock employees than for workers in similar skilled positions in Fall River, Custer, and Weston Counties, the operations workforce will be small in comparison to the combined labor force in the counties; therefore, income impacts will be SMALL. The impact on housing will be SMALL because of available housing in the immediate area surrounding the proposed ISR facility. Operation of the proposed Dewey-Burdock ISR Project will create new jobs, but because of the small workforce size and because most skilled workers will be drawn from areas outside of the region of influence, impacts on employment will not be noticeable. The local economy will experience a SMALL to MODERATE beneficial impact from the purchasing of local goods and services and an increase in sales and income tax revenues. An increased demand for schools will have a SMALL impact on education because the current school systems are not at full capacity and can accommodate more students. Increased demand for health and social services will have a SMALL impact.

Aquifer Restoration: Impacts will be SMALL. Impacts will be less than those experienced during the operations phase. Fewer workers will be required, which will reduce pressure on housing, education, and health and social services.

Decommissioning: Impacts will be SMALL. Impacts will be less than those during the construction and operations phases because fewer workers will be required. Demand for housing, education, and health and social services will also be reduced.

Environmental Justice

All Phases: The percentage of minority populations living in affected block groups in the vicinity of the proposed Dewey-Burdock ISR Project site in Custer and Fall River Counties in South Dakota and Weston County in Wyoming does not significantly exceed the percentage of minority populations recorded at the state and county level and is well below the national level. Furthermore, the percentage of low-income populations living in affected census tracts in the vicinity of the proposed project site in Custer, Fall River, and Weston Counties does not significantly exceed the percentage of low-income populations recorded at the state or county level. Therefore, there will be no disproportionately high and adverse impacts to minority and low-income populations from the construction, operation, aquifer restoration, and decommissioning of the proposed Dewey-Burdock ISR facility.

The population closest to the proposed Dewey-Burdock ISR Project that could be impacted by environmental justice concerns is the Pine Ridge Indian Reservation located approximately 80 km [50 mi] east in Shannon County, South Dakota. Based on 2010 United States Census Bureau data, this reservation has both minority {greater than 95 percent Native American (Oglala Sioux Tribe)} and low-income populations. Environmental justice impacts to Native American tribes living in the vicinity of the proposed project are not expected to differ from those experienced by other populations. The proposed action has the potential to affect certain sites of religious and cultural significance to Native American tribes; however, the impacts to such sites are expected to be reduced through mitigation strategies developed through the National Historic Preservation Act Section 106 consultation process.

Public and Occupational Health

Construction: Impacts will be SMALL. Construction activities, including the use of construction equipment and vehicles, will disturb the topsoil and create fugitive dust emissions. Fugitive dust generated from construction activities will be short term (1 to 2 years), and the levels of radioactivity in soils at the proposed project site are low; therefore direct exposure, inhalation, and ingestion of fugitive dust will not result in a radiological dose to workers and the public. Construction equipment will be diesel powered and will exhaust particulate diesel emissions. The potential impacts and potential human exposures from these emissions will be SMALL, because of the short duration of the release and because the emissions will be readily dispersed into the atmosphere.

Operation: The radiological impacts from normal operations will be SMALL. Public and occupational exposure rates at ISR facilities during normal operations have historically been well below regulatory limits. Dose assessments using the MILDOS computer code indicate that the 10 CFR Part 20 public dose limit of 1 mSv/yr [100 mrem/yr] will not be exceeded at any property boundary. The remote location of the proposed Dewey-Burdock site and the use of the proposed ISR technology coupled with the applicant procedures to minimize exposure demonstrate that the potential impact on public and occupational health and safety from facility operation will be SMALL. The radiological impacts from accidents will be SMALL for workers (if the applicant's radiation safety and incident response procedures in an NRC-approved radiation protection plan are followed) and SMALL for the public because of the facility's remote location. The nonradiological public and occupational health and safety impacts from normal operations and accidents, due primarily to risk of chemical exposure, will be SMALL if handling and storage procedures are followed.

Aquifer Restoration: Impacts will be SMALL. Impacts will be similar to, but less than, those during the operations phase. The reduction or elimination of some operational activities will further reduce the magnitude of potential worker and public health impacts and safety hazards.

Decommissioning: Impacts will be SMALL. Impacts will be similar to those experienced during construction. Soil and facility structures will be decontaminated, and lands will be restored to preoperational conditions.

Waste Management

Construction: Impacts will be SMALL. Small-scale and incremental wellfield development will generate small volumes of construction waste. Waste will primarily consist of building materials, piping, and other solid wastes. No byproduct material will be generated during construction. Nonhazardous solid waste will be disposed of at a nearby municipal solid waste landfill with available capacity to accommodate estimated construction-phase waste volumes.

Operation: Impacts will be SMALL. Liquid byproduct material, including production bleed, waste brine streams from elution and precipitation, resin transfer wash, laundry water, plant wash-down water, and laboratory chemicals will be treated and disposed using Class V injection wells. If a permit cannot be obtained from EPA for Class V injection, the applicant would pursue land application of treated liquid effluent. If the capacity of either method is limited, the applicant will pursue a combination of both Class V injection and land application. Deep well injection in a Class V well requires an EPA permit, and wastes will have to meet EPA permit conditions and NRC effluent discharge limits in 10 CFR Part 20, Appendix B (both would limit potential impacts). Land application will require SDDENR-permitting of discharge water, and the land application area would be monitored to assess compliance with NRC and SDDENR requirements that would limit impacts. Solids classified as byproduct material will be sent to a licensed facility for disposal. A preoperational agreement with a licensed facility to accept wastes the proposed action generates will avoid capacity impacts. Capacity is available for disposal of nonradiological, nonhazardous wastes at regional municipal landfills. Capacity will be sufficient for disposal of low volumes of generated hazardous wastes.

Aquifer Restoration: Impacts will be SMALL based on the type and quantity of waste expected to be generated and the available capacity for disposal. Waste disposal procedures will be the same as those during the operations phase, resulting in similar impacts. One exception is the addition of reverse osmosis treatment of aquifer restoration water if a Class V deep disposal well is used. The applicant proposal includes adequate disposal capacity, and the applicant is required to comply with EPA Class V disposal permit conditions, NRC effluent limits, and other NRC safety regulations. Although the wastewater volume could increase during aquifer restoration activities, this will be offset by the reduction in production capacity from completion of wellfield production and removal from service.

Decommissioning: Impacts will be SMALL to MODERATE. Safe handling, storage, and disposal of decommissioning wastes will be described in a required decommissioning plan for NRC review before decommissioning activities begin. A preoperational agreement with a licensed disposal facility to accept solid byproduct material will ensure that sufficient disposal capacity will be available at the time of decommissioning. Equipment and building materials that meet release criteria will be reused, recycled, or disposed as construction waste at a landfill. The available local landfill capacity may be insufficient to accommodate all decommissioning nonhazardous solid waste from the proposed Dewey Burdock ISR Project.

The potential impacts on waste management resources will depend on the long-term status of the existing local landfill resources. If the capacity of the Newcastle or Custer-Fall River landfills is expanded prior to project decommissioning, the impacts to local landfills will be SMALL. If capacity at either landfill is not expanded prior to the Dewey-Burdock decommissioning, the NRC staff conclude the Newcastle landfill will have no disposal capacity at the time of decommissioning. Impacts to the Custer-Fall River landfill are expected to be MODERATE because the increase in solid waste disposal will more rapidly consume storage capacity during the last years of the landfill's projected operational life. The disposal of any waste from the Dewey-Burdock facility in the Rapid City landfill will have a SMALL impact due to the projected operational life and available capacity of that landfill.

CUMULATIVE IMPACTS

Chapter 5 of this SEIS provides the NRC evaluation of potential cumulative impacts from the construction, operations, aquifer restoration, and decommissioning of the proposed Dewey-Burdock ISR Project considering other past, present, and reasonably foreseeable future actions. Cumulative impacts from past, present, and reasonably foreseeable future actions were considered and evaluated in this SEIS, regardless of what agency (federal or nonfederal) or person undertook the action. The NRC staff determined that the SMALL to MODERATE impacts from the proposed Dewey-Burdock ISR Project are not expected to contribute perceptible increases to the SMALL to LARGE cumulative impacts, due primarily to ongoing uranium and oil and gas exploration activities, potential wind energy projects, and proposed infrastructure and transportation projects.

SUMMARY OF COSTS AND BENEFITS OF THE PROPOSED ACTION

The implementation of the proposed action will generate primarily regional and local costs and benefits. The regional benefits of building the proposed project will be increased employment, economic activity, and tax revenues in the region around the proposed site. Costs associated with the proposed Dewey-Burdock ISR Project are, for the most part, limited to the immediate area surrounding the site. The NRC staff determined the benefit from constructing and operating the facility will outweigh the economic, environmental, and social costs.

COMPARISON OF ALTERNATIVES

For the No-Action alternative, the applicant will not construct or operate ISR facilities at the proposed Dewey-Burdock ISR Project site. As a result, no uranium ore will be recovered from the proposed site. This alternative will result in neither positive nor negative impacts to any resource area.

FINAL RECOMMENDATION

After weighing the impacts of the proposed action and comparing the alternatives, the NRC staff, in accordance with 10 CFR 51.91(d), sets forth its NEPA recommendation regarding the proposed action (issuing a source material license for the proposed Dewey-Burdock ISR Project). Unless safety issues mandate otherwise, the NRC staff recommendation to the Commission related to the environmental aspects of the proposed action is that a source material license for the proposed action be issued as requested. This recommendation is based on (i) the license application, including the ER and supplemental documents the applicant submitted and responses to NRC staff requests for additional information; (ii) consultation with

federal, state, tribal, and local agencies; (iii) NRC staff independent review; (iv) NRC staff consideration of comments received on the draft SEIS; and (v) the assessments summarized in this SEIS.

References

10 CFR Part 40. Code of Federal Regulations, Title 10, *Energy*, Part 40. "*Domestic Licensing of Source Material*." Washington, DC: U.S. Government Printing Office.

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51. "*Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions*." Washington, DC: U.S. Government Printing Office.

36 CFR Part 800. *Code of Federal Regulations*, Title 36, *Parks, Forests, and Public Property*, Part 800. "Protection of Historic Properties." Washington, DC: U.S. Government Printing Office.

43 CFR Part 3800. Code of Federal Regulations, Title 43, *Public Lands: Interior*, Part 3800. *"Mining Claims Under the General Mining Laws."* Washington, DC: U.S. Government Printing Office.

43 CFR Subpart 3809. Code of Federal Regulations, Title 43, *Public Lands: Interior*, Subpart 3809. *"Subsurface Management."* Washington, DC: U.S. Government Printing Office.

NRC. NUREG–1910, "Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities." ML091480244, ML091480188. Washington, DC: NRC. May 2009.

NRC. NUREG–1748, "Environmental Review Guidance for Licensing Actions Associated With NMSS Programs." Washington, DC: NRC. August 2003.

1.2.1 U.S. Bureau of Land Management's Proposed Action

The BLM's federal decision is to either approve the applicant's Plan of Operations (submitted August 26, 2009, modified and resubmitted January 28, 2011) subject to mitigation included in the license application and this SEIS or deny approval of the Plan of Operations if it is found that the applicant's proposal would result in unnecessary or undue degradation of the public lands. The total amount of BLM managed land expected to be disturbed by the applicant over the life of the proposed project is 4.7 ha [11.63 ac]. This disturbance includes an access road, overhead power lines, operational wellfields, groundwater monitoring wells, and underground pipeline installations.

1.3 Purpose of and Need for the Proposed Action

NRC regulates uranium milling, including the ISR process, under 10 CFR Part 40, Domestic Licensing of Source Material. The applicant is seeking an NRC source material license to authorize commercial-scale *in-situ* uranium recovery at the proposed Dewey-Burdock ISR Project site. The purpose and need for the proposed federal action is to provide an option that allows the applicant to recover uranium and produce yellowcake at the proposed project site. Yellowcake is the uranium oxide product of the ISR milling process that is used to produce various products including fuel for commercially operated nuclear power reactors.

This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the *Atomic Energy Act of 1954* (AEA), as amended, or findings in the NEPA environmental analysis that would lead NRC to reject a license application, NRC has no role in a company's business decision to submit a license application to operate an ISR facility at a particular location.

1.3.1 U.S. Bureau of Land Management's Purpose and Need

The BLM purpose and need for the proposed action is to provide for orderly, efficient, and environmentally responsible mining of the uranium resource. The uranium resource is needed to fulfill market demands for this product for power generation and other needs. The proposed Dewey-Burdock ISR Project area contains BLM-administered public lands open to mineral entry, and the applicant has filed mining claims on them. In addition, the applicant maintains the unpatented mining claims associated with 1,708 ha [4,220 ac] of federal minerals that the U.S. Government reserved under the Stock-Raising Homestead Act. The BLM federal decision is either to approve the revised applicant Plan of Operations subject to mitigation included in the license application and this SEIS, or deny approval of the Plan of Operations. BLM's responsibility to respond to the applicant's Plan of Operations establishes the need for the action. The mining claimant (Powertech) has the right to mine and develop the mining claims as long as it can be done without causing unnecessary or undue degradation and is in accordance with pertinent laws and regulations under 43 CFR Part 3800.

1.4 Scope of the Supplemental Environmental Impact Statement

NRC staff prepared this SEIS to analyze the potential environmental impacts (i.e., direct, indirect, and cumulative impacts) of the proposed action and of reasonable alternatives to the proposed action. The scope of this SEIS considers both radiological and nonradiological (including chemical) impacts associated with the proposed action and its alternatives. This SEIS also considers unavoidable adverse environmental impacts, the relationship between

short-term uses of the environment and long-term productivity, and irreversible and irretrievable commitments of resources.

1.4.1 Relationship to the Generic Environmental Impact Statement

As discussed in Section 1.1, this SEIS is a supplement to the GEIS published as a final report in May 2009. The final GEIS assessed the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISR facility that could be located in any of four specific geographic regions of the western United States. The proposed Dewey-Burdock ISR Project is located in the Nebraska-South Dakota-Wyoming Uranium Milling Region, one of the regions considered in the GEIS. Table 1.4-1 summarizes the expected environmental impacts by resource area in the Nebraska-South Dakota-Wyoming Uranium Milling Region based on the GEIS analyses (NRC, 2009a).

Table 1.4-1. *In-Situ* Leach Generic Environmental Impact Statement Range of Expected Impacts in the Nebraska-South Dakota-Wyoming Uranium Milling Region

Resource Area	Construction	Operation	Aquifer Restoration	Decommissioning
Land Use	S	S	S	S to M
Transportation	S to M	S to M	S to M	S
Geology and Soils	S	S	S	S
Surface Water	S to M	S to M	S to M	S to M
Groundwater	S	S to L	S to M	S
Terrestrial Ecology	S to M	S	S	S
Aquatic Ecology	S	S	S	S
Threatened and Endangered Species	S to L	S	S	S
Air Quality	S	S	S	S
Noise	S to M	S to M	S to M	S
Historical and Cultural Resources	S to L	S	S	S
Visual and Scenic Resources	S	S	S	S
Socioeconomics	S to M	S to M	S	S to M
Public Health and Safety	S	S to M	S	S
Waste Management	S	S	S	S

Source: NRC (2009a)
S: SMALL Impact, M: MODERATE Impact, L: LARGE Impact

Scoping provides an opportunity for the public and other stakeholders to identify key issues and concerns they believe should be addressed in an EIS. The NRC staff consider the GEIS scoping process to be sufficient for the purposes of defining the scope of this SEIS. NRC accepted public comments on the scope of the GEIS from July 24, 2007 to November 30, 2007, and held three public scoping meetings in Albuquerque and Gallup, New Mexico, and Casper, Wyoming to aid in this effort. In addition, NRC held eight public meetings to solicit comments on the draft GEIS, after its publication in July 2008. One public meeting was held in Spearfish, South Dakota, on August 25, 2008. Comments on the draft GEIS were accepted from July 28, 2008 until November 8, 2008. Public comments made during the scoping meetings and on the draft GEIS are available on the NRC website (http://www.nrc.gov/ reading-rm/adams.html). Transcripts of the scoping meetings and draft GEIS comment meeting held in South Dakota are available on the NRC web site (http://www.nrc.gov/materials/uranium-recovery/geis/pub-involve-process.html). The scoping summary report was provided in GEIS Appendix A, and GEIS Appendix G provides responses to public comments (NRC, 2009a).

This SEIS was prepared to fulfill the requirement in 10 CFR 51.20(b)(8) and 43 CFR 3809 to prepare either an Environmental Impact Statement (EIS) or supplement to an EIS for the issuance of a source material license for an ISR uranium recovery facility (NRC, 2009a) and for BLM's approval of the applicant's Plan of Operations. The GEIS provides a starting point for the NRC/BLM NEPA analyses for site-specific license applications for new ISR facilities, as well as applications to amend or renew existing ISR licenses. As discussed in the GEIS, the GEIS provides criteria for each environmental resource area to assess the significance level of impacts (i.e., SMALL, MODERATE, or LARGE).

NRC staff applied these criteria to the site-specific conditions at the proposed Dewey-Burdock ISR Project. This SEIS tiers from or incorporates by reference the relevant GEIS information, findings, and conclusions concerning environmental impacts. The extent to which NRC incorporates GEIS impact conclusions depends on the consistency between (i) the applicant's proposed facility, activities, and conditions at the proposed Dewey-Burdock ISR Project and (ii) the general ISR facility description and activities in the GEIS and information or conclusions in the GEIS. NRC determinations of potential environmental impacts and the discussion of which GEIS impact conclusions were incorporated by reference are discussed in SEIS Chapter 4. GEIS Section 1.8.3 describes the use of tiering and incorporation by reference in using the GEIS for environmental reviews of site-specific ISR license applications (NRC, 2009a).

1.4.2 Public Participation Activities

As part of the preparation of this SEIS, NRC staff met with federal, state, tribal, and local agencies and authorities over the course of an expanded visit to the proposed Dewey-Burdock ISR Project site and vicinity in November and December 2009 (NRC, 2009b). Attempts to arrange for an initial briefing meeting with the Oglala Sioux Tribe were unsuccessful at that time. The purpose of these meetings was to gather additional site-specific information to support the NRC staff's environmental review and to help the staff determine consistency between site-specific and local information and corresponding information in the GEIS. As part of information gathering, the NRC staff also contacted potentially interested Native American tribes and local authorities, entities, and public interest groups in person, by email, and by telephone. Additionally, in January and February 2010, the NRC staff published an advertisement in six newspapers circulated near the proposed project area (Rapid City Journal, Edgemont Herald

Tribune, Custer Chronicle, Hot Springs Star, Lakota Country Times, and the Native Sun) soliciting public comments on the proposed action; five comments were received from this effort.

NRC published a Notice of Opportunity for Hearing on the Dewey-Burdock ISR Project license application in the Federal Register (FR) on January 5, 2010 (75 FR 467). Hearing requests from Consolidated Petitioners and the Oglala Sioux Tribe were received on March 8, 2010, and April 6, 2010, respectively (Consolidated Petitioners, 2010; Oglala Sioux Tribe, 2010). NRC also published a Notice of Intent to prepare this SEIS on January 20, 2010 (75 FR 3261).

Another part of public participation activities for development of this SEIS includes the public scoping meetings and written public comments accepted during development of the GEIS. As described in SEIS Section 1.4.1, NRC accepted public comments on the scope of the GEIS from July 24, 2007 to November 30, 2007, and held three public scoping meetings in Albuquerque and Gallup, New Mexico, and Casper, Wyoming. In addition, NRC held eight public meetings to solicit comments on the draft GEIS, after its publication in July 2008. Written comments on the draft GEIS were accepted from July 28, 2008 until November 8, 2008.

On November 26, 2012, NRC published a Notice of Availability for the draft SEIS for the proposed Dewey-Burdock ISR Project in the FR (77 FR 70486). The Notice of Availability stated that public comments were to be submitted by January 10, 2013. Members of the public were invited and encouraged to submit comments electronically, by mail, or by facsimile. The notice for the draft SEIS also stated that comments received after the January 10, 2013, would be considered if it was practical to do so. NRC accepted all comments on the draft SEIS received on or before March 5, 2013 (99-day comment period). The period for public comments (i.e., from November 25, 2012, to March 5, 2013) exceeded the minimum 45-day comment period required under NRC regulations.

The NRC staff identified 820 comments on the Dewey-Burdock draft SEIS from 349 individuals and 31 agencies and organizations. Appendix E details how NRC staff systematically identified and responded to each comment. A response is provided in Appendix E for each comment or group of comments identified and indicates whether the SEIS was modified in response to the comment.

1.4.3 Issues Studied in Detail

To meet its NEPA obligations related to its review of the Dewey-Burdock ISR Project license application, the NRC staff conducted an independent, detailed, and comprehensive evaluation of the potential environmental impacts from construction, operation, aquifer restoration, and decommissioning of an ISR facility at the proposed site and from reasonable alternatives. As discussed in GEIS Section 1.8.3, the GEIS (i) evaluated the types of environmental impacts that may occur from ISR uranium milling facilities, (ii) identified and assessed generic impacts (the same or similar) at all ISR facilities (or those with specified facility or site characteristics), and (iii) identified the scope of environmental impacts that needed to be addressed in site-specific environmental reviews. Therefore, although all of the environmental resource areas identified in the GEIS would be addressed in site-specific reviews, certain resource areas would require a more detailed analysis, because the GEIS determined a range in the significance of impacts (e.g., SMALL to MODERATE, SMALL to LARGE) could result, depending upon site-specific conditions (see Table 1.4-1).

Based on the GEIS analysis, this SEIS provides a more detailed analysis of the following resource areas:

- Land use
- Transportation
- Surface water and wetlands
- Groundwater
- Geology and soils
- Terrestrial ecology
- Threatened and endangered species
- Noise
- Visual and scenic resources
- Historical and cultural resources
- Socioeconomics
- Public health and safety
- Waste management

In addition, site-specific analyses of cumulative impacts and environmental justice concerns that were not part of the GEIS are presented in this SEIS. NRC also considers the effects the proposed action could have on global climate; the analysis estimates the potential effect of the facility's greenhouse gas emissions based on a 10-year licensing period.

1.4.4 Issues Outside the Scope of the Supplemental Environmental Impact Statement

Some issues and concerns raised during the public scoping process on the GEIS (NRC, 2009a, Appendix A) were determined to be outside the scope of the GEIS. These issues and concerns (e.g., general support or opposition for uranium milling, impacts associated with conventional uranium milling, comments regarding the alternative sources of uranium feed material, comments regarding energy sources, requests for compensation for past mining impacts, and comments regarding the credibility of NRC) are also outside the scope of this SEIS.

1.4.5 Related *National Environmental Policy Act of 1969* Reviews and Other Related Documents

A number of NEPA documents (environmental assessments) and EISs and other documents were reviewed and used in the development of this SEIS. The related NEPA reviews are described next.

NUREG–1910, Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities, Final Report (NRC, 2009a). As previously discussed, this GEIS was prepared to assess the potential environmental impacts from the construction, operation, aquifer restoration, and decommissioning of an ISR facility located in any of four different geographic regions of the western United States, including the Nebraska-South Dakota-Wyoming Uranium Milling Region where the proposed Dewey-Burdock ISR Project would be located. The environmental analysis in this SEIS both tiers and incorporates by reference from the GEIS. [Agencywide Documents Access and Management System (ADAMS) Accession No. Volume 1, ML091480244; Volume II, ML091480188]

NRC staff met with members of the SD SHPO office on December 2, 2009, to discuss site-specific issues, including the SD SHPO review process, cumulative impacts to historic sites, and best management practices (NRC, 2009b). NRC and SD SHPO staff also discussed the possibility of entering into a programmatic agreement or memorandum of agreement, pursuant to Section 106, with all consulting parties to set forth procedures and mitigation measures to preserve existing historic and cultural resources at the proposed Dewey-Burdock ISR Project site. The NRC staff continue to consult with the SD SHPO to evaluate the effects of the proposed project on historic and cultural resources.

1.7.3 Coordination with Other Federal, Tribal, State, and Local Agencies

The NRC staff interacted with multiple federal, tribal, state, and local agencies and/or entities during preparation of this SEIS to gather information on potential issues, concerns, and environmental impacts related to the proposed Dewey-Burdock ISR Project. The consultation and coordination process included, but was not limited to, discussions with BLM; tribal governments (see SEIS Section 1.7.3.5); SDDENR; South Dakota Game, Fish, and Parks (SDGFP); and local organizations (e.g., Custer County, Town of Edgemont).

1.7.3.1 Coordination With the U.S. Bureau of Land Management

BLM is serving as a cooperating agency in the NEPA assessment and licensing process for the proposed Dewey-Burdock ISR Project because BLM has jurisdiction over the locatable mineral rights on federal land that the applicant holds within the proposed project area. As discussed in Section 1.3, the BLM's responsibility for the proposed action is to fulfill its statutory responsibilities to regulate mining on federal lands as described in 43 CFR Part 3809.

BLM is responsible for administering the National System of Public Lands and the federal minerals underlying these lands. BLM is also responsible for managing split estate situations where federal minerals underlie a surface that is privately held or owned by state or local government. In situations where BLM administers the surface rights, operators of mining claims including ISR uranium facilities, must submit a Plan of Operations and obtain BLM approval before beginning operations beyond those for casual use. BLM also reviews and approves Plans of Operations on split estate lands patented under the Stock-Raising Homestead Act but only where the surface owners and the claimant cannot come to terms on access or surface damages. In this case there are no surface owner/mining claimant conflicts and as a result the proposed development activity on the split estate lands is not subject to BLM approval. The proposed Dewey-Burdock ISR Project site contains approximately 97 ha [240 ac] of BLM-administered surface lands.

The U.S. government reserved 1,708 ha [4,220 ac] of mineral estate under the Stock-Raising Homestead Act, when the surface was originally patented. The applicant maintains the unpatented mining claims associated with the 1,708 ha [4,220 ac] of federal minerals. In addition, the applicant maintains unpatented mining claims on the 97 ha [240 ac] of BLM-administered surface lands. The statutory responsibilities pertaining to mining claims under the General Mining Laws are described in 43 CFR Part 3800.

NRC has coordinated with BLM during preparation of this SEIS. Numerous conference calls and meetings have been held, and a Memorandum of Understanding between NRC and BLM was negotiated.

that would enable the tribes to complete a detailed proposed SOW for the project area. The applicant agreed to the request, and the Dewey-Burdock Project tribal reconnaissance visit took place on Saturday, May 26, 2012.

On June 19, 2012, the tribes provided NRC staff with a preliminary tribal SOW for identifying properties of religious and cultural significance at the Dewey-Burdock ISR Project site. Subsequently, NRC staff held teleconferences on August 9, 2012, and August 21, 2012, to solicit additional details on the SOWs prepared by the applicant and tribes. Representatives of the tribes and staff from the NRC, Powertech, SRI, SD SHPO, EPA Region 8, and BLM attended these teleconferences. Discussions centered on (i) defining the areas of potential effects (direct and indirect) that would be included in the proposed surveys, (ii) the need to provide survey cost estimates, and (iii) the need to provide a survey schedule that met the NRC licensing review schedule and completion of its scheduled NEPA review. The participating tribes requested an opportunity to revise the applicant's proposed SOW for completing a tribal survey for the Dewey-Burdock ISR Project. During the August 21, 2012, teleconference, NRC staff agreed to meet with tribal representatives in Bismarck, North Dakota on September 5, 2012 to develop a revised SOW for completion of a field survey in the fall of 2012.

The applicant informed NRC by letter dated August 29, 2012, that it was unable to reach an agreement with the tribes on a SOW and it would be unable to provide information to the NRC on properties of religious and cultural significance to the tribes that may be affected by the proposed Dewey-Burdock ISR Project (Powertech, 2012). The applicant indicated that additional efforts on its part to negotiate a mutually acceptable SOW are unlikely to be productive. The applicant, however, committed to support efforts to complete identification of historic properties by offering financial assistance to tribal representatives to carry out fieldwork and reporting activities. The applicant committed to working with NRC and BLM to provide access for tribal representatives to the project area to carry out work agreed to by the tribes.

On September 5, 2012, NRC staff met with representatives of the Yankton Sioux, Sisseton-Wahpeton Oyate Sioux, Rosebud Sioux, Standing Rock Sioux, Northern Cheyenne, Oglala Sioux, and Crow Nation tribes at the Kelly Inn in Bismarck, North Dakota. During this meeting, participants discussed how to proceed with development of a SOW to identify religious and cultural properties within the APE. The APE is the area in which properties of cultural significance may be affected by the undertaking, including direct effects (such as destruction, damage, or alteration of all or part of a property) and indirect effects (such as visual, audible, and atmospheric changes that affect the character or setting of a property). All parties agreed a survey was necessary for historic property identification. All parties also agreed further consultation was needed to develop a SOW that focused survey efforts on the identification of properties directly and indirectly affected by the proposed project. The area of potential indirect effect could include properties that are well beyond the proposed license area. In addition, the parties acknowledged the need for a Programmatic Agreement for any future disturbances outside of areas directly affected by the proposed project.

By letter dated September 18, 2012, NRC staff asked participants in the September 5, 2012, meeting in Bismarck, North Dakota to designate a preferred contractor to submit a proposal for a survey on their behalf. The NRC staff requested that a cost estimate based on the area of direct effect that may be disturbed during the initial phase of the Dewey-Burdock ISR Project be included in the proposal (NRC, 2012d). The letter included the NRC staff response to four NHPA-related concerns the tribes raised at the September 5, 2012, meeting in Bismarck, North Dakota. The letter stated (i) the NRC agrees that a Programmatic Agreement will need to

Once exempted, the defined aquifer(s) or its portion will no longer be protected as a USDW under SDWA. For example, at the proposed Dewey-Burdock ISR Project, portions of the Fall River and Chilson aquifers could potentially be exempted in defined areas related to commercial mineral production uranium recovery operations. The remaining portion of the Fall River and Chilson aquifers, beyond the designated exempted area, will still be considered a USDW and continue to be protected under the SDWA.

2.1.1.1.2.3.2 Monitoring Wells

The applicant has proposed installing production zone monitoring wells at the periphery of each production area (Figure 2.1-8). This perimeter monitoring well "ring" will be utilized for early detection of horizontal excursions from within the sand unit or aquifer where production is occurring. An excursion at a monitoring well is declared when the concentrations of certain indicator parameters exceed upper control limits established by the license and verified by NRC and EPA or the state. The purpose of the monitoring well ring is to ensure that groundwater quality in aquifers outside exempted zones is not impacted by ISR operations.

In some areas of the proposed Dewey-Burdock ISR Project site, multiple orebodies are vertically stacked within the Fall River Formation or the Chilson Member of the Lakota Formation with no substantial confining layers between the orebodies. In these areas, the perimeter production zone monitor wells will be screened across the full thickness of the stacked orebodies and the orebodies treated as a single production zone (Powertech, 2011). In other areas of the project site, stacked orebodies within the Fall River and Chilson Member are separated by low permeability units that may act as localized confining units (Powertech, 2011). If delineation drilling and pump testing demonstrate that localized confining units provide hydraulic separation between orebodies within one of the primary production units (e.g., the Fall River or Chilson), then monitor wells could be located and screened only within the portion of the unit in which the orebody is located (Powertech, 2011).

Production zone monitor wells will be located at a maximum of 122 m [400 ft] from the production area (Powertech, 2009a, 2009c, 2011). The spacing between monitor wells will also be 122 m [400 ft] (Powertech, 2009a). To support the proposed spacing of monitor wells, the applicant conducted numerical simulations using site-specific hydrogeologic data and proposed production flow rates to evaluate groundwater conditions related to ISR at the proposed Dewey-Burdock ISR Project (Powertech, 2011). Results of the simulations indicated that the proposed maximum monitor well spacing of 122 m [400 ft] will be adequate to detect a potential excursion (Powertech, 2011).

Production zone monitoring wells will be installed before production activities begin; required groundwater sampling and hydrologic tests will be conducted on samples taken from the monitoring wells. The applicant estimates that approximately 100 monitoring wells will be installed in the initial wellfields during the construction phase of the proposed project (Powertech, 2010c).

The applicant plans to design and install two types of nonproduction zone monitoring wells; these wells are labeled "overlying" and "underlying." Placement of overlying and underlying monitor wells is designed to correspond to the site-specific lithology and the hydrologic characteristics within the production zone(s) of each wellfield. The screened intervals of overlying wells will be located in the sand unit or aquifer immediately above the ore-bearing sandstone (Figure 2.1-7). The overlying nonproduction monitoring wells are designed to monitor any upward movement of leach fluids away from the production zone and identify

leakage from production and injection well casings before fluids could enter the overlying aquifer. In the sand unit or aquifer immediately above the ore-bearing sandstone, overlying nonproduction zone monitoring wells will be evenly distributed with a minimum placement of one well for every 1.6 ha [4 ac] of production area in accordance with guidance in NUREG–1569 (NRC, 2003a). When additional aquifers exist above the first sand unit or aquifer above the ore-bearing sandstone, additional monitoring wells will be located in these aquifers, with a minimum placement of one well for every 3.2 ha [8 ac] of production area in accordance with guidance in NUREG–1569 (Powertech, 2011, Figure TR RAI 5.7.8-12-2).

The applicant will complete underlying nonproduction monitor wells in the first sand unit or aquifer underlying the ore-bearing sandstone. Where the production zone in the Chilson Member of the Lakota Formation is bounded below by the Morrison Formation, no underlying nonproduction monitor wells will be installed. In this case, the thickness {approximately 30 m [100 ft]} and relatively impermeable nature of the Morrison Formation minimize concerns about vertical excursion of lixiviant (Powertech, 2011). The underlying nonproduction monitoring wells are designed to monitor any downward movement of leach fluids from the production zone and to identify leakage from production and injection well casings before fluids could enter the underlying aquifer. Underlying nonproduction monitoring wells will be evenly distributed through the production area with a minimum placement of one well for every 1.6 ha [4 ac] of production area (Powertech, 2009a, 2011).

The production zone monitor ring and overlying and underlying monitor wells will be designed for each wellfield based on (i) production and injection well locations and (ii) site-specific lithologic and hydrologic characteristics of production zones and overlying and underlying hydrogeologic units gathered during delineation drilling. The location and/or number of monitoring wells will be determined after pump testing is complete to demonstrate that monitoring wells are hydrologically connected to injection and production wells (see following section). The applicant must present each monitoring well program to EPA for administrative approval before installing proposed wells. In addition, wells completed in overlying and underlying aquifers are subject to sampling procedures, remedial actions, and reporting requirements prescribed in NRC and EPA rules and regulations. (Powertech, 2009b)

2.1.1.1.2.3.3 Pumping Tests

Prior to operation of each wellfield, the applicant will design and implement pumping tests to establish that the production and injection wells are hydraulically connected to the perimeter production zone monitor wells and hydraulically isolated from nonproduction zone monitor wells in underlying and overlying sand units (Powertech, 2011). The pumping test system for each wellfield will include production zone pumping wells and monitor wells. Monitor wells will include (i) perimeter production zone monitor wells; (ii) monitor wells within the production zone (used for background characterization and later converted to production wells) at a minimum density of one per 1.6 ha [4 ac]; (iii) monitor wells in the immediately overlying and underlying nonproduction zone sand unit at a minimum density of one per 1.6 ha [4 ac]; (iv) monitor wells in the subsequently overlying nonproduction sand unit at a minimum density of one per 3.2 ha [8 ac]; and (v) monitor wells in alluvium, if present, at a minimum density of one per 3.2 ha [8 ac] (Powertech, 2011). As described in SEIS Section 2.1.1.1.2.3, delineation drilling data will provide detailed lithologic information to map production zones targeted for ISR operations and define the overlying and underlying sand units and confining layers to be monitored. The delineation drilling data will be used to determine the location and screened intervals of pumping and monitor wells for each wellfield during pumping tests.

The pumping test data will be used to evaluate and confirm hydraulic connection between the production zone and perimeter production zone monitor wells and hydraulic isolation (i.e., confinement) between the production zone and overlying and underlying sand units. In addition, the pumping test data will be used to demonstrate that solutions can be controlled with typical wellfield bleed rates and to detect and identify leakage due to anomalies such as improperly plugged wells and exploration boreholes (Powertech, 2011).

2.1.1.1.2.3.4 Wellfield Hydrogeologic Data Packages

The applicant's delineation drilling results and pumping test data will be included in wellfield hydrogeologic data packages, which will be submitted for review and evaluation to the Safety and Environmental Review Panel (SERP), which is established by NRC requirements (Powertech, 2011). The wellfield hydrogeologic data package will describe the wellfield, including (i) production and injection well patterns and location of monitor wells; (ii) documentation of wellfield geology (e.g., geologic cross sections and isopach maps of production zone sand and overlying and underlying confining units); (iii) pumping test results; (iv) sufficient information to demonstrate that perimeter production zone monitor wells adequately communicate with the production zone; and (v) data and statistical methods used to compute Commission-approved background water quality (Powertech, 2011).

The SERP will review the wellfield hydrogeologic test results and documentation to determine whether monitoring wells are hydrologically connected to the injection and production wells. The wellfield hydrogeologic data package and written SERP evaluation will be maintained on site and be available for NRC review. By license condition, all wellfield hydrogeologic data packages must be submitted to NRC for review prior to operating each wellfield (NRC, 2013b). The hydrogeologic test packages for the initial Burdock and Dewey area wellfields (i.e., B-WF1 and D-WF1) will be submitted to NRC for review and written verification. In addition, wellfields in the partially saturated portion of the Dewey-Burdock Project area, specifically wellfields B-WF6, B-WF7, and B-WF8 (see Figure 2.1-6), will be prohibited from operating until NRC staff have reviewed and approved the hydrogeologic data packages for those wellfields (NRC, 2013b).

2.1.1.1.2.3.5 Well Construction, Development, and Testing

The applicant intends to use standard mud rotary drilling techniques and equipment to construct production, injection, and monitor wells. Wells will be drilled to the bottom of the target completion interval with a small rotary drilling unit, using bentonite or polymer drilling mud with pH adjusted water and mixed to control viscosity (Powertech, 2008). A temporary mud pit, to contain the drilling mud, will be excavated adjacent to the drill site. During excavation of mud pits, topsoil will be separated from the subsoil with a backhoe. The subsoil will be deposited next to the mud pit, and the topsoil will be stored at a separate location until the well site is restored. Residual cuttings and drilling fluids are typically held in the mud pit after drilling and construction activities are completed (NRC, 2009a). Depending on state and local regulations, such mud pits are backfilled and graded or are alternatively emptied and cleaned, and residual solids and liquids transported and disposed of offsite (NRC, 2006). State of South Dakota rules governing disposal of drill cuttings are stipulated in ARSD 74:29:11:15. After well drilling is completed at the proposed project, the applicant proposes to redeposit the excavated subsoil in the mud pit followed by topsoil application and grading, usually within 30 days of the initial excavation of the mud pit (Powertech, 2009a).

2.1.1.1.3.1 Uranium Mobilization

Uranium mobilization will consist of the following steps: (i) injection of lixiviant into the production zone, (ii) oxidation and formation of uranium-bearing aqueous complexes underground, and (iii) extraction (production) and transport of the pregnant lixiviant to the processing facility. The uranium mobilization steps and excursion monitoring of lixiviant are described in the following sections.

2.1.1.1.3.1.1 Lixiviant Chemistry

The applicant proposes to add lixiviant, consisting of varying concentrations of oxygen and carbon dioxide, to the groundwater acquired from onsite wells to promote the dissolution and mobilization of uranium (Powertech, 2009a). The oxygen in the lixiviant oxidizes the uranium from the relatively insoluble, reduced tetravalent state (U^{4+}) to the more soluble, oxidized hexavalent state (U^{6+}). The carbon dioxide in the lixiviant provides a source of carbonate and bicarbonate ions that react with the oxidized uranium to form either dissolved uranyl tricarbonate complexes [$UO_2(CO_3)_3^{-4}$] or uranyl dicarbonate complexes [$UO_2(CO_3)_2^{-2}$]. The relative abundance of each dissolved uranyl carbonate complex is a function of pH and total carbonate strength. GEIS Table 2.4-1 summarizes typical lixiviant chemistry (NRC, 2009a). As noted in GEIS Section 2.4.1.1, the principal geochemical reactions caused by the lixiviant are (i) oxidation and subsequent dissolution of uranium and other metals from the orebody and (ii) their subsequent extraction (NRC, 2009a).

2.1.1.1.3.1.2 Lixiviant Injection and Production

Lixiviant is pumped down injection wells to the mineralized zones hosted in sandstones in the Fall River and Chilson Member of the Lakota Formations, where it will oxidize and dissolve uranium from the formations. The uranium-bearing solution migrates through the pore spaces in the sandstone and is recovered by production wells. The applicant has estimated that approximately 191 production wells and approximately 406 injections wells will be installed annually over the 8-year operational life of the proposed project (Powertech, 2010c). The applicant estimates production flow rates of 9,084 Lpm [2,400 gpm] in the Burdock area and 6,056 Lpm [1,600 gpm] in the Dewey area (Powertech, 2011). Uranium-enriched pregnant lixiviant will be pumped from production wells to the Burdock central plant or the Dewey satellite facility for uranium extraction by IX. The resulting barren lixiviant will then be refortified with oxygen and carbon dioxide and reinjected into the wellfield to dissolve additional uranium. This process will continue until further uranium recovery is uneconomical.

Production wells are normally positioned to pump pregnant lixiviant from a number of injection wells. As described in SEIS Section 2.1.1.1.2.3.1, square well patterns and sometimes hexagons or triangles will be utilized to access all economically recoverable portions of the uranium orebody. As described in GEIS Section 2.4.3, the production wells at an ISR facility extract slightly more water than is reinjected into the host aquifer to create a net inward flow of groundwater into the wellfield, which minimizes the potential movement of lixiviant and its associated contaminants out of the wellfield. This excess water, referred to as production bleed, is byproduct material that must be properly managed (NRC, 2009a). The applicant proposes to withdraw 0.5 to 3 percent more groundwater than is reinjected (Powertech, 2009a). The typical production bleed will be approximately 0.875 percent and will be adjusted as necessary to maintain the wellfield cone of depression (i.e., a net inward flow of groundwater into the wellfield) (Powertech, 2011). Production bleed rates will be controlled by withdrawing a small portion of the barren solution from the IX circuit, which will then be disposed of via Class V

deep well injection and/or land application in both the Dewey and Burdock areas. Production bleed is detailed in SEIS Section 2.1.1.1.3.3.

2.1.1.1.3.1.3 Excursion Monitoring

GEIS Section 2.4.1.4 describes how ISR operations potentially affect the groundwater quality near a site, if lixiviant moves from the production zone resulting in either a vertical or lateral excursion (NRC, 2009a). The applicant proposes to implement an operational groundwater monitoring program that meets the requirements of 10 CFR Part 40, Appendix A, Criteria 7 and 7A. This program will be designed to detect and correct any condition that could lead to the unintended spread of lixiviant either horizontally or vertically outside of the production zone, which could lead to an excursion (Powertech, 2009a). As described in GEIS Section 2.4.3, excursions may be caused by improper water balance between injection and recovery rates, undetected high permeability strata or geological faults, improperly abandoned exploration drill holes, discontinuities within the confining layers, poor well integrity, or unintentional disruption (fracturing) of the ore zone or confining units (NRC, 2009a). The applicant's proposed excursion monitoring program includes monitoring (i) flow rates, (ii) operating pressures of injection, production, and monitoring wells, and (iii) the flow rates and operating pressures of the main pipelines leading to and from the Burdock central plant and the Dewey satellite facility.

The applicant estimated that approximately 57 monitoring wells will be installed annually over the 8-year operational life of the project (Powertech, 2010c). The applicant proposes to sample the monitoring wells in the ore zone and overlying and underlying aquifers at approximately 2-week intervals (Powertech, 2009a). Samples from these wells will be analyzed for chloride, conductivity, and total alkalinity, and the data will be compared to the upper control limits (UCLs) for these constituents (Powertech, 2011). The applicant will establish UCLs after background water quality is established for the monitor wells in a particular wellfield, as described in SEIS Section 7.3.1.2. The water level in each monitor well will also be measured and recorded prior to each sampling event. Water level and analytical monitoring data for the UCL parameters will be retained onsite for NRC review.

An excursion occurs when two or more excursion indicators in a monitoring well exceed their UCLs (NRC, 2003b). If the concentration of two or three excursion indicators exceeds established UCL concentrations during a sampling event, a second sample will be taken within 48 hours after results of the first analysis are received and analyzed (Powertech, 2011). If an excursion is not confirmed by a second sample, a third sample will be taken within 48 hours after the second set of sampling data are received. If the second or third samples produce results where two or more excursion indicators exceed the UCL concentrations, the well producing these results will be placed on excursion status and corrective action will be required. The first sample results will be considered in error if the second and third samples do not confirm the results from the first sample.

If an excursion is detected, the applicant will be required to notify NRC within 24 hours by telephone or email, and in writing within 7 days; corrective actions should begin immediately. Corrective actions will include increasing sampling frequency to weekly, increasing the pumping rates of production wells in the area of the excursion to increase the net bleed, and pumping individual wells to enhance recovery of solutions. If these actions do not retrieve the excursion within 60 days, the applicant will suspend injection of lixiviant into the production zone adjacent to the excursion until the excursion is retrieved and the UCL parameters are no longer

exceeded. Within 60 days of a confirmed excursion, the applicant will be required to file a written report to NRC describing the event and the corrective action taken (NRC, 2003b).

2.1.1.1.3.2 Uranium Processing

Uranium will be recovered from the pregnant lixiviant and processed into yellowcake in a multistep process (NRC, 2009a). The steps include (i) loading of uranium complexes onto IX resin, (ii) eluting (recovering) uranium complexes from the resin, and (iii) precipitating, drying, and packaging of uranium. Figure 2.1-13 shows the general flow of the uranium processing steps for the proposed Dewey-Burdock Project.

2.1.1.1.3.2.1 Ion Exchange

Recovery of uranium from the pregnant lixiviant solution will be accomplished via an IX process. Pregnant lixiviant will be pumped from the wellfields into the IX columns, which contain uranium-specific IX resin beads (Dowex 21K XLT or equivalent) (Powertech, 2009a). As the lixiviant flows through the resin beads, the dissolved uranium complexes in the solution will attach to the resin beads by displacing a chloride ion or bicarbonate ion. The resin will be considered loaded when uranium complexes occupy most of the available sites on the resin beads.

The proposed IX systems at both the Dewey satellite facility and Burdock central plant consist of eight fixed-bed IX columns (Powertech, 2009a). The columns will be operated as four sets of two vessels in series (Figure 2.1-13). The IX vessels are designed to operate in pressurized downflow mode, and each will contain approximately 14.15 m^3 [500 ft^3] of IX resin. The barren lixiviant leaving the IX system will normally contain less than 2 mg/L [2 ppm] uranium (NRC, 2009a).

After the barren lixiviant leaves the IX vessels, the production bleed will be removed and routed to the liquid waste system for deep well injection and/or land application. Carbon dioxide will then be added to the barren lixiviant to return the carbonate/bicarbonate concentration to the desired level. The lixiviant solution will then be pumped back to the wellfield, where oxygen will be added prior to reinjection into the wellfields to repeat the leaching cycle.

2.1.1.1.3.2.2 Elution

GEIS Section 2.4.2.2 describes the elution circuit at ISR facilities (NRC, 2009a). The proposed elution circuit at the Burdock central plant is designed to accept and elute uranium-loaded resin from the Burdock central plant and the Dewey satellite facility (Powertech, 2009a).

At the Burdock central plant, resin transfer out of the IX vessels into the elution circuit will be accomplished via resin-transfer piping. Transfer of loaded resin from the Dewey satellite facility to the elution circuit at the Burdock central plant will be accomplished via resin-transfer trucks. Resin-transfer trucks will have one or more compartments with minimum capacities of 14.15 m^3 [500 ft^3] per compartment (Powertech, 2009a). The resin will be hydraulically removed from the compartments and screened for debris and other particulates before transfer into the elution vessels.

An elution process removes the uranyl dicarbonate and uranyl tricarbonate ions from the resin and restores the resin to its chloride form for reuse. Fresh eluant will be prepared by combining

measurements in perimeter monitor wells (Powertech, 2011). Water levels in the perimeter monitor wells will be measured continuously using pressure transducers to confirm hydraulic wellfield control. Aquifer restoration will be complete when the applicant demonstrates that water quality conditions have been restored in accordance with 10 CFR Part 40, Appendix A, Criterion 5B(5) requirements. These standards are either CAB water quality; water quality equivalent to the MCLs provided in the table in 10 CFR Part 40, Appendix A, Criterion 5C; or an ACL NRC established in accordance with Criterion 5B(6). The NRC process for reviewing and approving ACLs is found in SEIS Appendix B.

After NRC determines the production area is restored, the applicant will implement a groundwater stability monitoring program for a minimum of 12 months. The results of the monitoring program determine whether the approved standards for each constituent have been met and whether any adjacent nonexempt aquifers are affected (Powertech, 2009b, 2011). Over the 12-month minimum stability monitoring period, there will be an initial sampling event at the beginning of the stability monitoring period followed by the sampling events described next (Powertech, 2011):

- Perimeter monitor wells in the production zone and monitor wells in the overlying and underlying aquifers will continue to be sampled once every 60 days for the UCL indicator excursion parameters of chloride, total alkalinity, and conductivity. The applicant will contact NRC if any of the wells cannot be monitored within 65 days of the last sampling event due to unforeseen conditions, such as snowstorms, flooding, and equipment malfunctions.

- Quarterly, the production zone wells will be sampled and analyzed for the water quality parameters listed in SEIS Table 7.3-1. The criteria to establish successful stability are as follows: for each sampling event, the mean concentration of each water quality parameter must meet the target restoration goal established for that parameter.

If the analytical results from the stability monitoring program meet the target restoration goals and do not exhibit significant increasing trends, the applicant will (i) submit supporting documentation to NRC showing that the restoration parameters have remained at to below the restoration standards and (ii) request that the wellfield be declared restored (Powertech, 2011).

2.1.1.1.4.3 Schedule

The applicant estimates that wellfield restoration in the Burdock and Dewey areas will commence immediately after production activities in the wellfields end. The applicant projected that restoration of the first wellfields will begin 2 years after production activities commence and will continue for 9 years (see Figure 2.1-1). As additional wellfields are brought into production in the Burdock and Dewey areas, the applicant will restore each wellfield as soon as reasonably practicable following production (Powertech, 2011). The applicant estimates nine workers will be directly involved in aquifer restoration activities (Powertech, 2009a). Most workers will come from Edgemont, Hot Springs, and Custer, South Dakota, and Newcastle, Wyoming, which are 21 to 80 km [13 to 50 mi] from the proposed project site.

2.1.1.1.5 Decontamination, Decommissioning, and Reclamation Activities

Decommissioning of the proposed Dewey-Burdock ISR Project will require an NRC-approved decommissioning plan. All decommissioning activities will be carried out in accordance with

results must be reported to NRC semiannually (see SEIS Chapter 7). As part of the decommissioning phase, NRC will require radiological surveys of land application areas to ensure that the soil concentration limits in 10 CFR Part 40, Appendix A, Criterion 6-(6) are met. If soil concentration limits are exceeded, NRC will require the removal of contaminated materials, which could add to the total amount of material for disposal at a licensed facility. In addition, the applicant proposes to dispose of any pond liners and precipitated solids accumulated in radon settling ponds as solid byproduct material, as described in SEIS Section 2.1.1.1.6.3.

The amount of liquid byproduct material produced by the proposed action varies by ISR lifecycle phase, disposal option, and aquifer restoration method. The applicant estimated the maximum estimated flow of produced liquid byproduct material at any time considering concurrent uranium recovery operations and aquifer restoration activities. For the Class V injection well option, the applicant's maximum calculated liquid byproduct material production is 749 L/min [197 gal/min] (Powertech, 2011). For the land application option, the applicant's maximum calculated liquid byproduct material production is 2,080 L/min [547 gal/min] (Powertech, 2011).

The applicant proposes to dispose of sanitary wastewater from restrooms and lunchrooms into onsite septic systems located near the Burdock central plant and Dewey satellite facility. The applicant is required to obtain a permit from the SDDENR to construct the onsite septic systems (Powertech, 2009b). The applicant also proposes to collect and route stormwater for discharge to surface water (Powertech, 2009a). The applicant is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit to discharge stormwater to surface water from the State of South Dakota.

2.1.1.1.6.3 Solid Wastes

As described in GEIS Section 2.7.3, all phases of the operational lifecycle of an ISR facility generate solid wastes (NRC, 2009a). Solid byproduct material includes spent resin, empty chemical containers and packaging, pipes and fittings, tank or storage pond sediments, contaminated soil from leaks and spills, and contaminated construction and demolition debris. Nonhazardous solid waste includes septic solids, municipal solid waste (general trash), and other solid wastes. Solid hazardous waste includes used batteries and light bulbs.

Solid byproduct material does not meet the NRC criteria for unrestricted release and must be disposed of at a licensed disposal site, in accordance with the requirements of 10 CFR Part 40, Appendix A, Criterion 2. The applicant estimates the proposed Dewey-Burdock facility will produce 22 m^3 [29 yd^3] of solid byproduct material from radium settling ponds annually from the deep Class V injection well option and 50 m^3 [66 yd^3] of solid byproduct material from the land application option (Powertech, 2011). Assuming a 10-year operational period, the NRC staff calculated total radium settling byproduct material accumulation as 222 m^3 [290 yd^3] from the deep Class V injection well option and 500 m^3 [660 yd^3] from the land application option. The applicant plans to store these wastes temporarily onsite. The applicant proposes to transport these materials offsite to a licensed facility for disposal in accordance with U.S. Department of Transportation (USDOT) requirements using shipment capacities of 23 m^3 to 33 m^3 [30 yd^3 to 40 yd^3] (Powertech, 2010a, 2011). It is estimated that one to three shipments of operational byproduct material will occur per year.

The NRC staff calculated the amount of solid byproduct material that will be generated from decommissioning activities using the financial assurance information the applicant submitted;

the land application option estimate is 1,580 m^3 [2,067 yd^3] and the deep Class V injection well disposal option estimate is 1,419 m^3 [1,856 yd^3] (Powertech, 2011). These estimates apply to decommissioning wellfields, removal of constructed ponds, pond liners, and equipment and IX resin. The applicant anticipates that decommissioning of facilities will take 2 years; therefore, the annual byproduct waste generation estimate for decommissioning is 790 m^3 [1,034 yd^3] for the land application option and 710 m^3 [928 yd^3] for the deep Class V injection well disposal option. At this time, the applicant does not have an agreement in place with a licensed site to accept its solid byproduct material for disposal. If an NRC license is granted, an NRC license condition will require the applicant to have a byproduct material disposal agreement in place before operations begin. The applicant assumes it will obtain an agreement for disposal of byproduct material at the White Mesa site in Blanding, Utah, which is detailed in SEIS Section 3.13. SEIS Section 4.14 describes the impacts of solid byproduct material disposal.

During all phases of the proposed project, the applicant expects to produce nonhazardous solid waste. This waste could be composed of municipal waste (facility trash), septic solids, and other solid wastes, such as uncontaminated equipment, hardware, and packing materials. The applicant proposes to collect nonhazardous solid waste at designated onsite areas and dispose of this material at the Custer-Fall River Waste Management District landfill in Edgemont, South Dakota, or at the Newcastle Solid Waste Facility, if additional capacity is needed (Powertech, 2010a). SEIS Section 3.13 provides additional descriptions of the local solid waste facilities. The applicant estimates the proposed action will generate approximately 184 t [203 T] of nonhazardous solid waste annually during the construction phase (Powertech, 2010a). The NRC staff calculates the annual volume of construction debris as 144 m^3 [188 yd^3], which assumes a density of 1,281 kg/m^3 [1.08 T/yd^3]. During the operational period, the applicant estimates that less than 1.4 t [3,000 lb] per week of nonhazardous solid waste will be generated. The mass of nonhazardous solid waste is equivalent to an annual volume of 150 m^3 [196 yd^3], assuming a density of 475 kg/m^3 [800 lb/yd^3].

The NRC staff used the data in the applicant's financial assurance section of the application (Powertech, 2011) to estimate the total amount of nonhazardous solid waste that will be generated during the proposed 2-year decommissioning period; these totals are 12,496 m^3 [16,344 yd^3] for the land application option and 10,427 m^3 [13,638 yd^3] for the deep Class V injection well disposal option. The NRC staff calculates the annual decommissioning nonhazardous solid waste as 6,248 m^3 [8,172 yd^3] for the land application option and 5,213 m^3 [6,819 yd^3] for the deep Class V injection well disposal option by dividing the total estimates by the applicant's proposed 2-year decommissioning period. The applicant's nonhazardous solid waste estimates for decommissioning include plant building materials and equipment and wellfield equipment that do not contain radioactive materials or that meet NRC limits for unrestricted release.

The applicant's proposal describes hazardous waste that will be generated as waste oil, cleaning solvents, and used batteries (Powertech, 2009a). The applicant has estimated the proposed Dewey-Burdock ISR Project will generate less than 100 kg [220 lb] per month of all forms of hazardous waste, a quantity that the applicant expects will allow the facility to be classified as a Conditionally Exempt Small Quantity Generator (CESQG) under RCRA and South Dakota regulations (Powertech, 2009a). A CESQG (i) must determine whether its waste is hazardous; (ii) must not generate more than 100 kg [220 lb] per month of hazardous waste or, except with regard to spills, more than 1 kg [2.2 lb] of acutely hazardous waste; (iii) may not accumulate more than 1,000 kg [2,205 lb] of hazardous waste onsite at any time; and (iv) must treat or dispose of its hazardous waste in a treatment storage or disposal facility that meets the requirements specified in 40 CFR 261.5. If the facility fails to meet any of these four criteria, it

will lose CESQG status. Without CESQG classification it will be fully regulated as either (i) a small-quantity generator of more than 100 kg [220 lb], but less than 1,000 kg [2,205 lb] of nonacute hazardous waste per calendar month or (ii) a large-quantity generator of 1,000 kg [2,205 lb] or more of nonacute hazardous waste per calendar month. Any hazardous wastes, such as organic solvents, paints, used oil and paint thinners, empty chemical containers, tank sediments/sludges, chemical wastes, or spent batteries, must be disposed of in accordance with applicable local, state, and federal regulatory requirements.

2.1.1.1.7 Transportation

The applicant proposes using trucks to transport construction equipment and materials, operational processing supplies, IX resins, yellowcake product, and waste materials. The applicant commits to complying with all applicable USDOT and NRC packaging and transportation requirements for shipments of hazardous chemicals and radioactive materials (Powertech, 2009b). During all phases of the facility lifecycle, both temporary and permanent workers will commute to and from the facility and generate additional traffic on local roads.

The applicant proposes using trucks to ship construction supplies and the vehicles used to construct facilities and wellfields at the proposed site. As stated previously, the applicant proposes phased wellfield development. After the processing facilities are constructed, the remaining wellfield construction activities and associated transportation will occur over a number of years (Figure 2.1-1). The applicant estimated 38 worker commuting round-trips will occur daily during the construction period based on a commitment to implement a carpooling policy (Powertech, 2013a,b). The applicant's estimate of construction-related traffic is presented in Table 2.1-7.

During operations, the applicant plans to use tanker trucks to transfer uranium-loaded and barren IX resins between the Burdock central processing plant and the Dewey satellite facility. The applicant estimates that each day, one uranium-loaded resin truck will travel from the satellite facility to the central processing plant and one barren resin truck will travel from the central processing plant to the satellite facility. The applicant proposes to ship yellowcake product from the central processing plant to a conversion facility located in Metropolis, Illinois, or Port Hope, Ontario, Canada. The NRC staff estimates the shipment distances from the proposed site to Metropolis, Illinois, and Port Hope, Ontario, to be approximately 2,270 km [1,410 mi] for either location (NRC, 2009a). The applicant proposes loading yellowcake into sealed 210-L [55-gal] drums and shipping by certified carrier. Assuming a proposed production rate of 0.45 million kg [1 million lb] of yellowcake per year, the applicant estimates approximately 25 yellowcake shipments annually. Proposed chemical supply shipments to the Dewey-Burdock facility include carbon dioxide, oxygen, salt, soda ash, barium chloride, hydrogen peroxide, sulfuric acid, hydrochloric acid, sodium hydroxide, and fuel. Shipments of waste products, including byproduct material, nonhazardous solid wastes, and hazardous wastes will originate at the proposed site for disposal at licensed disposal facilities during the plant operations. Estimates of traffic for all phases of the facility lifecycle are provided in Table 2.1-7. Based on the information in Table 2.1-7, the total daily operations phase truck traffic is estimated at 2 one-way trips per day for either waste disposal option.

During the decommissioning phase, the applicant proposes to decommission and dismantle structures and equipment, and to reclaim land surfaces. The applicant also proposes to ship some materials and equipment offsite for recycling or reuse. The applicant expects that waste materials, which will include byproduct material (e.g., contaminated facilities and equipment,

Artificial Penetrations

According to the environmental report, there are 4,000 exploration drill holes representing historic exploration activities (Powertech, 2009a). The applicant has drilled approximately 115 exploration holes, including 20 monitoring wells in the project area. While the applicant cannot confirm that all historic borings were properly plugged and abandoned, the applicant has made commitments to ensure that unplugged drill holes will not impact human health or the environment during operations (Powertech, 2009b, 2011). Futhermore, state regulations were in place governing exploration hole plugging at the time the historical exploration occurred. In the technical report (Powertech, 2009b), the applicant stated that little evidence of unplugged boreholes has been observed given infrared photography data. However, an infrared map of a portion of the Burdock area shows an alkali pond area (Powertech, 2011). The applicant states unplugged borings appear to explain the presence of this pond area. No other pond areas or springs appear in infrared photography data of the Dewey-Burdock site. There is no other evidence indicating that previously unplugged borings are current groundwater flow pathways (Powertech, 2011).

3.4.2 Soils

GEIS Section 3.4.3.1 describes the soils of the Black Hills as a product of weathering of surficial sedimentary rocks of the Black Hills range (NRC, 2009a). To provide site-specific soil characteristics, the applicant had a soil survey conducted within the Dewey-Burdock permit area in accordance with procedures of the National Cooperative Soil Survey (Powertech, 2009a). The survey included a total of 4,272 ha [10,557 ac] (Powertech, 2009b). The soils in the proposed site are typical for semiarid grasslands and shrublands of the Western United States and are classified as Aridic Argiustolls, Aridic Ustorthents, and Aridic Haplusterts.

The soil survey results indicated that soils within the proposed permit area generally have a clayey or very fine texture with patches of sandy loam on upland areas and fine, clay-textured soils in or near drainages. Deep soils were found on level upland areas, and shallow and very shallow soils were found on hills, ridges, and breaks. Salvage depths ranged from 0 to 1.5 m [0 to 5 ft] (Powertech, 2009a). The clayey texture of the surface horizon found throughout most of the proposed project area results in soils more susceptible to erosion from water than wind (Powertech, 2009a).

3.4.3 Seismology

The Dewey Fault is located approximately 1.6 km [1 mi] north of the proposed Dewey-Burdock permit area (Figure 3.4-3). The Dewey Fault is a nearly vertical northeast-to-southwest-trending normal fault with a combined displacement and drag of approximately 152 m [500 ft] on the north side. Given the location and displacement characteristics of this fault, there will be no effect on proposed site activities. The Long Mountain Structural Zone located 11 km [7 mi] southeast of the proposed project area contains several small, shallow faults in the Inyan Kara Group. No faults have been identified within the proposed permit area (Powertech, 2009a). Additionally, according to the USGS Quaternary Fault and Fold Database, no capable faults (active faults) with surface expression occur within a 100-km [62-mi] radius from the center of the proposed site, demonstrating a historically low seismic potential (USGS, 2006a). The most significant seismic hazard within and in the vicinity of the proposed project area is a “floating” earthquake. In accordance with 10 CFR Part 40, Appendix A, a floating earthquake is one that is considered to occur randomly within a tectonic province. According to the applicant, the

maximum magnitude of such an earthquake is 6.1. Within the period from 1872 to 2010, 14 earthquakes of Richter Scale magnitudes ranging from 2.3 to 4.1 were recorded in Custer and Fall River Counties (SDGS, 2010). The Modified Mercalli scale intensities for these magnitudes are II (e.g., felt by few at best) to IV (e.g., felt indoors and outdoors), respectively. Eight earthquakes had epicenters located north of Hot Springs near Wind Cave National Park in Custer County, and two earthquakes had epicenters near Hot Springs in Fall River County. The closest earthquake to the proposed Dewey-Burdock site occurred January 5, 2004, with a recorded magnitude 2.8 with an epicenter located approximately 8 km [5 mi] north of the hamlet of Dewey in Custer County. The remaining 3 of the 14 earthquakes had epicenters located in southwestern, central, and eastern Fall River County.

3.5 Water Resources

3.5.1 Surface Waters

As described in GEIS Section 3.4.4.1, uranium deposits in Fall River and Custer Counties in southwestern South Dakota are present within the Beaver Creek and Angostura Reservoir watersheds (Figure 3.5-1). The proposed Dewey-Burdock ISR Project area lies within the Beaver Creek watershed and is drained by Beaver Creek, Pass Creek, and their tributaries (Powertech, 2009a). The Beaver Creek watershed covers an area of 3,522 km^2 [1,360 mi^2], excluding the Pass Creek subwatershed and lies within Weston, Niobrara, and Crook Counties in Wyoming and within Pennington, Custer, and Fall River Counties in South Dakota. The Pass Creek subwatershed comprises most of the east-southeast portion of the Beaver Creek watershed and covers an area of 596 km^2 [230 mi^2] within Custer, Fall River, and Pennington Counties in South Dakota and a very small portion of Weston County in Wyoming.

Beaver Creek, a perennial and shallow stream with ephemeral tributaries, flows northwest to southeast through the northwestern and western portions of the Dewey area (Figure 3.5-2). The average discharge rate for Beaver Creek, measured at Newcastle, Wyoming, is 0.34 m^3/s [12 ft^3/s] (stream gage 06392950; USGS, 2010). Pass Creek, which within the proposed project area is an ephemeral stream that supports some intermittent habitat, is dry for most of the year, except for short periods of high runoff following major storms (Powertech, 2009a). Pass Creek flows southerly through the central portion of the proposed project area and joins Beaver Creek southwest of the proposed project area. No permanent stream flow gages are stationed along Pass Creek. Beaver Creek and Pass Creek were not classified as domestic water supplies in beneficial uses of surface waters categorized by the State of South Dakota near the proposed area (SDDENR, 2008), although water from Beaver Creek is used for hay irrigation. Approximately 4 km [2.5 mi] south of the confluence of Beaver and Pass Creeks, Beaver Creek flows into the Cheyenne River (Figure 3.5-2). The average flow of the Cheyenne River at Edgemont, South Dakota, is 1.1 m^3/s [39 ft^3/s] (stream gage 06395000; USGS, 2010).

There are no known natural springs within the proposed Dewey-Burdock ISR Project area (Powertech, 2011). There is one area in the southwest corner of the Burdock area, known as the “alkali flats” or the “alkali area,” where groundwater is discharging to the ground surface from the Fall River aquifer and Chilson aquifer (Chilson Member of the Lakota Formation) through improperly plugged exploratory boreholes (Powertech, 2011). Two springs are present along the Dewey Fault near the town of Dewey approximately 2 km [1.2 mi] northwest of the proposed project boundary.

Figure 3.5-1. Watersheds Within the Nebraska-South Dakota-Wyoming Uranium Milling Region
Source: NRC (2009a)

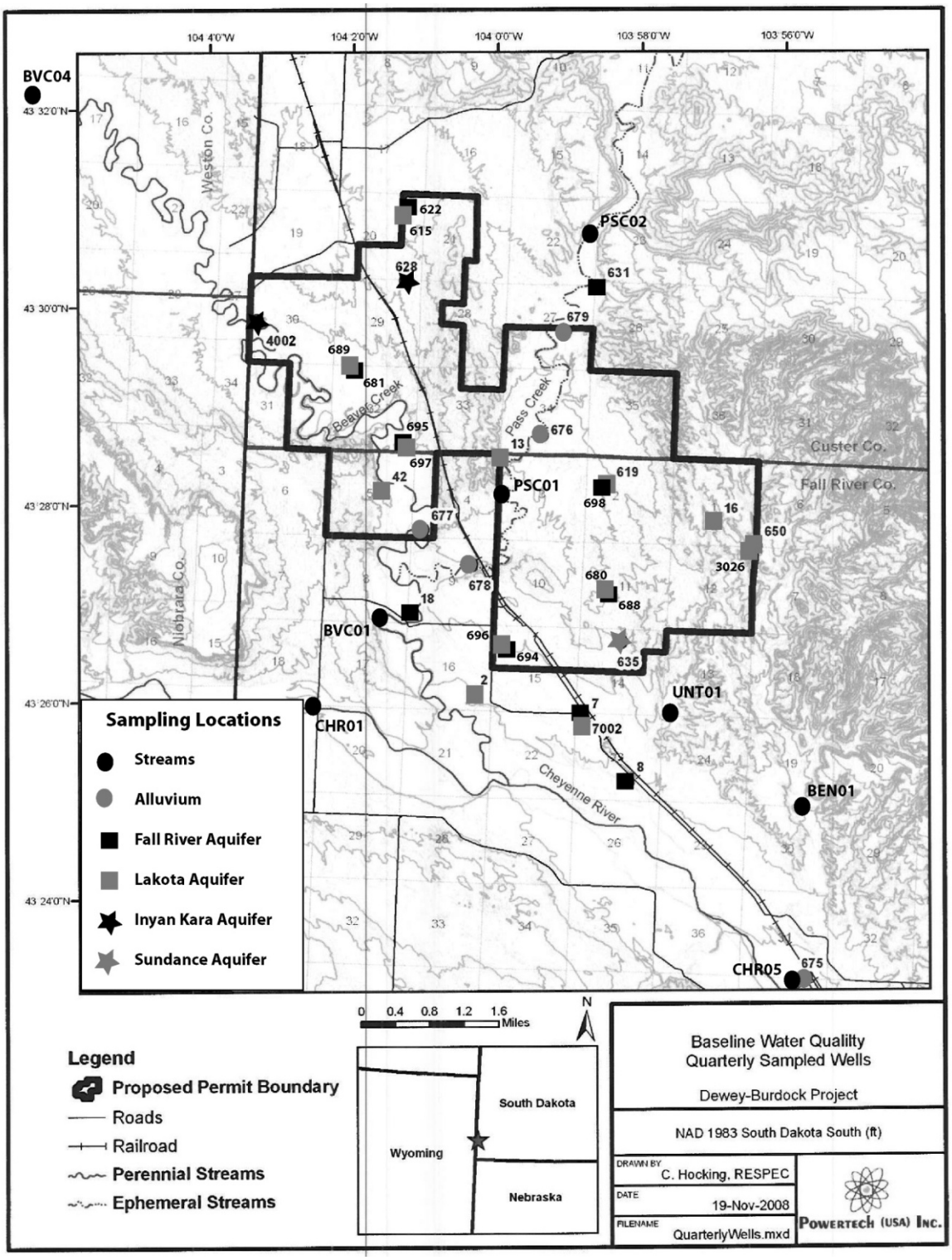

Figure 3.5-2. Map Showing Locations of Beaver Creek, Pass Creek, and the Cheyenne River in Relation to the Proposed Dewey-Burdock *In-Situ* Recovery Project and Water Quality Sampling Locations for Surface Water and Groundwater. Note That Alluvium Samples Were Collected From Wells and Are Not Surface Water Samples.
Source: Modified From Powertech (2009a)

The applicant performed floodplain modeling on the stream channels of Beaver Creek, Pass Creek, and smaller ephemeral drainages within the proposed project area to determine the extent of inundation from a simulated 100-year flood and evaluate potential adverse impacts to facilities from flooding (Powertech, 2009b, 2011). Results of the modeling showing the areal extent of a 100-year flood with respect to proposed facilities and wellfields are illustrated in Figure 3.5-3. The modeling indicates that, with the exception of the plant-to-plant pipeline and small parts of some proposed wellfields, most of the proposed facilities, infrastructure, potential land application areas, and wellfields will be located outside the 100-year flood inundation boundaries of Beaver Creek and Pass Creek. For example, the 100-year floodplain boundary of Beaver Creek will be 668 m [2,190 ft] from the proposed satellite facility in the Dewey area and 664 m [2,180 ft] from the proposed central processing plant in the Burdock area. Conversely, some wellfields and storage ponds in the Dewey area and some wellfields, the main access road, and the plant-to-plant pipeline in the Burdock area are located within the 100-year floodplain boundary of ephemeral drainages (Figure 3.5-3).

There are a number of abandoned open pit mines (depression zones) within the project area stretching from the eastern to the northern boundaries of the site in the Burdock area (see Figure 3.2-3). With the exception of Darrow Pit #2, the Darrow pits are usually dry but occasionally contain water that collects from runoff events (Powertech, 2011). The usual presence of water in Darrow Pit #2 suggests that the base of the pit may be below the potentiometric surface of the Fall River Formation. The Triangle Pit, which lies up dip of the proposed Burdock area wellfields, has permanent water storage at a depth greater than 30 m [100 ft]. The bottom of the Triangle Pit is below the potentiometric surface of the Fall River and is, therefore, hydraulically connected to the Fall River Formation.

Surface Water Quality

Water quality in Beaver Creek, Pass Creek, and the Cheyenne River varies considerably and is dependent on flow regime. These streams often experience extended periods of low or no flow. During periods of high flow, relatively high amounts of sediment and low dissolved solids occur in the streams, while less turbid waters with higher dissolved solids occur during periods of low flow. Upstream and downstream of the proposed Dewey-Burdock ISR Project in South Dakota, the Cheyenne River is classified as having the following beneficial water uses: (i) warm water semipermanent fish life propagation; (ii) limited contact recreation; (iii) fish and wildlife propagation, recreation, and stock watering; and (iv) irrigation (SDDENR, 2008). According to the State of South Dakota 2006 303(d) list, from Beaver Creek to the Angostura Reservoir, the Cheyenne River is listed as supporting the beneficial use of limited contact recreation, but is listed as impaired for the other three beneficial water uses due to high total dissolved and suspended solids, high salinity, and high conductivity. According to Administrative Rules of South Dakota (ARSD) 74:51:03:08, Beaver Creek in South Dakota is classified as suitable for the same uses as the Cheyenne River.

Both Beaver Creek and Pass Creek are classified as having the beneficial uses of fish and wildlife propagation, recreation, stock watering, and irrigation near the project site (SDDENR, 2008). These creeks, however, are not classified as having the beneficial use of domestic waters.

(Powertech, 2010a). The applicant developed a numerical groundwater model using site-specific geologic and hydrologic information (Petrotek, 2012). Based on results of the numerical model, the applicant concluded that vertical leakage through the Fuson Shale is caused by improperly installed wells or improperly abandoned boreholes. The Fuson Shale is underlain by the Chilson aquifer, which varies in thickness from 37 to 61 m [120 to 200 ft]. Its transmissivity ranges from 18 to 55 m^2/day [190 to 590 ft^2/day] in the Burdock area, and its storativity is on the order of 10^{-4} cm/sec [10^{-6} ft/sec] (Powertech, 2009a).

Underlying the Chilson aquifer is the Morrison Formation with an average thickness of 18.3 to 42.7 m [60 to 140 ft] across the project area (Powertech, 2011). The Morrison Formation is the lower confining unit for the Inyan Kara Group aquifer system and has low vertical hydraulic conductivities of 10^{-9} cm/sec [10^{-11} ft/sec] (Powertech, 2009a).

The Morrison Formation is underlain by the Unkpapa then the Sundance aquifers. There is no intervening confining unit between the Unkpapa and Sundance aquifers (see Figure 3.5-5). They are considered to be minor aquifers and are a source of water within the proposed project area (Powertech, 2009a). These aquifers are separated from the underlying Minnekahta aquifer by the low permeability Spearfish Formation, which consists of shale and siltstone. The Spearfish Formation has an average thickness of 98 m [320 ft]. The applicant reported that the Minnekahta aquifer does not supply water for domestic, livestock, or agricultural uses in the proposed Dewey-Burdock ISR Project area (Powertech, 2010a).

Potentiometric surfaces for the Fall River and Chilson aquifers indicate groundwater flows from northeast to southwest (Powertech, 2009b). The directional groundwater flow at the proposed site is consistent with regional groundwater flow; regional flow moves outward radially from the Black Hills, which results in northeast-to-southwest regional flow in the general vicinity of the proposed project site. Potentiometric surfaces also indicate that the hydraulic gradient is upward from the Chilson aquifer to the Fall River aquifer in the Dewey area. At the Dewey pumping test area, the potentiometric surface difference between the Chilson and Fall River aquifers in the Dewey area is approximately 12 m [40 ft] (Powertech, 2010a). Potentiometric surfaces for the Fall River and Chilson aquifers, however, are nearly equal in the Burdock area, suggesting that these two aquifers could be hydraulically connected through the intervening Fuson shale (Powertech, 2009b). There is no evidence from exploratory drilling information (e.g., borehole and geophysical log) that supports the thickness of the Fuson shale as being less than 6 m [20 ft] in the Burdock area (Powertech, 2010a,b).

3.5.3.3 Uranium-Bearing Aquifers

The Chilson and Fall River aquifers, as part of the Inyan Kara Group aquifer, contain the uranium mineralization that the proposed project will extract (Powertech, 2009a). The initial wellfield in the Dewey area will be located in the mineralization zone of the Fall River Formation, and the initial wellfield in the Burdock area will be located in the mineralization zone of the Chilson member of the Lakota Formation (Powertech, 2009c). The Fall River Formation crops out in the eastern part of the project area, where it is geologically unconfined and partially saturated (i.e., the water table is below the top of the formation). The approximate boundary between fully saturated and partially saturated conditions in the Fall River is shown in Figure 3.5-7. The applicant has indicated that it has no plans at present to conduct ISR operations in Fall River orebodies in the eastern portion of the project area where the Fall River is geologically unconfined and partially saturated (Powertech, 2011). This will restrict the proposed ISR operations to confined portions of the underlying hydrogeologic system.

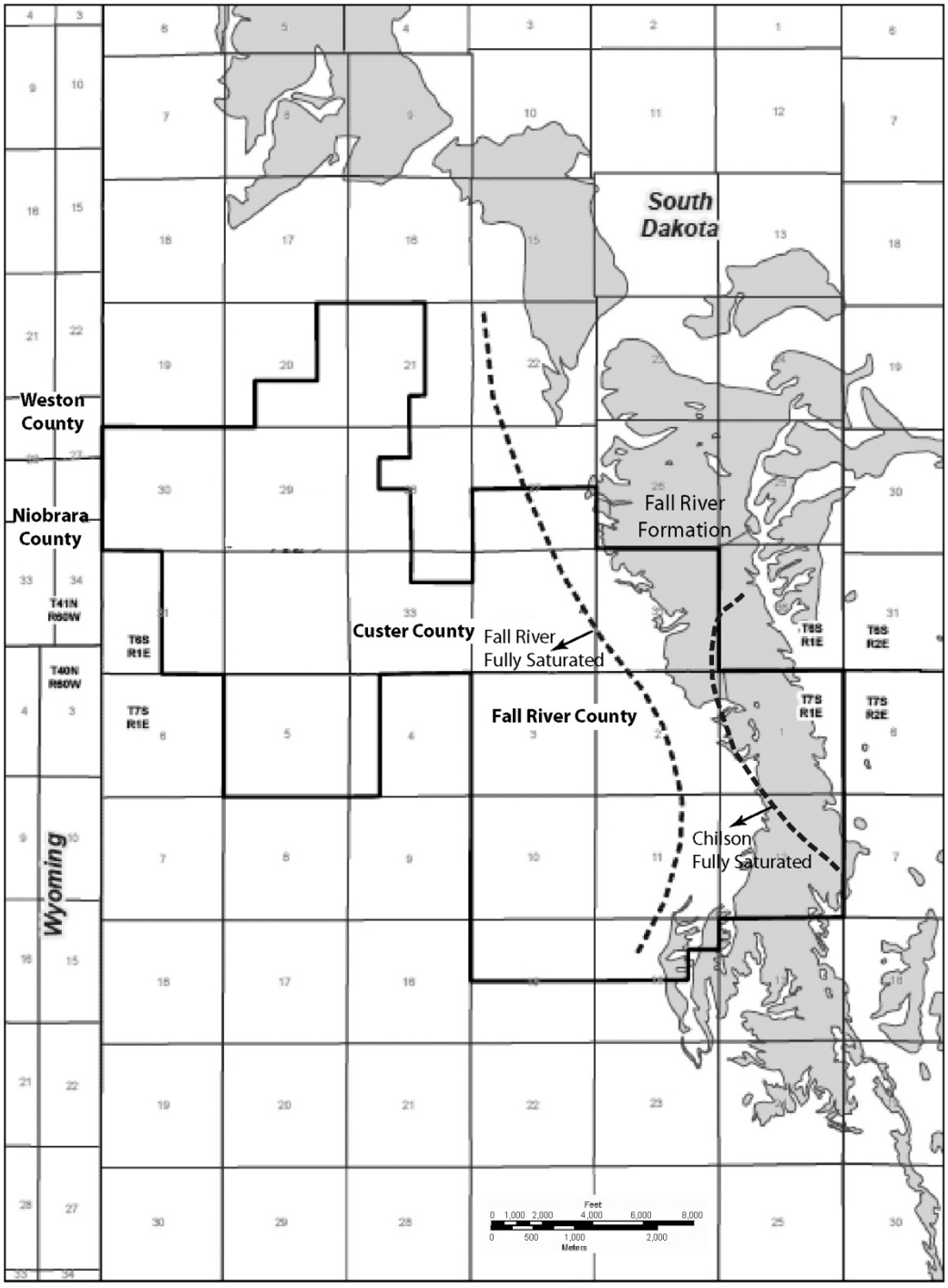

Figure 3.5-7. Map of the Proposed Dewey-Burdock *In-Situ* Recovery Project Area Showing the Approximate Locations of Fully Saturated Portions of the Fall River Formation and Chilson Member of the Lakota Formation. Shaded Areas Are Where Fall River Formation Is Exposed at the Ground Surface. Source: Modified From Powertech (2011)

The applicant is considering the possibility of conducting ISR operations in partially saturated portions of the underlying Chilson aquifer in the eastern part of the project area (Powertech, 2010a, 2011). The approximate boundary between fully saturated and partially saturated conditions in the Chilson is shown in Figure 3.5-7. Partially saturated portions of the Chilson along the eastern edge of the project area are not confined under pressure beneath the relatively impermeable Fuson Shale. Therefore, although the Chilson is geologically confined in this area, the partially saturated portions are considered hydrologically unconfined. The applicant has committed, as part of the license condition, to conduct additional hydrogeological investigations (e.g., delineation drilling and pump testing) prior to wellfield development to accurately measure and identify partially saturated portions of the Chilson aquifer to confirm sufficient potentiometric head {greater than 15.2 m [50 ft]} is available to perform normal ISR operations (Powertech, 2010a, 2011).

3.5.3.4 Other Surrounding Aquifers for Water Supply

The Madison aquifer is the most important aquifer in the region supplying municipal water for numerous communities, including Rapid City and Edgemont, South Dakota. Powertech reported that the Sundance and Unkpapa aquifers are minor aquifers, supplying local domestic and livestock water within the proposed project area (Powertech, 2009a, 2011).

3.5.3.5 Groundwater Quality

The applicant followed guidance in NUREG–1569 (NRC, 2003) and NRC Regulatory Guide 4.14 (NRC, 1980) to establish preoperational or baseline groundwater quality conditions at the proposed site (Powertech, 2009a, 2011). The applicant conducted initial baseline groundwater sampling of wells at the proposed Dewey-Burdock ISR Project from July 2007 through June 2008 (Powertech, 2009a). The baseline study sampled 19 groundwater wells quarterly: 14 were existing wells and 5 wells were newly drilled. Eight domestic wells and six stock watering wells were sampled, and three of these existing wells are located upgradient of the proposed uranium recovery areas. Groundwater sampling was undertaken in a number of aquifers: four wells in the Fall River Formation, seven wells in the Lakota Formation (Chilson Member), two wells in the Inyan Kara Group made up of the Fall River or Chilson, one well in the Sundance formation, and five wells in the alluvium were tested. The applicant conducted monthly sampling of an additional 12 wells from March 2008 to February 2009. Six of these wells were located in the Dewey area and six in the Burdock area. A set of Fall River and Chilson wells was sampled within areas upgradient and downgradient of proposed uranium recovery areas in both the Dewey and Burdock areas. The locations of all groundwater sampling sites are shown in Figure 3.5-2.

The initial baseline groundwater sampling results found that 28 out of 31 groundwater samples exceeded the MCLs for primary drinking water standards as provided by EPA regulations at 40 CFR Part 141. Wells with groundwater samples exceeding primary drinking water standards for arsenic (40 CFR Part 141, Subpart B), lead (40 CFR Part 141.86), uranium, Ra-226, and gross alpha (40 CFR Part 141.66) are shown in Table 3.5-4. This table provides data on constituent concentrations of inorganic chemicals, uranium, Ra-226, and gross alpha particle radioactivity and identifies the well and aquifer sampled. Of 25 groundwater samples collected from the proposed ore-bearing aquifer, 23 exceeded the MCLs for primary drinking water standards as provided by EPA regulations at 40 CFR Part 141; hence, groundwater from the proposed ore-bearing aquifer within the permit boundaries will not be used in public water systems and is unsuitable for private domestic use without treatment.

Table 3.5-4. Baseline Groundwater Samples With Values Exceeding the Maximum Contaminant Level for Arsenic (0.01 mg/L), Lead (0.015 mg/L), Uranium (Total, 0.03 mg/L), Ra-226 (Dissolved, 5 pCi/L), and Gross Alpha (Total, 15 pCi/L)

Well Identification	Aquifer	Arsenic (mg/L)	Lead (mg/L)	Uranium (mg/L)	Ra-226 (Dissolved) (pCi/L)	Gross Alpha (pCi/L)
2	Chilson					
7	Fall River					15.5
8	Fall River					
13	Chilson					19.5
16	Chilson				6.4–26.2	28.3–85.7
18	Fall River					15.7–31.7
42	Chilson				96.5–102	371–558
615	Chilson	0.021–0.024			7.2	15.1–38.3
619	Chilson				99.7–120	341–438
622	Fall River	0.027	0.023–0.03		7.9	15–1470
628	Inyan Kara				6.1–20.7	29.9–83.9
631	Fall River				9.5–22.1	46.5–162
635	Sundance					
650	Chilson		0.05			
675	Alluvial			0.0387–0.0502		18.3–55.2
676	Alluvial	0.021	0.06	0.0591–0.0687		31.9–95.5
677	Alluvial			0.0414–0.0471		38.7–129
678	Alluvial			0.0379–0.0387		18.9–54.7
679	Alluvial	0.011	0.015–0.022			18.4–22.4
680	Chilson			0.0541	1,110–1,440	4,090–6,730
681	Fall River				357–434	656–2220
688	Fall River	0.015			6.7	17.3–29.8
689	Chilson		0.017		5.4–7.9	23.9–64.3
694	Fall River					15.1–25.9
695	Fall River	0.016			5.2–10.4	18.7–44.0
696	Chilson					20.2–23.9
697	Chilson				5.6	18.2–21.7
698	Fall River			0.101–0.132	347–429	36.3–2110
3026	Chilson	0.022–0.044		0.0322	5.9–10.1	36.0–116
4002	Inyan Kara				52.3–63.6	120–314
7002	Chilson				8–8.8	29.5–91.4

Source: Powertech (2011)

Samples collected from wells 615 and 3026, which are within the Chilson aquifer, exceeded the MCL for arsenic {0.01 mg/L [0.01 ppm]}; wells 650 and 689, also within the Chilson aquifer, exceeded the MCL for lead {0.015 mg/L [0.015 ppm]}. Samples from well 622 in the Fall River aquifer and from wells 676 and 679 in alluvial aquifers along Pass Creek exceeded the MCL for both arsenic and lead. In addition, samples from wells 688 and 695 in the Fall River aquifer exceeded the MCL for arsenic. The MCL for uranium (0.03 mg/L) was exceeded in samples obtained from four of five wells in the alluvial aquifers. Samples from wells 680 and 3026 in the Chilson aquifer and well 698 in the Fall River aquifer also exceeded the MCL for uranium; these wells are within the Burdock area. The MCL for other metals, such as selenium {0.05 mg/L [0.05 ppm]}, was not exceeded in any of the groundwater samples.

More than 60 percent of the samples in the both Fall River and Chilson aquifers exceeded the MCL for dissolved Ra-226 [185 Bq/m_3 [5 pCi/L]}. Ra-226 levels exceeding the MCL ranged between 192 and 53,274 Bq/m^3 [5.2 and 1,440 pCi/L]. Approximately 75 percent of the wells sampled in the Fall River, Chilson, and alluvial aquifers produced samples that exceeded the MCL for gross alpha {555 Bq/m^3 [15 pCi/L]}. Gross alpha levels exceeding the MCLs in alluvial wells ranged between 677 and 4,772 Bq/m_3 [18.3 and 129 pCi/L]; however, gross alpha levels exceeding MCLs in the Fall River and Chilson aquifers were higher, ranging from 555 to 248,983 Bq/m^3 [15 to 6,730 pCi/L]. Wells 680 and 681 demonstrated Ra-226 levels exceeding 11,099 Bq/m^3 [300 pCi/L] and gross alpha concentrations exceeding 36,996 Bq/m^3 [1,000 pCi/L]; these wells are directly within mapped orebodies in the Chilson and Fall River aquifers. Another well (698) downgradient of abandoned open pit mines within the Fall River aquifer demonstrated uranium, Ra-226, and gross alpha levels in the range of 0.113 to 0.123 mg/L [0.113 to 0.123 ppm], 13,688 to 15,871 Bq/m^3 [370 to 429 pCi/L], and 44,765 to 78,061 Bq/m^3 [1,210 to 2,110 pCi/L], respectively, exceeding the corresponding MCLs.

Baseline groundwater samples also measured levels that exceeded the SMCLs for bulk water quality properties including pH, TDS, and other major constituents such as sodium and sulfate (Powertech, 2009a, 2011). Samples from six wells exceeded the SMCL for pH (6.5–8.5) with values ranging from 8.6 to 10.3. All the samples exceeded the SMCL for TDS {500 mg/L [500 ppm]} with values ranging from 670 to 9,700 mg/L [670 to 9,700 ppm]. The highest TDS values were obtained from alluvial aquifer samples. The SMCL for sodium {200 mg/L [200 ppm]} was exceeded in approximately half of the samples; measured values ranged from 201 to 2,140 mg/L [201 to 2,140 ppm]. Samples taken from alluvial aquifers produced the highest values for sodium. All samples taken from wells exceeded the SMCLs for sulfate {250 mg/L [250 ppm]}; wells in the alluvial aquifers measured the highest sulfate values {greater than 3,000 mg/L [3,000 ppm]}.

At the present time, a primary drinking water standard for Rn-222 has not been established; however, EPA has proposed a limit of 11,099 Bq/m^3 [300 pCi/L] (EPA, 2000). Only well 650, of all the wells tested during baseline groundwater sampling, produced samples that did not exceed the proposed EPA limit; well 650 in the Chilson aquifer lies upgradient of historic uranium mining activities (Powertech, 2009a, 2011). Well samples exceeding the EPA's proposed limit for Rn-222 produced values ranging from 11,247 to 17,092,120 Bq/m^3 [304 to 462,000 pCi/L]. Wells 680 and 42, located in the mapped orebodies in the Chilson aquifer, and well 681 in the Fall River aquifer have the highest concentrations of Rn-222. Well 42 provides water for domestic and stock uses.

Before ISR operations begin, the portion of the aquifer(s) designated for uranium recovery must be exempted from the underground source of drinking water (USDW) designation, in

accordance with the Safe Drinking Water Act and pursuant to 40 CFR Part 146. A USDW is defined as an aquifer or its portion that supplies any public water system, or that contains a sufficient quantity of groundwater to supply a public water system and currently supplies drinking water for human consumption, or contains fewer than 10,000 mg/L [10,000 ppm] total dissolved solids, and which is not an exempted aquifer. An aquifer or aquifer portion that meets the criteria for a USDW may be determined to be an "exempted aquifer" if it does not currently serve as a source of drinking water and it cannot now and will not in the future serve as a source of drinking water because it is mineral, hydrocarbon, or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class III operation to contain minerals that, considering their quantity and location, are expected to be commercially producible. The applicant, therefore, must obtain an aquifer exemption from EPA as a precondition to initiating ISR operations.

3.6 Ecology

The Nebraska-South Dakota-Wyoming Milling Region, as fully described in GEIS Section 3.4.5, encompasses the Middle Rockies, Northwestern Great Plains, Western High Plains, and the Nebraska Sand Hills ecoregions (NRC, 2009a). The proposed Dewey-Burdock ISR Project is located within the Black Hills Foothills and Sagebrush Steppe ecoregions (Figure 3.6-1). GEIS Section 3.4.5.1 provides the following description of these ecoregions:

- The Black Hills Foothills ecoregion is composed of the Hogback Ridge and the Red Valley. The Hogback Ridge forms a ring of foothills surrounding the Black Hills. The Red Valley encircles most of the Black Hills dome and acts as a buffer between the Hogback Ridge and the Black Hills. Natural vegetation within this region includes ponderosa pine (*Pinus ponderosa*), woodlands and open savannas with an understory of western wheat grass (*Elymus smithii)*, needle-and-thread grass (*Stipa comata*), little bluestem (*Schizachyrium scoparium*), blue grama (*Bouteloua gracilis)*, buffalo grass (*Hierochloe odorata*), and leadplant (*Amorpha canescens*). In addition, some burr oak (*Quercus macrocarpa*) is found in the north and Rocky Mountain juniper (*Juniperus scopulorum*) occurs in the south (Chapman, et al., 2004).

- The Sagebrush Steppe ecoregion is found in Montana and in the Dakotas with only a small area extending into Wyoming. Vegetation types in this region consist of big sagebrush, Nuttall saltbush (*Atriplex nuttallii*), and short grass prairie. The sparse sagebrush communities consist of dusky gray sagebrush (*Artemisia arbuscula* ssp*. Arbuscula)*, dwarf sage (*Artemisia columbiensis*), and big sagebrush (*Artemisia tridentata*). Prairie vegetation that can be found includes western wheatgrass, green needlegrass (*Nassella viridula*), blue grama, Sandberg bluegrass (*Poa secunda*), junegrass (*Koeleria macrantha*), rabbit brush (*Chrysothamnus*), fringed sage (*Artemisia frigid)*, and buffalo grass. The shrub vegetation of this ecoregion is transitional between the grasslands of the Montana Central Grassland and the woodland of the Pine Scoria Hills (Bryce, et al., 1996).

The applicant conducted ecological baseline studies from July 2007 through August 2008 at the proposed Dewey-Burdock site to fulfill the objectives specified in NUREG–1569 (NRC, 2003) and to meet SDDENR, SDGFP, and U.S. Fish and Wildlife Service (FWS) guidelines (Powertech, 2009a).

As part of its obligations under Section 106 of the NHPA and the regulations at 36 CFR 800.2(c)(2)(B)(ii)(A), NRC must provide Indian tribes "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties and evaluation of historic properties, including those of religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects." The NRC identified 23 Native American tribes that attach historical, cultural, and religious significance to sites within the Dewey-Burdock ISR Project area. The NRC continues consultation on historic properties with the following tribes:

- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Flandreau Santee Sioux Tribe
- Lower Brule Sioux Tribe
- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Sisseton-Wahpeton Sioux Tribe
- Standing Rock Sioux Tribe
- Yankton Sioux Tribe
- Three Affiliated Tribes (Mandan, Hidasta, and Arikara Nation)—North Dakota
- Turtle Mountain Band of Chippewa—North Dakota
- Spirit Lake Tribe—North Dakota
- Lower Sioux Indian Community—Minnesota
- Fort Peck Assiniboine and Sioux—Montana
- Northern Cheyenne Tribe—Montana
- Northern Arapaho Tribe—Wyoming
- Eastern Shoshone Tribe—Wyoming
- Ponca Tribe—Nebraska
- Crow Tribe—Montana
- Santee Sioux Tribe—Nebraska
- Omaha Tribe—Nebraska
- Cheyenne and Arapaho Tribes—Oklahoma
- Pawnee Tribe—Oklahoma

NRC staff formally initiated the Section 106 consultation process for the proposed Dewey-Burdock ISR Project by contacting 20 tribal governments by letters dated March 19, 2010 (SEIS Section 1.7.3.5, NRC 2010a). Additional invitations to consult with the NRC concerning the proposed project were sent to tribes on September 10, 2010 and March 4, 2011 (NRC 2010b; NRC 2011). NRC staff invited the tribes to participate as consulting parties in the NHPA Section 106 process and sought their assistance in identifying places of religious and cultural significance and any other cultural resources that may be affected by the proposed action. SEIS Section 1.7.3.5 describes consultation activities undertaken by NRC with tribal governments. Consultation correspondence associated with the Section 106 process is presented in Appendix A. At this time, consultation on the evaluation and effects determination of historic properties is ongoing with all consulting parties, including interested tribes. The outcome of this consultation effort will be included in the programmatic agreement.

osmosis, and radium settling depending on the disposal option selected as described in Section 2.1.1.1.6.2 (Powertech, 2009a–c). If the applicant uses the deep well disposal option, four to eight Class V wells will be installed, as described in SEIS Section 2.1.1.1.6.2. Figure 2.1-12 shows the proposed land application areas.

3.13.2 Solid Waste Disposal

Solid byproduct material (including radioactively contaminated soils or other media) that does not meet NRC unrestricted release criteria must be disposed of at a licensed facility, as required by 10 CFR Part 40, Appendix A, Criterion 2. As described in SEIS Section 2.1.1.1.6.3, the proposed action will generate solid byproduct material that does not meet NRC criteria for unrestricted release. In addition to the regulatory requirements, if an NRC license is granted, NRC staff will require, by license condition, an agreement to be in place before operations begin to ensure the availability of sufficient disposal capacity. The applicant has identified the White Mesa site as the disposal location for solid byproduct material, but a disposal agreement is not yet in place (Powertech, 2011). The White Mesa site, an operating conventional uranium mill in Blanding, Utah, is permitted to construct an additional 1,452,654 m^3 [1,900,000 yd^3] of tailings impoundment capacity (UDEQ, 2010a); however, in accordance with its license, it must obtain approval from Utah Department of Environmental Quality (UDEQ) to bury ISR waste. Furthermore, it may not receive more than 3,823 m^3 [5,000 yd^3] of ISR wastes from any single source (UDEQ, 2010b).

As discussed in SEIS Section 2.1.1.1.6.3, nonhazardous solid wastes are materials that are not hazardous waste and comply with NRC unrestricted release limits. All proposed phases of the Dewey-Burdock ISR Project will generate nonhazardous solid waste (Powertech, 2009a). The proposed project is expected to generate solid wastes that could include general facility trash, septic system solids, construction/demolition debris, and any solid byproduct material (such as piping, valves, instrumentation, or equipment) that has been decontaminated to meet NRC criteria for unrestricted release.

The applicant has proposed to dispose of nonhazardous solid waste at the Custer-Fall River Waste Management District landfill at Edgemont, South Dakota, approximately 24 km [15 mi] southeast of the proposed Dewey-Burdock site. The Custer-Fall River landfill received 9,964 short tons {approximately 19,060 m^3 [24,910 yd^3]} of solid waste in 2011 and has a remaining permitted solid waste capacity of 154,000 tons {approximately 294,567 m^3 [385,000 yd^3]} (Barker Concrete & Construction, Inc., 2012). The projected average annual rate of waste received at the landfill is 8,160 t/yr [9,000 T/yr] (SDDENR, 2010). The remaining capacity would allow operations of the landfill for an additional 17 years beyond mid-year 2012 (the time of the capacity estimate) if the annual receipt of waste continued at the projected annual average rate.

If additional disposal capacity is needed, the applicant has also proposed to dispose of nonhazardous solid waste at a landfill in Newcastle, Wyoming (Powertech, 2010a), approximately 64 km [40 miles] north of the proposed Dewey-Burdock ISR Project site. The most recent published documentation of landfill characteristics NRC staff identified is from American Engineering Testing, Inc. (AET, Inc.) (2011). The estimated volume of waste the Newcastle landfill receives annually is 12,118 m^3 [15,850 yd^3] (AET, Inc., 2011). The remaining permitted capacity of the Newcastle landfill was reported as 187,452 m^3 [245,000 yd^3] and estimated in 2011 to allow 12 additional years of operation (AET, Inc., 2011). These annual

inputs to waste facilities are provided to show how the proposed action's generation rate compares with the regional generation from other sources.

Another more distant and higher capacity landfill serving Rapid City, South Dakota, is projected to be operational until 2050 (HDR Engineering Inc., 2010).

3.14 References

10 CFR Part 20. *Code of Federal Regulations*, Title 10, *Energy*, Part 20. "Standards for Protection Against Radiation." Washington, DC: U.S. Government Printing Office.

10 CFR Part 40. *Code of Federal Regulations*, Title 10, *Energy*, Part 40, Appendix A. "Criteria Relating to the Operation of Uranium Mills and to the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily from their Source Material Content." Washington, DC: U.S. Government Printing Office.

23 CFR Part 772. *Code of Federal Regulations*, Title 23, *Highways*, Part 772. "Procedures for Abatement of Highway Traffic Noise and Construction Noise." Washington, DC: U.S. Government Printing Office.

36 CFR Part 60. *Code of Federal Regulations*, Title 36, *Parks, Forests, and Public Property*, Part 60, Section 4. "Criteria for Evaluation." Washington, DC: U.S. Government Printing Office.

36 CFR Part 800. *Code of Federal Regulations*, Title 36, *Parks, Forests, and Public Property*, Part 800. "Protection of Historic Properties." Washington, DC: U.S. Government Printing Office.

40 CFR Part 50. *Code of Federal Regulations*, Title 40, *Protection of the Environment*, Part 50. "National Primary and Secondary Ambient Air Quality Standards." Washington DC: U.S. Government Printing Office.

40 CFR Part 52. *Code of Federal Regulations*, Title 40, *Protection of the Environment*, Part 52. Section 21 "Prevention of Significant Deterioration of Air Quality." Washington DC: U.S. Government Printing Office.

40 CFR Part 141. *Code of Federal Regulations*, Title 40, *Protection of the Environment*, Part 141. "National Primary Drinking Water Regulations." Washington, DC: U.S. Government Printing Office.

40 CFR Part 146. *Code of Federal Regulations*, Title 40, *Protection of the Environment*, Part 146. "Underground Injection Control Program: Criteria and Standards." Washington, DC: U.S. Government Printing Office.

72 FR 37346. FWS. "Endangered and Threatened Wildlife and Plants; Removing the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife." *Federal Register*. Vol. 72, No. 130. pp. 37,345–37,347. July 9, 2007.

74 FR 66496. "Endangerment and Cause or Contribute Findings for Greenhouse Gases." *Federal Register.* Vol. 74, No. 239. pp. 66496–66546. December 15, 2009.

projected traffic is assumed to be half the tabulated values [e.g., 2,584 vehicles per day for the U.S. Highway 18 total of 5,169 (2,584 vehicles per day is well below the aforementioned range of capacities staff evaluated of 7,237 to 13,900 vehicles per day)]; therefore, the NRC staff conclude the highest projected traffic is below the estimated capacity.

Considering the magnitude of projected traffic from the proposed Dewey-Burdock ISR Project, the NRC staff conclude the increase in traffic volumes to the local and unpaved Dewey Road will result in SMALL impacts under the Class V injection well disposal option. This increase in traffic will incrementally accelerate degradation of the road surface, increase the generation of dust, and increase the potential for traffic accidents and wildlife or livestock kills. Based on the available capacity on the more distant regional roads, the staff conclude the potential traffic impacts to the remainder of regional roads under the Class V injection well disposal option will be SMALL.

The applicant intends to use existing roads on the site area to the degree possible; however, some new roads will be constructed to facilitate onsite transportation (SEIS Section 2.1.1.2.2). Impacts to land use related to the development of new access roads are addressed in SEIS Section 4.2.1.1. All roads constructed for the proposed action will be reclaimed except those landowners specify to remain for future use (Powertech, 2009a).

4.3.1.1.2 Operations Impacts

The proposed operational transportation activities for the Dewey-Burdock ISR Project are similar to those evaluated in GEIS Section 4.4.2.2 including employee commuting and truck shipments of yellowcake, ion-exchange resins, hazardous chemical supplies, and byproduct material. The types of impacts evaluated are also similar to those evaluated in the GEIS including impacts to traffic and potential hazards associated with shipment of yellowcake, ion-exchange resins, byproduct material, and hazardous materials.

Traffic generated by these proposed operations is described in SEIS Section 2.1.1.1.7. The overall magnitude of proposed operational transportation is less than the operational transportation evaluated in GEIS Section 4.4.2.2. Commuting workers constitute the majority of road traffic the applicant proposed for the operations phase. The applicant estimated a number of commuting workers trips to the site that was within the range considered in the GEIS (27 vehicle trips for the proposed project compared to 20 to 200 trips considered in the GEIS). For trucking activities, remote ion-exchange shipments were comparable to the GEIS Section 2.8 values and processing chemical shipments were less than GEIS values. The proposed operational byproduct shipments are less than the GEIS values, and proposed yellowcake shipments are at the low end of the range considered in the GEIS. (NRC, 2009a)

Table 4.3-2 compares the magnitude of the NRC staff's estimated increase in local traffic counts from proposed operations activities. The projected traffic for the operations phase for all road segments evaluated is lower than the projected traffic from the construction phase. Considering Table 4.3-2, the proposed traffic, if allocated completely to the individual road segments, will increase the existing traffic on unpaved Dewey Road (Fall River County Road 6463 and Custer County Road 769) but will not substantially increase traffic on more heavily traveled road segments, such as State Highway 89, U.S. Highway 18 (from Edgemont and near Hot Springs), or State Highway 79 at the junction with U.S. Highway 18. The projected daily traffic on Dewey Road, the road nearest the proposed site, represents a 24 percent increase over existing traffic. State Highway 89 traffic was projected to increase by nine percent if all workers commuted on

Table 4.3-2. Estimated Daily Traffic on Regional Roads for the Operations Phase of the Proposed Dewey-Burdock *In-Situ* Recovery Project

Road Segment	Traffic Count*			Projected Traffic†		Percent Increase‡	
	All Vehicles	Auto	Truck	Auto	Truck	Auto	Truck
Dewey Road	225	225	—	279	4	24	—
U.S. Highway 18 (Edgemont to State Highway 89)	1,782	1,361	421	1,415	425	4	<1
U.S. Highway 18 (Hot Springs to State Highway 79)	5,075	4,725	350	4,779	354	1	1
State Highway 89 (U.S. Highway 385 to U.S. Highway 18)	659	604	55	658	59	9	7
State Highway 79 (at U.S. Highway18)	3,172	2,569	603	2,623	605	2	<1

Sources: Powertech (2013a,b); SDDOT (2011)
*Traffic counts are annual average daily traffic for both directions of travel (Supplemental Environmental Impact Statement Section 3.3). The U.S. Nuclear Regulatory Commission calculated the auto traffic count as the difference between the all vehicle count and reported truck count; for Dewey road, the auto count was assumed equal to the all vehicle count. Data for all roads are for year 2011 and are from SDDOT (2011) except the Dewey count is from 2012 (Powertech, 2013a).
†Projected traffic is the sum of the proposed action daily two-way traffic and the applicable traffic count. Proposed operations phase two-way traffic is double the round- trips reported in Table 2.1-7.
‡This analysis assumes all projected traffic will travel on each road. If proposed action traffic used multiple routes, then this analysis overestimates impacts to each road segment.

that route; however, because the road is more distant from the site, the NRC staff conclude it will be less likely to be used by all workforce commuters and therefore actual traffic impacts will be lower than projected. Based on the information in Table 4.3-2, the projected increases in truck traffic are low for all routes evaluated. Additionally, the magnitude of the projected operational traffic for all the roads evaluated (ranging from approximately 283 to 5,133 vehicles per day considering the sum of projected auto and truck traffic) will not exceed the existing road capacity (see additional discussion of capacity in SEIS Section 4.3.1.1), and the staff conclude the regional highways could accommodate the additional traffic from the proposed project.

Considering the magnitude of projected traffic from the proposed Dewey-Burdock ISR Project, the NRC staff conclude the increase in traffic volumes to the local and unpaved Dewey Road will result in SMALL impacts under the Class V injection well disposal option. This increase in traffic will incrementally accelerate degradation of the road surface, increase the generation of dust, and increase the potential for traffic accidents and wildlife or livestock kills. Based on the available capacity on the more distant regional roads, the staff conclude the potential traffic impacts to the remainder of regional roads will also be SMALL under the Class V injection well disposal option.

The potential radiological accident risk associated with yellowcake product shipments was evaluated in GEIS Section 4.4.2.2. The yellowcake transportation analysis assumed shipment volumes that ranged from 34 to 145 yellowcake shipments per year, which could result in a risk of 0.01 and 0.04 latent cancer fatalities, respectively, considering accident probabilities and

consequences (NRC, 2009a). The proposed yellowcake transportation activities for the proposed Dewey-Burdock ISR Project are described in SEIS Section 2.1.1.1.7. These activities are similar in approach to the activities evaluated in the GEIS Section 4.2.2.2, and the quantities of material shipped, the number of shipments, and the shipment distances are within the magnitude of the yellowcake transportation activities evaluated in the GEIS. The applicant has estimated approximately 25 yellowcake shipments per year will be needed for the proposed action or an average of one shipment every 2 weeks. This estimate is based on the proposed 45,250 kg [1 million lb] annual yellowcake production rate and an assumed 18,100 kg [40,000 lb] capacity per yellowcake shipment (Powertech, 2009b). By comparison the GEIS does not differ significantly; it considers yellowcake shipped in drums that hold approximately 430 kg [950 lb] and shipments carrying 40 drums per load for a total shipment capacity of 17,200 kg [38,000 lb]. Therefore, the radiological accident risk associated with yellowcake shipment at the proposed Dewey-Burdock ISR Project will be bounded by the GEIS risk analysis. The shipment volume will not significantly affect the project-related traffic relative to the expected commuting workforce.

The GEIS Section 4.4.2.2 reported that previous accidents involving yellowcake releases result in up to 30 percent of shipment contents being released (NRC, 2009a). To limit the risk of an accident involving resin or yellowcake transport, the applicant has proposed that all such materials will be transported in accordance with U.S. Department of Transportation (USDOT) and NRC regulations, handled as low specific-activity materials, and shipped using exclusive-use-only vehicles (Powertech, 2009a). The NRC staff conclude the consequences of such accidents will also be limited because the applicant has proposed to develop emergency response procedures (Powertech, 2009a) for yellowcake and other transportation accidents that could occur during shipment to or from the proposed Dewey-Burdock ISR Project. The applicant also proposes to ensure its personnel and the carrier receive training on these emergency response procedures and that information about the procedures is provided to state and local agencies (Powertech, 2009a). Therefore, the NRC staff conclude the impact from a potential accident involving yellowcake transportation during the operations phase of the proposed project will be SMALL under the Class V injection well disposal option.

The potential impacts from ion-exchange shipments were evaluated in GEIS Section 4.2.2.2 as cited by GEIS Section 4.4.2.2. NRC staff concluded in the GEIS that the potential radiological impacts of these shipments will be bound by the risks from yellowcake shipments based on the less concentrated nature of the resins; the uranium being chemically bound to the resins, which will limit dispersion in the event of a spill; and the small shipment distance relative to yellowcake shipments (i.e., the likelihood of an accident increases with the distance traveled). The proposed ion-exchange transportation activities for the Dewey-Burdock ISR Project described in SEIS Section 2.1.1.1.7 are similar to the activities evaluated in the GEIS. The applicant plans to transport one loaded resin truck per day (Powertech, 2009a), which is consistent with the GEIS Section 2.8 assumption of one truck per day. Ion-exchange resin transported onsite between the Dewey site and the Burdock site central processing plant will traverse approximately 8 km [5.0 mi] of road (primarily on Dewey Road). Compliance with the applicable NRC and USDOT regulations for shipping ion-exchange resins, which are enforced by NRC onsite inspections, provides additional confidence that these materials can be safely shipped across the site area. Therefore, applying the GEIS impact analysis to the proposed activities, the NRC staff conclude the aforementioned SMALL potential radiological accident impacts from the proposed Dewey-Burdock facility yellowcake shipments bound the potential radiological accident impacts of the proposed ion-exchange resin shipments. The NRC staff conclude the resulting environmental impact from ion-exchange resin shipments will be SMALL; this is based on the

fact that the risk of ion-exchange resin accidents is low, a resulting spill will be properly removed and disposed of, and the affected area will be reclaimed in accordance with applicable NRC and state regulations.

The potential impacts from operational byproduct material shipments were evaluated in GEIS Section 4.2.2.2 as cited by GEIS Section 4.4.2.2. NRC staff concluded in the GEIS the SMALL risks from transporting yellowcake during operations will bound the risks expected from byproduct material shipments, owing to the concentrated nature of shipped yellowcake, the longer distance yellowcake is shipped relative to byproduct material, and the relative number of shipments of each material. The proposed operational byproduct material transportation activities for the Dewey-Burdock ISR Project are described in SEIS Section 2.1.1.1.7. The applicant proposed to temporarily store operational byproduct material and then ship the material to an offsite disposal facility that is licensed to accept byproduct material. Byproduct material disposal facility options are described in SEIS Section 3.13.2. The applicant's estimated annual generation of 22 m^3 [29 yd^3] of byproduct material (including reverse osmosis reject solids, spent ion-exchange resins, and tank and pond sediments) will comprise approximately one shipment per year (SEIS Section 2.1.1.1.7). This magnitude of operational byproduct material shipping is lower than the range documented in the GEIS of 2.5 to 15 shipments per year (NRC, 2009a, Table 2.8-1). Transportation safety will be maintained by the applicant's proposed adherence to applicable NRC and USDOT transportation requirements, the applicant's proposed use of licensed third-party carriers, and the applicant's proposed emergency response measures (Powertech, 2009b). Based on the preceding analysis, the NRC staff conclude the applicant's proposed operational byproduct material shipment activities are consistent with the impact analysis in GEIS Section 4.4.2.2, and therefore environmental impacts of the proposed shipments under the Class V injection well disposal option will be bounded by impacts from the proposed yellowcake shipments (SMALL).

The potential impacts from transportation of process chemical supplies were also evaluated in GEIS Section 4.2.2.2 as cited by GEIS Section 4.4.2.2. The potential safety hazards associated with process chemicals the applicant intends to use for the proposed action (see SEIS Section 4.13.1.2.3) were also described and evaluated in GEIS Sections 2.11.2 and 4.2.11.2.4 (NRC, 2009a). The proposed operational hazardous chemical shipments for the Dewey-Burdock ISR Project are described in SEIS Section 2.1.1.1.7. The applicant proposes to store, use, and receive shipments of the following chemicals: sodium chloride (NaCl), sodium carbonate ($NaHCO_3$), sodium hydroxide (NaOH), hydrochloric acid (HCl), hydrogen peroxide (H_2O_2), carbon dioxide (CO_2), oxygen (O_2), anhydrous ammonia (NH_3), diesel fuel, gasoline, and bottled gases (Powertech, 2009b). The magnitude of operational chemical supply shipments is less than the value documented in the GEIS (NRC, 2009a, Table 2.8-1), and the types of chemicals shipped align with the materials evaluated in the GEIS (NRC, 2009a).

Transportation risks associated with incoming, onsite, and outgoing shipments involve potential in-transit accidents. The process chemicals described in the applicant's proposal are commonly used in industrial applications, and they will be transported following applicable USDOT hazardous materials shipping provisions. If an accident occurs, spill response will be handled via emergency response procedures, although a spill of nonradiological materials will be reportable to the appropriate state agency, EPA, and USDOT (NRC, 2009a). Spill material will be recovered or removed and the affected areas reclaimed. The release of anhydrous ammonia, a compound that the applicant may use in the precipitation circuit (Powertech, 2009b), could be hazardous to the public if released near a populated area. However, the proposed project is not situated in a populated area and the likelihood of such an accident

occurring is small, calculated as 3.0×10^{-7} accidents per km [4.8×10^{-7} accidents per mi] based on NUREG–0706 accident data (NRC, 1980). The applicant proposes to maintain transportation safety by following applicable USDOT hazardous materials transportation requirements and the proposed use of licensed third-party carriers (Powertech, 2009a). Based on these considerations, the staff conclude the environmental impacts from operational hazardous chemical shipments under the Class V injection well disposal option will be SMALL.

NRC staff conclude the increase in traffic volumes will result in SMALL impacts to the local and unpaved Dewey Road and SMALL impacts to the remaining regional roads under the Class V injection well disposal option. Based on the low radiological risks from transportation accidents and the implementation of the applicant's additional safety practices as previously discussed, the overall impacts from the proposed transportation activities during the operations phase will be SMALL under the Class V injection well disposal option.

4.3.1.1.3 Aquifer Restoration Impacts

At the proposed Dewey-Burdock ISR Project, commuting workers constitute the majority of road traffic the applicant proposes for the aquifer restoration phase. The applicant estimated the number of worker trips per day to the site will be five (compared to 20 to 200 worker trips per day considered in GEIS Section 2.8). To evaluate the potential traffic impacts, the NRC staff assumed remote ion-exchange and processing chemical shipments will be similar to the operations phase and bounded by the GEIS values (NRC, 2009a).

Table 4.3-3 compares the magnitude of the NRC staff's estimated increase in local traffic counts from proposed aquifer restoration activities. The projected auto traffic for the aquifer restoration phase for all road segments evaluated is lower than the projected traffic from the construction and operation phases, and the projected truck traffic is similar to the operation phase. Considering Table 4.3-3, the proposed traffic, if allocated completely to the individual road segments, will increase the existing traffic on low-traffic roads, such as the unpaved Dewey Road (Fall River County Road 6463 and Custer County Road 769), but will not substantially increase traffic on the remaining road segments in the table. The projected daily traffic on Dewey Road, the road nearest the proposed site, is a 4 percent increase over existing traffic. Based on the low levels of projected traffic for all vehicle types and road segments, the NRC staff conclude the transportation impacts from the proposed aquifer restoration transportation activities will be SMALL under the Class V injection well disposal option.

4.3.1.1.4 Decommissioning Impacts

The proposed decommissioning traffic estimates for the Dewey-Burdock ISR Project are described in SEIS Section 2.1.1.1.7. NRC staff derived these estimates from applicant-provided information. The magnitude of estimated truck transportation for the proposed decommissioning phase is about two times greater than what is reported in the GEIS (NRC, 2009a, Table 2.8-1), due to the larger amount of estimated nonhazardous solid waste (e.g., facility demolition and equipment removal) from the proposed action that will need to be shipped offsite for disposal. Despite this increase, the overall level of transportation is still low at about one truck per day (two trips when both directions are included) based on the information in SEIS Section 2.1.1.1.7.

Table 4.3-4 compares the magnitude of the NRC staff's estimated increase in local traffic counts from proposed decommissioning activities. The projected traffic in Table 4.3-4 is based on the

Table 4.3-3. Estimated Daily Traffic on Regional Roads for the Aquifer Restoration Phase of the Proposed Dewey-Burdock *In-Situ* Recovery Project

Road Segment	Traffic Count*			Projected Traffic†		Percent Increase‡	
	All Vehicles	Auto	Truck	Auto	Truck	Auto	Truck
Dewey Road	225	225	—	235	4	4	—
U.S. Highway 18 (Edgemont to State Highway 89)	1,782	1,361	421	1,371	425	<1	<1
U.S. Highway 18 (Hot Springs to State Highway 79)	5,075	4,725	350	4,735	354	<1	1
State Highway 89 (U.S. Highway 385 to U.S. Highway 18)	659	604	55	622	59	2	7
State Highway 79 (at U.S. Highway 18)	3,172	2,569	603	2,579	607	<1	<1

Sources: Powertech (2013a,b); SDDOT (2011)
*Traffic counts are annual average daily traffic for both directions of travel (Supplemental Environmental Impact Statement Section 3.3). The U.S. Nuclear Regulatory Commission calculated the auto traffic count as the difference between the all vehicle count and reported truck count for Dewey road, the auto count was assumed equal to the all vehicle count. Data for all roads are for year 2011 and are from SDDOT (2011), except the Dewey count is from 2012 (Powertech, 2013a).
†Projected traffic is the sum of the proposed action daily two-way traffic and the applicable traffic count. Proposed aquifer restoration phase two-way traffic is double the round-trips reported in Table 2.1-7.
‡This analysis assumes all projected traffic will travel on each road. If proposed action traffic used multiple routes, then this analysis overestimates impacts to each road segment.

applicant's proposed Class V injection well disposal option, which the applicant estimated will generate less decommissioning waste than the land application disposal option (and therefore will generate less truck traffic). The projected combined auto and truck traffic for the decommissioning phase for all road segments evaluated is lower than the projected traffic from the construction, operation, and aquifer restoration phases. Considering Table 4.3-4, the proposed traffic, if allocated completely to the individual road segments, will increase the existing traffic on low-traffic roads, such as the unpaved Dewey Road (Fall River County Road 6463 and Custer County Road 769), but will not substantially increase traffic on the remaining road segments in the table. The projected increase in daily traffic on Dewey Road, the road nearest the proposed site, is a six percent increase over existing traffic. Based on the low levels of projected traffic for all vehicle types and road segments, the NRC staff conclude the potential traffic-related impacts from the proposed decommissioning transportation activities will be SMALL under the Class V injection well disposal option.

Another potential transportation impact from proposed decommissioning activities is the radiological risk from the transportation of byproduct material for offsite disposal. The NRC staff consider the potential radiological accident risk associated with byproduct material shipments will be low based on the calculated risks from concentrated yellowcake product shipments discussed previously in SEIS Section 4.3.1.1.2 and in GEIS Section 4.2.2.2. The number of byproduct material shipments NRC staff estimated based on the applicant's proposal is low (Table 2.1-7) (approximately 31 annually for the Class V injection well option compared to

Table 4.3-4. Estimated Daily Traffic on Regional Roads for the Decommissioning Phase of the Proposed Dewey-Burdock *In-Situ* Recovery Project

Road Segment	2011 Traffic Count*			Projected Traffic†		Percent Increase‡	
	All Vehicles	Auto	Truck	Auto	Truck	Auto	Truck
Dewey Road	225	225	—	239	2	6	—
U.S. Highway18 (Edgemont to State Highway 89)	1,782	1,361	421	1,375	423	1	<1
U.S. Highway 18 (Hot Springs to State Highway 79)	5,075	4,725	350	4,739	352	<1	1
State Highway 89 (U.S. Highway 385 to U.S. Highway 18)	659	604	55	618	57	2	4
State Highway 79 (at U.S. Highway18)	3,172	2,569	603	2,583	605	<1	<1

Sources: Powertech (2013a,b); SDDOT (2011)
*Traffic counts are annual average daily traffic for both directions of travel (Supplemental Environmental Impact Statement Section 3.3). The U.S. Nuclear Regulatory Commission calculated the auto traffic count as the difference between the all vehicle count and reported truck count; for Dewey road, the auto count was assumed equal to the all vehicle count. Data for all roads are for year 2011 and are from SDDOT (2011), except the Dewey count is from 2012 (Powertech, 2013a).
†Projected traffic is the sum of the proposed action daily two-way traffic and the applicable traffic count. Proposed decommissioning phase two-way traffic is double the round-trips reported in Table 2.1-7.
‡This analysis assumes all projected traffic will travel on each road. If proposed action traffic used multiple routes, then this analysis overestimates impacts to each road segment.

145 yellowcake shipments evaluated in the GEIS; annual values for the proposed action are the product of the reported daily values in Table 2.1-7 and 260 days/year shipping frequency). The applicant's annual byproduct material volume estimate in its surety (Powertech, 2009b) (see SEIS Section 2.1.1.6.3) indicates the material will consist primarily of pond leak detection equipment and liners. Relative to powdered yellowcake, this material is in a form that will be less dispersible (i.e., less likely to cause public exposure if released) and easier to clean up if an accident involving release occurred. The byproduct material will be transported and disposed of at a licensed facility. The applicant has proposed to pursue an agreement with the White Mesa site in Blanding, Utah, for disposal of solid byproduct material (SEIS Section 3.13.2). The trip distance to this facility from the proposed site of 1,210 km [752 mi] is less than the distance used in the risk analysis described in GEIS Section 4.2.2.2 for transporting yellowcake to the conversion facility in Metropolis, Illinois {approximately 2,414 km [1,500 mi]}. The applicant proposes to implement additional BMPs to reduce the risk of accidents including (i) enforcing safe driving and emergency response procedures and training for personnel and truck drivers, (ii) installing communication systems to connect trucks to shipper/receiver/emergency responders, (iii) and enforcing speed limits on the proposed project site to increase driver safety and to reduce conflicts with big game, livestock, and other vehicles (Powertech, 2009a).
All shipments will be required to comply with applicable USDOT regulations governing the transportation of radioactive material (including quantity limits, packaging requirements, and conveyance dose rate limits). Based on the preceding analysis, the NRC staff conclude the potential radiological risks from the proposed transportation of decommissioning byproduct material will be low and therefore the potential environmental impacts from the proposed

radioactive material transportation will be SMALL under the Class V injection well disposal option.

In conclusion, because of the low estimated traffic for the proposed Dewey-Burdock ISR Project relative to existing road traffic in the region surrounding the site, the NRC staff conclude the potential traffic-related transportation impacts during decommissioning will be SMALL under the Class V injection well disposal option. The low radiological risk from potential transportation accidents in comparison to the accident risks evaluated for the operation phase (i.e., no interstate transport of yellowcake product) supports the staff's conclusion that the radiological risks from transportation of decommissioning byproduct material for offsite disposal will also be SMALL. Therefore, the NRC staff conclude the overall transportation impacts related to the decommissioning phase will be SMALL under the Class V injection well disposal option.

4.3.1.2 Disposal Via Land Application

If a permit for Class V injection wells is not obtained from EPA, the applicant proposes to dispose of liquid byproduct material generated at the proposed Dewey-Burdock ISR Project by land application (see SEIS Section 2.1.1.1.2.4.2). The potential transportation environmental impacts from construction, operations, aquifer restoration, and decommissioning associated with the land application liquid disposal option are discussed in the following sections.

4.3.1.2.1 Construction Impacts

The estimated daily traffic volume on regional roads for the construction phase for the land application option will be the same as that described in SEIS Section 4.3.1.1.1 and summarized in Table 4.3-1 for the Class V injection well disposal option. Commuting workers will constitute the majority of road traffic the applicant proposed for the construction phase. Considering Table 4.3-1, the proposed traffic will increase the existing traffic on low-traffic roads, such as Dewey Road, and State Highway 89 but will not substantially increase traffic on more heavily traveled road segments, such as U.S. Highway 18 traveling through Edgemont or near Hot Springs or State Highway 79 at the junction with U.S. Highway 18. As described in SEIS Section 4.3.1.1.1, when the projected traffic for all the roads in the analysis is evaluated (ranging from 319 to 5,169 vehicles per day based on the sum of projected auto and truck traffic for each road), the magnitude of traffic is not expected to exceed the existing road capacity. Therefore, NRC staff conclude the regional highways could accommodate the additional traffic from the proposed project.

Considering the magnitude of projected traffic from the proposed project, the NRC staff conclude the increase in traffic volumes to the local and unpaved Dewey Road will result in SMALL impacts under the land application disposal option. The projected daily traffic on Dewey Road represents a 42 percent increase over existing traffic considering both autos and trucks (see Table 4.3-1). This increase in traffic will incrementally accelerate degradation of the road surface, increase the generation of dust, and increase the potential for traffic accidents and wildlife or livestock kills. Based on the available capacity on the more distant regional roads, the NRC staff conclude the potential traffic impacts to the remainder of regional roads under the land application disposal option will also be SMALL.

The applicant intends to use existing roads on the site area to the degree possible; however, some new roads will be constructed to facilitate onsite transportation (SEIS Section 2.1.1.2.2). Impacts to land use related to the development of new access roads are addressed in SEIS

(Powertech, 2009a). Based on these considerations, the staff conclude the environmental impacts from operational hazardous chemical shipments under the land application disposal option will be SMALL.

NRC staff conclude the increase in traffic volumes to the local and unpaved Dewey Road will result in SMALL impacts from travel on that road and SMALL impacts to the remaining regional roads under the land application disposal option. Based on the low radiological risks from transportation accidents and the implementation of the applicant's additional safety practices as previously discussed, the overall impacts from the proposed transportation activities during the operations phase will be SMALL under the land application disposal option.

4.3.1.2.3 Aquifer Restoration Impacts

The estimated daily traffic volume on regional roads during the aquifer restoration phase for the land application disposal option will be the same as that described in SEIS Section 4.3.1.1.3 and summarized in Table 4.3-3 for the Class V injection well disposal option. Commuting workers will constitute the majority of road traffic the applicant proposed for the aquifer restoration phase. The projected auto traffic for the aquifer restoration phase for all road segments evaluated is lower than the projected traffic from the construction and operation phases, and the projected truck traffic is similar to the operation phase. Considering Table 4.3-3, the proposed traffic, if allocated completely to the individual road segments, will increase the existing traffic on low-traffic roads, such as the unpaved Dewey Road (Fall River County Road 6463 and Custer County Road 769), but will not substantially increase traffic on the remaining road segments in the table. The projected daily traffic on Dewey Road, the road nearest the proposed site, is increased by four percent of the existing low level of traffic. Based on the low levels of projected traffic for all vehicle types and road segments, the NRC staff conclude the transportation impacts from the proposed aquifer restoration transportation activities will be SMALL under the land application disposal option.

4.3.1.2.4 Decommissioning Impacts

The proposed decommissioning transportation activities for the Dewey-Burdock ISR Project include employee commuting and truck shipments of nonhazardous solid waste (e.g., facility demolition and equipment removal) and byproduct material. Traffic generated by these proposed activities for the land application option will be the same as that described in SEIS Section 4.3.1.1.4 and summarized in Table 4.3-4 for the Class V injection well disposal option.

The applicant estimated that the proposed land application disposal option will generate more decommissioning waste than the Class V injection well disposal option (and therefore will generate more truck traffic). The projected combined auto and truck traffic for the decommissioning phase for all road segments evaluated is lower than the projected traffic from the construction, operation, and aquifer restoration phases. Considering Table 4.3-4, the proposed traffic, if allocated completely to the individual road segments, will increase the existing traffic on low-traffic roads, such as the unpaved Dewey Road (Fall River County Road 6463 and Custer County Road 769), but will not substantially increase traffic on the remaining road segments in the table. The projected daily traffic on Dewey Road, the road nearest the proposed site, is increased by six percent of the existing low level of traffic. Based on the low levels of projected traffic for all vehicle types and road segments, the NRC staff conclude the potential traffic-related impacts from the proposed decommissioning transportation activities will be SMALL under the land application disposal option.

Another potential transportation impact from proposed decommissioning activities is the radiological risk from the transportation of byproduct material for offsite disposal. The NRC staff consider the potential radiological accident risk associated with byproduct material shipments will be low based on the calculated risks from concentrated yellowcake product shipments discussed previously in SEIS Section 4.3.1.2.2. The number of byproduct material shipments NRC staff estimated based on the applicant's proposal is low (Table 2.1-7; approximately 34 annually for the land application option). The applicant's annual byproduct material volume estimate in its surety (Powertech, 2009b) (see SEIS Section 2.1.1.6.3) indicates the material will consist primarily of pond leak detection equipment and liners. Relative to powdered yellowcake, this material is in a form that will be less dispersible (i.e., less likely to cause public exposure if released) and easier to clean up if an accident involving release occurred. The byproduct material will be transported and disposed of at a licensed facility. The applicant has proposed to pursue an agreement with the White Mesa site in Blanding, Utah, for disposal of solid byproduct material (SEIS Section 3.13.2). The trip distance to this facility from the proposed site of 1,210 km [752 mi] is less than the distance used in the risk analysis described in GEIS Section 4.2.2.2 for transporting yellowcake to the conversion facility in Metropolis, Illinois {approximately 2,414 km [1,500 mi]}. The applicant proposes to implement additional BMPs to reduce the risk of accidents, including (i) enforcing safe driving and emergency response procedures and training for personnel and truck drivers; (ii) installing communication systems to connect trucks to shipper/receiver/emergency responders; and (iii) and enforcing speed limits on the proposed project site to increase driver safety and to reduce conflicts with big game, livestock, and other vehicles (Powertech, 2009a). All shipments will be required to comply with applicable USDOT regulations governing the transportation of radioactive material (including quantity limits, packaging requirements, and conveyance dose rate limits). Based on the preceding analysis, the NRC staff conclude the potential radiological risks from the proposed transportation of decommissioning byproduct material will be low, and therefore the potential environmental impacts from the proposed radioactive material transportation will be SMALL under the land application disposal option.

In conclusion, because of the low estimated traffic for the proposed project relative to existing road traffic in the region surrounding the site, the NRC staff conclude the potential traffic-related transportation impacts during decommissioning will be SMALL under the land application disposal option. The low radiological risk from potential transportation accidents in comparison to the accident risks evaluated for the operation phase (i.e., no interstate transport of yellowcake product) supports the staff's conclusion that the radiological risks from transportation of decommissioning byproduct material for offsite disposal will also be SMALL. Therefore, the NRC staff conclude the overall transportation impacts related to the decommissioning phase will be SMALL under the land application disposal option.

4.3.1.3 Disposal Via Combination of Class V Injection and Land Application

If a permit for Class V injection wells is obtained from EPA but the capacity of the wells is insufficient to dispose of all liquid byproduct material generated at the proposed Dewey-Burdock ISR Project, the applicant has proposed to dispose of liquid byproduct material by a combination of Class V injection wells and land application (see SEIS Section 2.1.1.1.2.4.3). For the combined option, land application facilities and infrastructure will be constructed, operated, restored, and decommissioned on an as-needed basis depending on the deep well disposal capacity (Powertech, 2011). The land application option will require the construction and operation of irrigation areas and increased pond capacity for storage of liquid byproduct material during nonirrigation periods (see SEIS Section 2.1.1.1.2.4.2), whereas the Class V injection well

area (see Figure 4.5-1) and may also require the applicant to obtain a USACE permit prior to construction. The USACE permitting process ensures that proper filling and dredging techniques are used and proper mitigation measures are defined and implemented to ensure protection of wetland habitat and water quality in affected jurisdictional wetlands. The applicant has committed to seek authorization from USACE and comply with Section 404 permitting requirements before conducting work in jurisdictional wetlands identified in the project area (Powertech, 2009a). At this time, the applicant has not applied for a Section 404 permit. Therefore, USACE has not conducted additional Section 404 permitting activities at the proposed project site, such as determining specific acreages of jurisdictional wetlands that could be impacted or identifying mitigation measures to be implemented to minimize wetland impacts.

Construction activities may generate a limited amount of surface water runoff. The applicant indicates surface waters will not be consumed and long-term discharge to surface waters will not occur during construction (Powertech, 2009a). The applicant will implement a stormwater pollution management plan (SWMP) to control stormwater runoff during construction and to ensure that surface water runoff from disturbed areas will not contaminate surface waters and wetlands (Powertech, 2009a). SWMP control measures will (i) minimize disturbance of surface areas, drainage channels, and vegetation; (ii) employ grading to direct stormwater runoff away from water bodies; (iii) use riprap at intersections to make bridges and culverts more effective; (iv) stabilize slopes; (v) avoid unnecessary off-road travel; (vi) provide rapid response cleanup procedures and training for potential spills; (vii) require storage of hazardous materials and chemicals in bermed or curbed areas; (viii) place surface piping outside identified 100-year floodplain levels; and (ix) build curbs around facilities and structures to control process fluid spills.

Proposed sites for radium settling and holding ponds for the deep well liquid waste disposal option are shown in Figure 2.1-10. As described in SEIS Section 2.1.1.1.2.4, radium settling and holding ponds will be constructed with linings that meet the requirements of NRC regulations in 10 CFR Part 40, Appendix A, Criterion 5 (NRC, 2003b, 2008). Approved construction uses liners, underdrains, and a leak detection system to identify and reduce the impact on the environment from any leaks.

Because the applicant has committed to (i) implementing mitigation measures to control erosion, stormwater runoff, and sedimentation; (ii) complying with USACE Section 404 permitting requirements for wetlands; (iii) complying with NPDES permit requirements for discharge to surface waters; and (iv) following NRC regulations concerning the construction of settling and holding ponds (e.g., use of liners, underdrains, and leak detection systems), NRC finds impacts to surface waters and wetlands during the construction phase to be SMALL.

4.5.1.1.1.2 Operations Impacts

The NRC staff has considered site-specific hydrological factors in assessing environmental impacts to surface water and wetlands during ISR operations in conjunction with the deep well disposal of liquid wastes option. The staff evaluated the occurrence of surface water and wetlands and found it to be limited in area and quantity. Beaver Creek is a perennial stream and does not bisect any wellfields in the Dewey area. Pass Creek and tributaries of Pass and Beaver Creeks have ephemeral surface water flows.

As described in SEIS Section 3.5.3.3, the Fall River and Chilson aquifers make up the Inyan Kara Group aquifer and contain the uranium mineralization that will be extracted at the

proposed project (Powertech, 2009a). Beaver and Pass Creeks do not have a natural hydraulic connection with the underlying Fall River and Chilson aquifers across the Dewey-Burdock site. However, standing water in the Triangle Pit in the Burdock area is hydraulically connected to the Fall River Formation. In addition, pumping tests in the Burdock area indicated a certain degree of hydraulic communication between the Fall River aquifer and Chilson aquifer through the intervening Fuson Shale (see SEIS Section 3.5.3.2). Because the Triangle Pit is not a source of water for domestic use or livestock watering due to its poor water quality [specifically, elevated uranium and gross alpha concentrations exceeding EPA-regulated MCLs for drinking water (see SEIS Section 3.12.1)], the potential environmental impacts to the standing water at the abandoned Triangle Pit mine during ISR operations in conjunction with the Class V injection well disposal option will be SMALL.

As described in SEIS Section 3.5.1, groundwater from the Fall River and Chilson aquifers is discharging to the ground surface through improperly plugged exploratory boreholes at an area in the southwest corner of the Burdock area known as the “alkali flats” (Powertech, 2011). This area is within the proposed B-WF2 wellfield (see Figure 4.5-1). Although the alkali flats area is located outside the drainage areas of Beaver and Pass Creeks, it is near surface impoundments used for stock watering. As described in SEIS Sections 2.1.1.1.2.3.3 and 2.1.1.1.2.3.4, prior to wellfield development, the applicant proposes to identify and evaluate unplugged and improperly sealed boreholes using delineation drilling and wellfield pump testing. Based on the results of the delineation drilling and pump testing, the applicant will plug or otherwise mitigate the potential effects of any boreholes that will potentially affect surface waters and wetlands during ISR operations (Powertech, 2011).

The Class V injection well disposal option involves injecting process-related effluents into the Deadwood and Minnelusa Formations, which lie below the Morrison Formation (Powertech, 2011, Appendix 2.7L). The depth from the ground surface to the disposal horizon for the first 4 Class V injection wells ranges from 492 to 1,076 m [1,615 to 3,530 ft] (Powertech, 2011; Appendix 2.7L). As described in SEIS Section 2.1.1.1.2.4, an EPA Class V UIC permit is required for the applicant to use deep well disposal. EPA will evaluate the suitability of the formations proposed for Class V well injection. Class V injection disposal will be allowed only if the applicant demonstrates liquid waste can be isolated safely in a deep aquifer. In the Dewey-Burdock area, there is no evidence of any hydraulic connection between surface waters and proposed aquifers for the Class V injection well disposal option. Therefore, the potential environmental impacts to surface waters and wetlands from the Class V injection well disposal option during ISR operations will be SMALL.

In addition to site-specific hydrological information and a Class V deep well injection permit, the NRC staff have considered other permit requirements and mitigation measures to which the applicant has committed in assessing environmental impacts to surface water and wetlands during ISR operations in conjunction with the Class V injection well disposal option. The applicant will construct the central plant and satellite facility on concrete slabs surrounded by protective berms or curbs to contain and control accidental spills. Permitted discharge of processing effluents to surface waters will not be undertaken. Earthmoving activities sufficient to generate surface water runoff will not take place. The applicant will use its delineation drilling and pump testing program to identify and plug improperly sealed boreholes that may impact surface waters. The applicant will implement SWMP as part of the NPDES permit in accordance with SDDENR requirements to detain and treat stormwater runoff for these facilities and to ensure that runoff does not contaminate surface waters and wetlands (Powertech, 2009a). The SWMP will identify and evaluate routes by which spills could leave the facility and

lay out BMPs as preventative measures to minimize stormwater contamination. Stormwater runoff will be diverted away from the facility and absorbed into soils. The applicant has committed to implement mitigation measures to control erosion and sedimentation, as part of the SWMP. The applicant will implement an emergency response plan to identify and clean up accidental spills and leaks (Powertech, 2009a). Pipelines will be buried to avoid freezing, and pipeline pressure will be monitored to detect leaks.

In conclusion, based on the aforementioned hydrological factors and the applicant's commitment to comply with permit requirements, the NRC staff conclude that environmental impacts to surface waters and wetlands from ISR operations in conjunction with the Class V injection well disposal option will be SMALL.

4.5.1.1.1.3 Aquifer Restoration Impacts

As described in SEIS Section 2.1.1.1.4.1.1, the primary method of aquifer restoration for the Class V deep injection well option is RO treatment with permeate injection. The RO reject, or brine, will undergo radium removal in the radium settling ponds and then will be disposed of in deep Class V injection wells. Under the EPA Class V UIC permit, deep well disposal of treated liquid wastes must not lead to concentration levels of hazardous constituents that cause adverse environmental impacts on surface waters and wetlands. For the Class V injection well disposal option, automated sensors will monitor the injection process to detect potential pipeline leaks or well ruptures that could result in a surface discharge. When monitoring detects potential problems, the applicant will take corrective actions, which include inspections for leaks and spills and rapid response cleanup and remediation to minimize impacts to soils and surface water (Powertech, 2009a). Liquid effluents will not be discharged to running or standing surface waters (Powertech, 2009a). The applicant's NPDES permit requirements for discharges to surface water and SWMP will be in place to ensure that stormwater runoff will not degrade surface water quality. The applicant's emergency response plan will be in place to address and clean up accidental spills and leaks (Powertech, 2009a). The applicant will follow NRC and state regulations concerning the construction of settling and holding ponds (e.g., use of liners, underdrains, and leak detection systems) used to treat and store restoration fluid prior to injection in the Class V well. The applicant is required to follow groundwater restoration activities in compliance with NRC's regulatory requirements (see SEIS Section 2.1.1.1.4). The goal of aquifer restoration is to return groundwater quality in the wellfields consistent with background water quality conditions or to standards consistent with NRC requirements at 10 CFR Part 40, Appendix A, Criterion 5B(5). Because the applicant commits to complying with permitting and regulatory requirements, NRC finds impacts to surface waters and wetlands during the aquifer restoration phase in conjunction with the Class V injection well disposal option at the proposed project site will be SMALL.

4.5.1.1.1.4 Decommissioning Impacts

The central plant, satellite facility, storage facilities, and pipelines of the facility will be removed during the decommissioning phase, in accordance with an NRC-approved decommissioning plan. The wells, including Class V injection wells, will need to be plugged and abandoned. The removal of buildings and infrastructure will have impacts similar to those for the construction phase as described in SEIS Section 4.5.1.1.1.1. The applicant will implement the mitigation measures described in SEIS Section 4.5.1.1.1.1 to control erosion, stormwater runoff, and sedimentation during decommissioning activities. The applicant's NPDES permit requirements will ensure that stormwater runoff will not contaminate surface water. The applicant is

proposed project area (Powertech, 2009a). Therefore, potential impacts to water yields and pumping costs in nearby wells due to drawdowns associated with higher bleed rates for the Class V injection well option will be short-term and SMALL.

As described in SEIS Section 4.5.2.1, the applicant's water permit application to SDDENR for groundwater use from the Madison aquifer proposes to appropriate 109.6 ha-m [888.8 ac-ft] or 1.09×10^9 L [28.9×10^7 gal] of water annually (Powertech, 2012i). If this permit is granted, the applicant will rely largely on Madison aquifer water during ISR operations. The Madison aquifer is approximately 844 m [2,765 ft] bgs in the Burdock area and approximately 945 m [3,100 ft] bgs in the Dewey area (Powertech, 2011, Appendix 2.7–L). Otherwise, the applicant will pump water from the Inyan Kara Group aquifers to meet operational needs at an estimated sustainable rate of 151 to 246 Lpm [40 to 65 gpm] (Powertech, 2009a, 2010a). Results of numerical groundwater simulations indicate the Inyan Kara aquifer can sustain net extraction rates of up to 363 Lpm [96 gpm] over the 8-year operations phase (Petrotek, 2012).

To mitigate impacts on the use of shallow groundwater, the applicant commits to (i) removing all existing domestic wells within the project area from private use prior to ISR operations, (ii) removing all stock wells within 0.4 km [0.25 mi] of any wellfield from private use prior to operation of the wellfield, (iii) removing stock wells that could be adversely impacted by or could adversely impact ISR operations from private use, (iv) controlling all monitor wells within the proposed project boundary, and (v) providing alternative sources of water to landowners in the event of significant drawdown or degradation of water quality to domestic wells within 2 km [1.2 mi] of the project boundary and stock wells within the proposed project area (Powertech, 2009a, 2011). After production and restoration are complete and groundwater withdrawals are terminated at the Dewey-Burdock Project, groundwater levels will tend to recover with time. Therefore, NRC staff conclude that the overall environmental impacts on local aquifers, production aquifers, and domestic and livestock wells from consumptive use during operations for the Class V injection well disposal option at the proposed project will be SMALL.

Excursions and Groundwater Quality

As described in the GEIS, groundwater quality in the production zone will be degraded during ISR operations (NRC, 2009a). The production portion of the aquifer will need to be exempted from being a USDW though an EPA-issued aquifer exemption in accordance with the criteria under 40 CFR 146.4. After production is completed, the licensee must initiate aquifer restoration activities to restore the production zone to Commission-approved background water quality, if possible. If the aquifer cannot be returned to background conditions, NRC requires that the production aquifer be returned to the MCLs provided in 10 CFR Part 40, Appendix A, Table 5C or to NRC-approved ACLs. Appendix B explains the process for granting an ACL. For proposed ACLs to be approved, they must be shown to protect human health at the site. For these reasons, NRC staff concluded in the GEIS that the potential impacts to the water quality of the uranium-bearing production zone aquifer as a result of ISR operations will be SMALL (NRC, 2009a).

To prevent horizontal excursions, inward hydraulic gradients need to be maintained in the production aquifer during ISR operations (NRC, 2009a). These inward hydraulic gradients are created by the net groundwater withdrawals (production bleeds) maintained through continued pumping during ISR operations. For the Dewey-Burdock ISR Project, the applicant plans to maintain a 0.5 to 3 percent production bleed rate (see SEIS Section 2.1.1.1.3.1.2). The inward

hydraulic gradients will ensure that groundwater flow is toward the production zone and that horizontal excursions will not occur.

As required by NRC license condition, a licensee must take preventive measures to reduce the likelihood and consequences of potential excursions. An applicant must design and install a monitoring network capable of detecting both horizontal and vertical excursions from the production zone to demonstrate that restoration is feasible. A ring of monitoring wells within and encircling the production zone is required for early detection of horizontal excursions. The applicant's groundwater monitoring program is detailed in SEIS Sections 2.1.1.1.3.1.3 and 7.3.1.2. If excursions are detected in the monitoring well ring, corrective actions to either stop or reverse the fluid movement (i.e., excursions) are required. The applicant will need to modify wellfield operations, as necessary, to correct the excursion. As described in SEIS Section 2.1.1.1.3.1.3, corrective actions to monitor and stop or reverse an excursion may include increasing sampling frequency to weekly, increasing the pumping rates (and thus the net bleed) of production wells in the area of the excursion, and pumping individual wells to enhance recovery of extraction solutions. If these actions do not effectively retrieve the excursion within 60 days, the applicant is required by license condition to suspend injecting lixiviant into the production zone adjacent to the excursion until the excursion is retrieved and the upper control limit parameters are no longer exceeded.

Vertical excursions may also occur in aquifers overlying or underlying the production zone aquifer. An analysis presented in the GEIS indicated the potential for migration of production solutions into an overlying or underlying aquifer is minor if the aquitard (confining layer) separating the production zone from the overlying and underlying aquifer is sufficiently thick and the aquitard has low permeability (NRC, 2009a). The hydraulic gradient between the production zone and overlying or underlying aquifers is also used to determine the potential for vertical excursions. The upper confining layer (Skull Creek, Mowry, and Belle Fourche Shales, which are collectively referred to as the Graneros Group) at the Dewey-Burdock site has a thickness of approximately 61 to 168 m [200 to 550 ft] (see Figure 3.5-5). The applicant stated that it will not likely place any monitoring wells below the Lakota Formation due to the presence of a 30-m [100-ft]-thick underlying confining layer (Morrison Formation) and the upward vertical hydraulic gradient at the proposed Dewey-Burdock site (Powertech, 2009a). The thicknesses of the upper confining layer {approximately 61 to 168 m [200 to 550 ft]} and the lower confining layer {approximately 30 m [100 ft]} will minimize the potential impacts of vertical excursions. To ensure the detection of vertical excursions, NRC requires monitoring in the overlying and underlying aquifers. The applicant's groundwater monitoring program is detailed in SEIS Sections 2.1.1.1.3.1.3 and 7.3.1.2.

Vertical excursions can also occur due to improperly sealed boreholes, poorly completed wells, or loss of mechanical integrity of ISR injection and production wells. The applicant will use its delineation drilling and pump testing program to identify and plug improperly sealed boreholes that could result in vertical excursions (Powertech, 2011). The applicant will use its mechanical integrity testing program to mitigate the impacts of potential vertical excursions resulting from borehole failure of injection, production, and monitoring wells (see SEIS Section 2.1.1.1.2.3.5). The applicant must also conduct periodic mechanical integrity testing of each well to check for leaks or cracks in the casing, as required by 40 CFR 146.8. Because mechanical integrity testing reduces the likelihood of poor well integrity, the impacts from excursions involving failure or damage to a well casing will be SMALL.

In GEIS Section 2.11.4, NRC staff discussed excursions that occurred at operating ISR facilities (NRC, 2009a). Separately, NRC staff analyzed the environmental impacts from both horizontal and vertical excursions that occurred at three NRC-licensed ISR facilities (NRC, 2009b). In that analysis, which considered 60 events at 3 facilities, NRC staff found that, for most of the events, the licensees were able to control and reverse the excursions through pumping and extraction at nearby wells. Most excursions were short-lived, although a few continued for several years. In all cases, however, no impacts occurred to nonexempted portions of the aquifer (NRC, 2009b).

Many of the hydrogeologic conditions at the proposed Dewey-Burdock ISR Project are similar to those at other ISR facilities. Groundwater in the production zone aquifers displays sufficient hydraulic conductivity to minimize excursions during ISR activities. However, the Dewey-Burdock site has several distinctive man-made and hydrogeological features that could contribute to potential vertical or horizontal excursions.

First, Tennessee Valley Authority (TVA) drilled several thousand exploratory boreholes within the proposed Dewey-Burdock ISR Project area, which penetrate the Inyan Kara Group aquifers to the Morrison Formation (Powertech, 2010a). These boreholes may provide pathways to aquifers above and below production zone confining units, such as alluvial aquifers above the Graneros Group and deep aquifers below the Morrison Formation, although few explorations holes penetrated the entire thickness of the Morrison Formation (Powertech, 2011). Before developing wellfields, the applicant commits to properly plugging and abandoning or mitigating any historical wells and exploration holes that may potentially impact the control and containment of wellfield solutions within the proposed wellfield (Powertech, 2011). The applicant will use available information and best professional practices—including historical records, color infrared imagery, field investigations, and potentiometric surface evaluation—to locate or detect improperly plugged boreholes or wells in the vicinity of potential wellfield areas. In addition, the applicant will use pumping test results conducted as part of routine wellfield hydrogeologic package development to identify improperly plugged wells and exploration boreholes (Powertech, 2011).

Second, hydraulic communication (i.e., leakage) between the Fall River and Chilson aquifers through the intervening Fuson Shale (see Figure 3.5-5) in the Burdock area has been identified based on aquifer pumping tests [see safety evaluation report (SER) Section 2.4.3.4] and potentiometric surface differences (see SEIS Section 3.5.3.2). Leakage through the Fuson Shale has implications when evaluating the capability of reversing potential vertical excursions by drawing water back into producing wells. Using exploratory drilling data the applicant provided (Powertech, 2010b), NRC staff independently constructed isopach maps (i.e., maps showing the thickness of a bed or formation throughout a geographic area) for the Fuson Shale underlying the Burdock area using different statistical methods (e.g., kriging, inverse distance). The resultant isopach maps for the Fuson Shale were in good agreement with the isopach map for the Fuson Shale the applicant presented (see Figure 3.5-6). However, the thickness of the Fuson Shale at the proposed Dewey-Burdock site may be different from other areas, and the applicant has committed to collecting more detailed lithologic data in each wellfield prior to ISR operations to ensure hydraulic control of the production zone (Powertech, 2010a). The applicant also developed a numerical groundwater model using site-specific geologic and hydrologic information (Petrotek, 2012). Based on results of the numerical model, the applicant concluded that vertical leakage through the Fuson Shale is caused by improperly installed wells or improperly abandoned boreholes. NRC staff reviewed the applicant's numerical groundwater model and calibration, and it determined that the model was appropriately developed and

sufficiently calibrated. As noted previously, the applicant has committed to locating unknown boreholes and wells, and committed to plugging and abandoning historical wells and exploration holes, holes drilled by the applicant, and any wells that fail mechanical integrity tests (Powertech, 2011).

Finally, the applicant plans to conduct ISR operations in partially saturated portions of the Chilson aquifer in the Burdock area (Powertech, 2011). ISR operations in partially saturated aquifers present special challenges with regard to controlling production fluids and detecting and remediating excursions. As described in SEIS Section 2.1.1.1.2.3, the applicant has committed to collect more detailed lithologic data through delineation drilling and conduct additional hydrogeologic investigations (including pump tests) in each proposed wellfield to ensure that hydraulic control of the production zone can be maintained (Powertech, 2010a, 2011). The applicant will be required to submit detailed operational plans, including monitoring well layouts, for NRC and EPA approval before conducting ISR operations in partially saturated aquifers at the proposed Dewey-Burdock site (Powertech, 2010a, 2011). NRC staff have also included a license condition for ISR operations in partially saturated portions of the Chilson aquifer. This license condition will require the applicant to demonstrate the ability to detect and remediate excursions in partially saturated zones (NRC, 2013).

In summary, NRC staff conclude that the impact from excursions at the proposed Dewey-Burdock ISR Project will be SMALL because (i) EPA will exempt uranium-bearing production aquifers from USDW classification according to the criteria under 40 CFR 146.4,(ii) the applicant will be required to submit wellfield operational plans for NRC and EPA approval, (iii) inward hydraulic gradients will be maintained to ensure groundwater flow is toward the production zone, and (iv) the applicant's NRC-mandated groundwater monitoring plan will ensure that excursions are detected and corrected. Impacts from vertical excursions will be SMALL because (i) uranium-bearing production zones in the Fall River and Chilson aquifers are hydrologically isolated from adjacent aquifers by thick, low permeability shale layers (i.e., the overlying Graneros Group and underlying Morrison Formation); (ii) a prevailing upward hydraulic gradient occurs across the major aquifers; (iii) the applicant's required mechanical integrity testing program will mitigate the impacts of potential vertical excursions resulting from borehole failure; and (iv) the applicant commits to properly plugging and abandoning or mitigating any previously drilled wells and exploration holes that may potentially impact the control and containment of wellfield solutions within the proposed project area. Moreover, because the applicant must initiate aquifer restoration in the production aquifers (i.e., Fall River and Chilson aquifers) to return groundwater to Commission-approved background levels or to NRC-approved alternative water quality levels at the end of ISR operations, NRC staff conclude that groundwater quality impacts to the production and surrounding aquifers as a result of ISR operations for the Class V injection well disposal option will be SMALL.

4.5.2.1.1.2.3 Operations Impacts to Deep Aquifers Below the Production Aquifers

Potential environmental impacts to confined, deep aquifers below the production aquifers could occur from deep well injection of process-related liquid effluents. Under the SDWA, EPA has statutory authority to permit and regulate injection well activities that may affect the environment. EPA Region 8 administers the deep well disposal UIC program in South Dakota and is responsible for issuing any permits for deep well disposal at the proposed Dewey-Burdock Project site.

At the proposed Dewey-Burdock ISR Project, the applicant plans to dispose of liquid waste using Class V (nonhazardous) deep injection wells, land application, or a combination of both deep well injection and land application (see SEIS Section 2.1.1.1.2.4). For the Class V injection well disposal option at the proposed project, the applicant will inject process-related liquid waste into the Deadwood and Minnelusa Formations, which both lie below the Morrison Formation (Powertech, 2011, Appendix 2.7-L). However, deep well injection into these formations depends on securing a Class V (nonhazardous) UIC permit through an EPA-permitting process. For disposal through a UIC Class V well, an EPA permit, if granted, will require that the waste stream to be injected will not be classified as hazardous under the Resource Conservation and Recovery Act (RCRA). EPA will also evaluate the suitability of the proposed deep injection wells. EPA will only allow deep well injection if the liquid wastes can be safely isolated in the deep aquifers. If a license is granted, NRC will also require the liquid wastes to be treated and monitored to verify they meet NRC release standards in 10 CFR Part 20, Subparts D and K and Appendix B, Table 2, Column 2. If the proposed injection zones are underground sources of drinking water {have a total dissolved solids concentration below 10,000 mg/l [10,000 ppm]}, the EPA UIC permit will require the injectate to be treated to meet drinking water standards or contaminant-specific background concentrations for constituents regulated under the SDWA, unless the applicant applies for and is granted an aquifer exemption. The applicant's Class V injection well monitoring program is detailed in SEIS Section 7.6.

At the Dewey-Burdock site, the Madison aquifer is an important aquifer in the region supplying municipal water for numerous communities, including Rapid City and Edgemont, South Dakota. As noted previously, the proposed injection zones for the deep disposal wells are the Minnelusa Formation and the Deadwood Formation, which respectively lie above and below the Madison Formation (Figure 3.5-5). There are confining layers at the base of the Minnelusa Formation, which separate the Madison Formation from the overlying Minnelusa Formation. Locally, these confining layers may be absent or provide ineffective confinement, which could enhance hydraulic connection between the Minnelusa aquifer and the underlying Madison aquifer (Naus, et al., 2001). However, based on water levels in Minnelusa and Madison observation wells in the area, SDDENR concluded that there is a significant difference in the potentiometric surfaces of the two aquifers suggesting that the aquifers are hydraulically separated in the vicinity of the site (SDDENR, 2012b). The Englewood Formation underlies the Madison Formation and should provide a confining layer between the Madison Formation and the underlying Deadwood Formation. As described in SEIS Section 3.5.3.1, the Whitewood and Winnipeg Formations (see Figure 3.5-5) are not expected to be present in the southern Black Hills (Naus, et al., 2001). As stated previously, the UIC permit will not allow injection into the Class V deep disposal wells unless the permittee demonstrates the wells are properly sited, such that confinement zones and proper well construction minimize the potential for migration of fluids outside of the approved injection zone. Based on the protective requirements of the EPA UIC Class V permit, NRC staff conclude that the impact of the deep Class V disposal wells on the deep aquifers will be SMALL.

4.5.2.1.1.3 Aquifer Restoration Impacts

Consistent with the GEIS, the primary goal of aquifer restoration at the proposed Dewey-Burdock ISR Project is to return groundwater quality within the production zone of a wellfield to Commission-approved background water quality conditions or to standards consistent with NRC requirements at 10 CFR Part 40, Appendix A, Criterion 5B(5) (Powertech, 2009b). These standards state the concentration of a hazardous constituent must not exceed

(i) the Commission-approved background concentration of that constituent in groundwater; (ii) the respective value in the table in paragraph 5C (in 10 CFR Part 40, Appendix A) if the constituent is listed in the table and if the background level of the constituent is below the value listed; or (iii) an ACL the Commission establishes. Appendix B explains the process for granting an ACL. For proposed ACLs to be approved, they must be shown to protect human health at the site.

In addition to NRC requirements at 10 CFR Part 40, Appendix A, Criterion 5B(B), groundwater in the production zone aquifer will have to be restored to State of South Dakota standards. In accordance with ARSD 74:54:01:04, groundwater in the production zones will be required to be restored to established ambient concentrations or South Dakota groundwater quality standards.

NRC staff examined available groundwater restoration data from three NRC-licensed ISR facilities (COGEMA's Irigary/Christensen Ranch facility, Power Resources Inc.'s Smith Ranch/Highland Uranium Project facility, and Crow Butte Resources Crow Butte facility) (NRC, 2009b). NRC staff has approved 11 wellfield restorations at the three sites. The restoration data show that pre-operational concentrations are attainable for many parameters (50 to 70 percent of the 35 parameters commonly monitored) but are not attainable for other constituents, in particular, the major and trace cations with solubilities most susceptible to the oxidation state of the aquifer water (i.e., iron, manganese, arsenic, selenium, uranium, vanadium, and radium-226). However, for the approved restorations, the impacts to groundwater in the exempted aquifer met all regulatory standards for the state or EPA UIC program, met the quality designated for its class of use prior to ISR operations, have been shown to decrease in the future due to natural attenuation processes, and have been shown to meet drinking water standards at the perimeter of the exempted aquifer. Therefore, the impacts to the exempted aquifer for each of the approved restorations do not pose a threat to human health and the environment.

Hydraulic control of the ore zone must be maintained during aquifer restoration. This is accomplished by maintaining an inward hydraulic gradient through a restoration bleed. During aquifer restoration at the proposed Dewey-Burdock site, the restoration bleed will typically be 1 percent of the restoration flow (Powertech, 2011). The applicant plans to begin restoration of the first wellfield in both the Burdock and Dewey areas immediately after production activities end in that wellfield (Powertech, 2009a). Subsequently, as additional wellfields are completed, the applicant plans to restore each wellfield as soon as reasonably achievable or practicable following production (Powertech, 2011).

As described in SEIS Section 2.1.1.1.4.1, the applicant's primary method of aquifer restoration for the Class V injection well disposal option is groundwater treatment with RO and permeate injection (Powertech, 2009b, 2011). This method uses a RO system consisting of pressurized, semipermeable membranes that will treat groundwater removed from the wellfields in the Dewey and Burdock areas. The RO system removes more than 90 percent of the total dissolved solids in groundwater being restored. The reverse RO reject, or brine, undergoes radium removal in the radium settling ponds and then disposal in one or more Class V injection wells. The total liquid waste flow rate will be approximately 746 Lpm [197 gpm] during concurrent uranium production and aquifer restoration and approximately 568 Lpm [150 gpm] during aquifer restoration alone (Powertech, 2011). These liquid waste flow rates are lower than the proposed disposal capacity of up to 1,135 Lpm [300 gpm] for the Class V injection well disposal option (see SEIS Section 2.1.1.1.2.4.1).

About 70 percent of the water withdrawn from the wellfields and passed through the RO membranes will be recovered as permeate. Before reinjection into the wellfields, the permeate will be supplemented with makeup water from wells in the Madison Formation and injected into the wellfields at an amount slightly less than the amount withdrawn to maintain a slight restoration bleed. As noted previously, the restoration bleed will maintain hydraulic control of the wellfields during aquifer restoration and will typically be 1 percent of the restoration flow unless groundwater sweep is used in conjunction with RO treatment with permeate injection, in which case the restoration bleed will average approximately 17 percent as described in SEIS Section 2.1.1.1..4.1.3.

As described in SEIS Section 4.5.2.1, the applicant submitted a water appropriation permit to SDDENR in June 2012 for groundwater use from the Madison aquifer. However, if the applicant cannot secure a water appropriation for use of Madison aquifer water, the applicant will have to either identify an alternative source of water to meet aquifer restoration water requirements or reduce pumping rates to meet the estimated sustainable net extraction rate from the Inyan Kara aquifer, which is estimated to be at least 556 Lpm [147 gpm] for 2 years and 363 Lpm [96 gpm] for 8 years (see SEIS Sections 4.5.2.1.1.1 and 4.5.2.1.1.2.2.). Reducing the pumping rate will extend the aquifer restoration phase (Powertech, 2010a). After production and restoration are complete and groundwater withdrawals are terminated, groundwater levels will tend to recover with time (NRC, 2009a). Based on numerical modeling, the applicant estimates that water levels will recover to near pre-operational levels within 1 year after groundwater withdrawals cease (Petrotek, 2012). Thus, the potential long-term environmental impact from consumptive use during the restoration phase at the proposed project for the Class V injection well disposal option will be SMALL.

Aquifer restoration will directly impact groundwater quality in the production zone. At the end of operations in wellfields, the applicant must initiate aquifer restoration to return groundwater to Commission-approved background conditions. If these aquifers cannot be returned to Commission-approved background conditions, NRC will require that the production aquifer be returned to the MCLs provided in 10 CFR 40, Appendix A, Table 5C, or to NRC-approved alternate concentration limits. Restoration to these standards will ensure that groundwater within the exemption boundary will not pose a threat to surrounding groundwater. For these reasons, potential impacts to the water quality of the Fall River and Chilson aquifers and surrounding aquifers as a result of aquifer restoration for the Class V injection well disposal option will be SMALL.

As described previously, leakage between the Fall River and Chilson aquifers through the intervening Fuson Shale in the Burdock area has been identified based on aquifer pumping tests (see SER Section 2.4.3.4) and potentiometric surface differences (see SEIS Section 3.5.3.2). Because leakage may occur through the Fuson Shale, a potential exists for drawdown-induced migration of radiological contaminants from abandoned open pit mines in the Burdock area (e.g., Triangle Pit mine) from the Fall River aquifer into the hydraulically connected Chilson aquifer.

To address uncertainties in the confining properties of the Fuson Shale in the Burdock area, the NRC staff will impose by license condition that the applicant design and implement a monitoring well network (NRC, 2013). Specifically, for wellfields in the Burdock area where the production zone is located in the Chilson aquifer, the NRC will require monitoring wells to be placed in the

Fall River aquifer to identify any lack of confinement. A proposal for the monitoring well network must be submitted to NRC staff for review and written verification at least 60 days prior to construction.

In addition, the applicant committed to conducting hydrogeological characterization and aquifer pumping tests in each wellfield, in order to examine the hydraulic integrity of the Fuson Shale and ensure drawdown-induced migration of potential contaminants will not impact aquifer restoration goals (Powertech, 2010a). By license condition, NRC will also require the applicant to provide the results of the hydrogeological characterization and aquifer pumping tests for review and written verification before any proposed wellfields are developed (NRC, 2013). Further, wellfields in the vicinity of the abandoned mine pits in the Burdock area, specifically wellfields B-WF6, B-WF7, and B-WF8 (see Figure 2.1-6), will be prohibited from operating until NRC staff have reviewed and approved the hydrogeologic data packages for those wellfields (NRC, 2013).

Based on NRC requirements and applicant commitments, the potential for contaminants from abandoned open pit mines in the Burdock area to be drawn through the Fuson Shale into production zones within the Chilson aquifer during aquifer restoration will be SMALL.

As with the operations phase, a network of buried pipelines is used during the restoration phase for transporting fluids between the pump house and the satellite facility, or central processing plant. These pipelines are also used to connect injection and extraction wells to manifolds inside the header houses. However, the fluids transported in these pipes during restoration are generally less concentrated than during production. The failure of pipeline fittings or valves, or failures of well mechanical integrity in shallow aquifers, could result in leaks and spills of these fluids that could impact water quality in shallow aquifers. As discussed in SEIS Section 4.5.2.1.1.2.1, the applicant committed to implementing a leak-detection and spill-cleanup program (Powertech, 2009a). The EPA-mandated UIC program will also require preventive measures, such as well mechanical integrity testing. Consequently, implementing these measures will result in potential SMALL impacts to alluvial or shallow (near-surface) aquifers during the aquifer restoration phase at the proposed project.

As previously discussed in SEIS Section 4.5.2.1.1.2.3, it is assumed that the potential environmental impact to deep aquifers below the production aquifers from deep well injection of treated liquid wastes will be SMALL. The applicant will need an EPA UIC Class V permit for deep disposal wells at the proposed project (Powertech, 2009c). EPA will evaluate the suitability of the proposed deep injection wells and will only allow deep well injection if the waste fluids can be suitably isolated in a deep aquifer. Consequently, NRC staff determine that the potential environmental impact from the Class V injection well disposal option on targeted deep aquifers located below the production zone aquifers will be SMALL.

As described in SEIS Section 2.1.1.1.4.2, the applicant will implement a restoration monitoring plan to detect and correct horizontal and vertical excursions during aquifer restoration. After aquifer restoration is complete, groundwater levels will tend to recover with time (NRC, 2009a), and therefore long-term impacts to consumptive water use will be SMALL. Continued implementation of a leak-detection and spill-cleanup program and preventative measures, such as well mechanical integrity testing, will result in SMALL impacts to alluvial or shallow (near-surface) aquifers. The applicant's UIC Class V permits from EPA for deep well disposal will ensure that the impact to deep aquifers during aquifer restoration will be SMALL. Moreover, restoration to Commission-approved background conditions (or NRC-approved water quality

standards) in accordance with NRC license conditions will ensure that groundwater within the exemption boundary will not threaten surrounding groundwater.

Before NRC terminates an ISR source material license, a licensee is required to demonstrate that there will be no long-term impacts to USDWs. NRC review and approval of the wellfield restoration will ensure that the restoration standards are met and that these standards are protective of public health and the environment. Therefore, NRC staff conclude that the impacts from aquifer restoration in the Burdock and Dewey areas for the Class V injection well disposal option will be SMALL.

4.5.2.1.1.4 Decommissioning Impacts

After completion of ISR operations at the Dewey-Burdock ISR Project site, improperly plugged and abandoned wells could potentially impact aquifers above the production zone by providing hydrologic connections between aquifers. As part of the restoration and reclamation activities, all monitor, injection, and recovery wells at the proposed Dewey-Burdock site will be plugged and abandoned in accordance with SDDENR and EPA UIC regulations (see SEIS Section 2.1.1.1.5.2). In addition, the applicant will submit decommissioning plans, including detailed plans for plugging and abandoning wells, to NRC for review and approval.

The applicant has committed to implementing an emergency response plan to address cleanup of accidental spills and leaks that may occur during decommissioning. The applicant will implement the mitigation measures to control erosion and stormwater runoff. The applicant's NPDES permit will ensure that stormwater runoff will not contaminate surface water or shallow groundwater. After removal of surface structures, the applicant will replace topsoil in previously disturbed areas, recontour the land surface to restore it to a surface configuration to blend with the natural terrain, and seed disturbed areas in wellfields in accordance with the NRC and SDDENR regulations (Powertech, 2009b). Access roads will be reclaimed and restored in a similar manner.

If this process is properly implemented following the NRC-approved decommissioning plan and the abandoned wells are properly isolated from the flow domain, the potential environmental impacts to groundwater from decommissioning for the Class V injection well disposal option will be SMALL.

4.5.2.1.2 Disposal Via Land Application

If the permit for Class V injection wells is not obtained from EPA, the applicant proposes to dispose of liquid waste generated at the proposed Dewey-Burdock ISR Project by land application (see SEIS Section 2.1.1.2.4.2). Potential environmental impacts to groundwater from construction, operation, aquifer restoration, and decommissioning for the land application disposal option are discussed in the following sections.

4.5.2.1.2.1 Construction Impacts

The construction of facilities, pipelines, wellfields, holding ponds, irrigation areas, and access roads in the construction phase of the land application disposal option will disturb 566 ha [1,398 ac] of land (Powertech 2010a). The total land disturbance will be 13.2 percent of the permit area. The locations of land application areas are shown in Figure 2.1-12. As described in SEIS Section 4.5.1.1.2.1, significant earthmoving activities will not be conducted to prepare

As described in SEIS Section 4.4.1.2.2, licensees must ensure that radioactive constituents in liquid effluents applied to land application areas are within allowable release limits (NRC, 2009a). The applicant proposes to treat liquid wastes applied to land application areas so they meet NRC release limit criteria for radiological contaminants, as referenced in 10 CFR Part 20, Appendix B (Standards for Protection Against Radiation) (Powertech, 2011). SDDENR also regulates land application of treated wastewater, requiring the applicant to obtain an approved GDP and comply with applicable state discharge requirements for land application of treated wastewater. State regulations also prohibit surface runoff from permitted land application areas and the GDP will require land application activities to be conducted so that no ponding and runoff of effluent (i.e., wastewater solutions) occurs during these activities. Therefore, the NRC staff conclude that applied treated effluents on land application sites will not introduce additional contamination to the soil or surface runoff that is harmful to human health or the environment.

Due to existing hydrological conditions at the site, and the permitting and regulatory requirements the applicant must meet, NRC staff conclude that potential environmental impacts to groundwater in shallow aquifers from operations for the land application disposal option will be SMALL.

4.5.2.1.2.2.2 Operations Impacts to Production and Surrounding Aquifers

The potential environmental impact to groundwater in the production and other surrounding aquifers is related to consumptive water use and groundwater quality.

Water Consumptive Use

The potential impacts to groundwater in the production and surrounding aquifers due to consumptive water uses—impacts the staff discusses in SEIS Section 4.5.2.1.1.2.2—will also apply during ISR operations for the land application liquid waste disposal option. To summarize, in June 2012 the applicant submitted a water appropriation permit for use of the Madison aquifer. If SDDENR approves the permit application, the applicant will rely largely on Madison aquifer water during ISR operations. Otherwise, the applicant will pump water from the Inyan Kara aquifer to meet operational needs at an estimated sustainable rate of 151 to 246 Lpm [40 to 65 gpm] (Powertech, 2009a, 2010a). Results of numerical groundwater simulations indicate the Inyan Kara aquifer can sustain net extraction rates of up to 363 Lpm [96 gpm] over the 8 year operations phase (Petrotek, 2012). Therefore, NRC staff conclude that the impacts on local aquifers and domestic and livestock wells from consumptive water use during ISR operations will be SMALL. In addition, the applicant will monitor and provide alternative sources of water to landowners in the event of significant drawdown to domestic wells within and adjacent to the proposed project area. After production and restoration are complete and groundwater withdrawals are terminated at the Dewey-Burdock ISR Project, groundwater levels will tend to recover with time. Land application of treated liquid wastes will not require additional consumptive water demands. Therefore, NRC staff conclude that the overall environmental impacts on local aquifers, production aquifers, and domestic and livestock wells from consumptive use during operations for the land application option will be SMALL.

Excursions and Groundwater Quality

Potential impacts to groundwater quality from excursions in the production and surrounding aquifers during ISR operations (discussed in SEIS Section 4.5.2.1.1.2.2) will also be applicable during ISR operations for the land application liquid waste disposal option. Impacts from

horizontal excursions will be SMALL because (i) uranium-bearing production aquifers will be exempted as USDWs through the EPA-issued aquifer exemption in accordance with the criteria under 40 CFR 146.4, (ii) the applicant will be required to submit wellfield operational plans for NRC and EPA approval, (iii) inward hydraulic gradients will be maintained to ensure groundwater flow is toward the production zone, and (iv) the applicant's NRC-mandated groundwater monitoring plan will ensure that excursions are detected and corrected. Impacts from vertical excursions will be SMALL because (i) uranium-bearing production zones in the Fall River and Chilson aquifers are hydrologically isolated from adjacent aquifers by thick, low permeability shale layers (i.e., the overlying Graneros Group and underlying Morrison Formation); (ii) a prevailing upward hydraulic gradient occurs across the major aquifers; (iii) the applicant's required mechanical integrity testing program will mitigate the impacts of potential vertical excursions resulting from borehole failure; and (iv) the applicant commits to properly plugging and abandoning or mitigating any previously drilled wells and exploration holes that may potentially impact the control and containment of wellfield solutions within the proposed project area. Moreover, at the end of ISR operations, the applicant must to initiate aquifer restoration in the production aquifers (i.e., Fall River and Chilson aquifers) to return groundwater to Commission-approved background levels or to NRC-approved alternative water quality levels. Therefore, NRC staff conclude the impact to groundwater quality from potential horizontal and vertical excursions will be SMALL.

The applicant proposes land irrigation areas in both the Dewey and Burdock areas of the project (Figure 2.1-12). NRC staff find that no additional contamination will be introduced into the production and surrounding aquifers due to land application of effluents, because (i) the applicant will treat process effluents to meet NRC release limit criteria for radiological contaminants as referenced in 10 CFR Part 20, Appendix B, Table 2, Column 2 and applicable SDDENR release limit requirements before applying them onto irrigation fields and (ii) the irrigation fields are underlain by low permeability shale layers (Graneros Group). Any recharge to the Fall River aquifer from land application of liquid wastes during proposed ISR operations will be remediated as part of restoration activities. As discussed in SEIS Section 4.5.2.1.1.2.1, the applicant has proposed to remove all existing domestic wells within the project area from private use prior to ISR operations (Powertech, 2011). Therefore, NRC staff conclude that the overall environmental impacts to production and surrounding aquifers from potential horizontal and vertical excursions during ISR operations for the land application option will be SMALL.

4.5.2.1.2.2.3 Operations Impacts to Deep Aquifers Below the Production Aquifers

Production zone aquifers at the Dewey-Burdock site are separated from deeper aquifers by a continuous and hydrologically impermeable 30-m [100-ft]-thick section of the Morrison Formation. In addition, there are no known unplugged or improperly abandoned wells or exploratory drills extending from ground surface to aquifers below the Morrison Formation within the project area. Therefore, the NRC staff conclude that, for the land application disposal option, environmental impacts to groundwater in the deep aquifers below the production aquifers from ISR operations will be SMALL.

4.5.2.1.2.3 Aquifer Restoration Impacts

As discussed in the GEIS, the impacts of consumptive groundwater use during aquifer restoration are generally greater than during ISR operations (NRC, 2009a). This is particularly true during the sweep phase, when a larger volume of groundwater is generally withdrawn from the production aquifer. During the sweep phase, groundwater is not reinjected into the

Because NRC staff expect the applicant or landowners to disturb the surface soil to plant crops in the irrigation areas, staff also expect an increase in potential soil erosion and sedimentation could impact surface water on and downstream from the site. Land application sites are located within 0.4 km [0.25 mi] of Beaver Creek within the Dewey area; however, ISR construction activities are not expected to significantly affect surface water quality unless irrigation activities cross over into jurisdictional waters. In addition, the applicant has committed to implementing mitigation measures to control erosion, stormwater runoff, and sedimentation (SEIS Section 4.5.1.1). Because the applicant does not plan to disturb any additional water bodies and perennial streams within the proposed project area (Powertech, 2009a), NRC staff expect that aquatic species and amphibians will not be directly affected by construction of land application areas and expect impacts to be SMALL.

NRC staff expect the same mitigation measures will be followed for the land application option that were previously explained for the deep Class V injection well option. NRC staff conclude the additional amount of land that will be disturbed for construction under the land application disposal option is expected to noticeably alter, but not destabilize, the vegetation and important wildlife habitat that occur at the site. Therefore, the potential impact to ecological resources, including vegetation, upland game birds, raptors, waterfowl and shorebirds, nongame/migratory birds, other mammals, reptiles, and some protected and sensitive species, will be MODERATE from construction of the land application option. Because no federally threatened or endangered species are expected to occur in the project area, potential impacts to threatened or endangered species will be SMALL. NRC staff expect that construction impacts will not threaten any species' population or current existence.

4.6.1.2.2 Operations Impacts

Surface disturbance, including the application of waste water, will be the primary change to ecology during the operations phase of the proposed Dewey-Burdock ISR Project under the land application option. Wellfield expansion that will disturb approximately 56.7 ha [140 ac] of land during the operations phase will have similar impacts to vegetation wildlife impacts as expected during the operations phase for the deep Class V injection well option. Disturbance of land application areas (including operating and standby center pivot areas and catchment areas) totaling approximately 426 ha [1,052 ac] will have similar impacts on vegetation and wildlife as impacts expected to vegetation and wildlife during the construction phase of the land application option.

Potential exposure of wildlife to holding/settling pond constituents and potential failure of settling and holding pond liners or embankment systems will increase under the land application waste disposal option due the additional pond capacity. In addition, the GEIS identified the following potential land application impacts from operations related to ecology: (i) reduction in growth of vegetation due to soil salination; (ii) accumulation of contaminants, dissolved solids, and radionuclides in the root zone; and (iii) increased vegetation growth due to the increase of available water (NRC, 2009a).

According to SEIS Chapter 2, the irrigation pivots will operate 24 hours a day and irrigated areas will receive approximately 1,124 Lpm [297 gpm] from March 29 to May 10, approximately 2,472 Lpm [653 gpm] from May 11 to September 24, and approximately 1,124 Lpm [297 gpm] from September 25 to October 31. From November to March, land application will not be used and treated liquid waste will be temporarily stored in ponds located near the Burdock central plant and Dewey satellite facility (Powertech, 2011). Land application activities during

operations under this option will have a similar land disturbance impact on wildlife as those expected during the construction phase because of the continuous disturbance from irrigation activities. NRC staff expect that few animals will inhabit the land application areas during continuous irrigation. NRC staff also expect that prey–predator relationships will be altered within the irrigation areas because of seasonal irrigation activities and may not return during the winter season when irrigation activities are not planned. Upland game birds, raptors, waterfowl and shorebirds, nongame and migratory birds, small- and medium-sized mammals, and reptiles will experience direct, long-term habitat loss and reduction in the carrying capacity during the operations phase of the land application option. Staff expect that in general, birds are mobile and able to relocate to other available regional habitat (SEIS Section 4.6.1.1.1.4). Temporary direct impacts to animals and nests could include disturbance from sprayed irrigation water that the wind carries outside of the land application areas.

During the uranium recovery process, the groundwater extracted from the production zone is enriched in uranium and other metals that are typically associated with uranium in nature. In the license application technical report, Tables 4.2-7, 7.3-8 (Powertech, 2009b), and in their state GDP (Powertech, 2012c, Table 5.8-2) the applicant describes the expected radiological constituents and estimated concentrations in wastewater for the proposed land application activities. The radiological constituents include natural uranium, radium-226, thorium-230, and lead-210. At NRC-licensed *in-situ* leach facilities, the licensee is required to monitor and control radiological constituents in effluents to satisfy limits in 10 CFR Part 20, Appendix B, and irrigation areas to maintain levels of radioactive constituents within allowable release standards outlined in 10 CFR Part 40, Appendix A both during and after disposal by land application (NRC, 2009a). As stated in SEIS Section 2.1.1.1.6.2 for radiological emissions, the applicant proposes regular monitoring of air, soil, biomass (i.e., crops and livestock), surface water, and groundwater to identify the presence of NRC- and SDDENR-regulated constituents. The applicant's proposed land application monitoring program is described in SEIS Section 7.5. Monitoring results must be reported to NRC semiannually (see SEIS Chapter 7).

In the license application technical report (Powertech, 2009b, Tables 4.2-7 and 7.3-8) and in its South Dakota GDP (Powertech, 2012c, Table 5.8-2), the applicant described the expected chemical constituents and estimated concentrations in wastewater for the proposed land application activities. The list of chemical constituents includes arsenic, barium, cadmium, chromium, lead, and selenium. The NRC staff evaluated the toxicity of the proposed wastewater solutions and the potential for proposed land application activities to impact wildlife. Selenium, in particular, was identified by the FWS as a constituent of concern in ISR wastewater because of low wildlife health effects thresholds in some sensitive species when compared with concentrations of selenium measured in ISR wastewater (FWS, 2007). The wildlife health effects thresholds described here establish the concentration of a chemical in water that is known to cause health effects in wildlife based on scientific studies.

The NRC staff compared the applicant's estimated wastewater concentrations with EPA chronic (long-term) exposure-based water quality criteria (guidance) established for the protection of aquatic life and found the estimated concentrations of cadmium, chromium, lead, and selenium exceed the EPA criteria. The applicant's estimated concentrations of both cadmium and lead also exceed the acute (short-term) exposure-based EPA water quality aquatic life criteria (EPA, 2013a). Additionally, the applicant's estimated concentrations of selenium exceed levels referenced by FWS (2007) as hazardous to aquatic birds. Based on this comparison, the NRC staff concludes that direct chronic and acute exposure of sensitive species to the applicant's

estimated cadmium, lead, and selenium concentrations in wastewater could adversely impact exposed individuals.

However, the NRC staff considers such chronic direct wildlife exposure to undiluted wastewater unlikely because the applicant's proposed wastewater controls (e.g., pond design, spill and leak detection and mitigation, pressure monitoring, runoff control and mitigation) and SDDENR permitting requirements limit direct contact that aquatic life and terrestrial wildlife will have with wastewater solutions. The SDDENR controls include limiting access to wastewater with fencing, implementing an avian protection plan for pond operations, and requiring no-runoff and no-ponding conditions for land application. These controls would limit direct terrestrial wildlife exposures and migration of wastewater to aquatic life habitat areas such as nearby surface water.

Wastewater storage ponds present an additional opportunity for wildlife, primarily migratory birds, to have direct contact with wastewater solutions. The only detailed wildlife field study of an ISR wastewater irrigation system observed only limited use of a wastewater storage reservoir by birds (FWS, 2000b). In the event that additional treatment to lower wastewater constituent concentrations or additional access controls for ponds are needed to protect wildlife, SDDENR has the authority to require these actions be implemented by the applicant.

While direct wastewater exposures will be limited, as noted in the GEIS and draft SEIS, land application could lead to accumulation of trace metal constituents in soils. The NRC staff evaluated the applicant's estimated steady-state soil concentrations of trace metals from proposed land application with published EPA ecological soil screening guidance levels (Eco SSLs) (EPA, 2010). Eco-SSLs were developed to support screening analyses to identify potential ecological concerns at superfund sites that may need further, more detailed evaluation (e.g., ecological risk assessment). While Eco-SSLs were developed for superfund sites, EPA envisions that any federal, state, tribal, or private environmental assessment can use the values to screen soil contaminants (EPA, 2003). The applicant's estimated steady-state soil concentrations of trace metals (Powertech, 2009b, Table 7.3-8) exceeded EPA Eco-SSLs for cadmium, lead, and selenium. This analysis suggests the land application activities described by the applicant have the potential to accumulate specific trace metal constituents in soils at levels that could impact wildlife. Soil constituents can also be taken up in plants. They may remobilize and transport to nearby surface water and shallow groundwater; even though transport of these constituents will involve dilution. In sum, plants, groundwater, and surface water containing concentrations of trace metals provide additional routes of exposure to wildlife.

The SDDENR mine permit will establish monitoring requirements and action levels for trace metal concentrations in soils, vegetation, surface water, and groundwater that are protective of the environment. The SDDENR will review monitoring data and impose corrective actions if action levels are exceeded. Additionally, SDDENR will evaluate the environmental fate and transport of land-applied wastewater in detail (including environmental concentrations, pathways and food chains, bioaccumulation) prior to operation as part of its permitting and oversight processes. If SDDENR finds the waste management activities could impact wildlife, it will impose additional conditions on the applicant to mitigate impacts and protect the environment.

In summary, some of the chemical constituent concentrations in proposed wastewater solutions and in land application area soils estimated by applicant exceed levels known to cause impacts to wildlife. NRC staff conclude that impacts to individual animals are possible even with the practices proposed by the applicant and the SDDENR regulatory controls that will be imposed

by permit conditions, which include, monitoring, setting action levels, and requiring corrective actions if those controls do not limit all direct exposures to undiluted wastewater solutions. However, the NRC concludes the direct exposure of wildlife to wastewater solutions will be limited and that, under current regulatory controls, environmental concentrations of wastewater constituents are unlikely to reach levels that would lead to destabilization of wildlife populations.

The NRC staff conclude the overall impact on vegetation, small- to medium-sized mammals, upland game birds, raptors, waterfowl and shorebirds, nongame and migratory birds, and reptiles from operations for the land application liquid waste disposal option will be MODERATE because of the potential for some wildlife exposures to harmful constituents and the planned 8-year operation period that will alter approximately 426 ha [1,052 ac] of vegetation, wildlife distribution, and wildlife habitat. Based on the foregoing analysis, the impacts are expected to noticeably alter important attributes of the terrestrial environment; however, staff do not expect these impacts to threaten the continued existence of any species.

Because the land application option will not disturb any additional water bodies and perennial streams within the proposed project area (Powertech, 2009a), and land application treated wastewater will be controlled to avoid runoff, staff expect that aquatic habitat will not be directly affected by land application activities and potential impacts to aquatic species and amphibians will be SMALL. For the same reasons explained for construction impacts on big game from the land application option, staff expect potential operations impacts to big game from operations during the land application option to be SMALL.

4.6.1.2.3 Aquifer Restoration Impacts

During aquifer restoration, potential impacts to ecological resources for the land application liquid waste disposal option at the proposed Dewey-Burdock ISR Project will remain similar to those described previously for the operations phase. Planned activities using existing infrastructure during the aquifer restoration phase are described in SEIS Section 4.2.1.2.3. NRC staff expect land application activities to continue during the aquifer restoration phase. Because construction and drilling equipment are not used during the aquifer restoration phase, NRC staff expect impacts from human presence, noise, and wildlife mortalities from equipment to decrease compared to human presence, noise, and wildlife mortalities expected during the operations phase. The expected liquid waste flow rates for the entire project will be approximately 2,070 Lpm [547 gpm] during concurrent uranium production and aquifer restoration and approximately 1,892 Lpm [500 gpm] during aquifer restoration alone (SEIS Section 2.1.1.1.4.1.2).

As with the operations phase, impacts to potential land application areas during aquifer restoration will be mitigated by implementing a monitoring program and maintaining levels of radiological contaminants in treated waste water to allowable release limits contained in 10 CFR Part 20, Appendix B (Powertech, 2009a, 2011) and chemical constituents in compliance with state requirements and permit conditions. Considering the potential for some wildlife exposures to harmful constituents and the continued alteration of approximately 426 ha [1,052 ac] of vegetation, wildlife distribution, and wildlife habitat, the NRC staff conclude that the overall potential impacts to vegetation, small- to medium-sized mammals, raptors, upland game birds, waterfowl and shorebirds, nongame and migratory birds, and reptiles will remain MODERATE. Based on the projected magnitude of expected liquid waste flow rates during aquifer restoration relative to operations, the potential impacts to big game, aquatic species, and

amphibians during the aquifer restoration phase will not increase beyond those of the operations phase and will therefore be SMALL.

4.6.1.2.4 Decommissioning Impacts

Staff expect the potential ecological impacts of decommissioning for the land application liquid waste disposal option will be similar to those described in SEIS Section 4.6.1.1.4 for the deep Class V injection well disposal option, including increased human presence, noise, and construction and field equipment. In addition to those activities planned for decommissioning under the deep Class V injection well disposal option, irrigation area pipelines, access roads, and larger pond areas will be directly impacted under the land application disposal option as explained in SEIS Section 4.6.1.2.1.

The dismantling of the proposed project facilities, piping, infrastructure, and roads and reseeding and recontouring will have fewer ecological impacts than those experienced during the construction phase due to continuous revegetation efforts during the ISR lifecycle. SDDNER recommends that the large-scale mine permit require (i) the collection of baseline vegetation data within land application areas; (ii) concurrent and interim reclamation in all areas where mining or land disturbance is completed; (iii) that revegetation success be equivalent to vegetative cover in reference areas using SDDENR-approved statistical methods; and (iv) that a post closure bond be held for 30 years after the reclamation bond is released to help ensure revegetation success. However, final permit conditions may change based on the final determination by the South Dakota hearing board. Noise, vehicle and equipment use, and human presence will increase to levels similar to those experienced during the construction phase and for the same expected amount of time (2 years). For these reasons, NRC staff conclude there will be a MODERATE impact on vegetation, small- to medium-sized mammals, raptors, upland game birds, waterfowl and shorebirds, nongame and migratory birds, and reptiles from decommissioning and reclamation under the land application liquid waste disposal option until vegetation has been reestablished and preconstruction wildlife populations return to the area. For the same reasons explained in SEIS Section 4.6.1.1.4, potential impact to big game, aquatic species, and amphibians will remain SMALL from decommissioning under the land application option for the proposed project.

4.6.1.3 Disposal Via Combination of Class V Injection and Land Application

For the combined deep Class V injection well disposal and land application option, land application facilities and infrastructure will be constructed, operated, restored, and decommissioned on an as-needed basis depending on the Class V injection well disposal capacity (Powertech, 2011). For the reasons explained in SEIS Section 4.2.1.3 for operations impacts to land use under the land application option, the significance of impacts that could impact either vegetation or wildlife populations for the combined disposal option will be less than for the land application option but greater than for the deep Class V injection well disposal option, as reflected in Table 4.6-5. Therefore, NRC staff conclude that the ecological impacts of the combined deep Class V injection well and land application disposal option for each phase of the proposed Dewey-Burdock ISR Project will bound the significance of ecological impacts of the deep Class V injection well option and the land application option.

Table 4.6-5. Significance of Ecological Impacts for the Proposed Liquid Waste Disposal Options for Each Phase of the Proposed Dewey-Burdock *In-Situ* Recovery Project

	Class V Injection Wells	Land Application	Combined Class V Injection Wells and Land Application*
Construction	SMALL for vegetation, terrestrial, and aquatic species	MODERATE for vegetation, small- to medium-sized mammals, raptors, waterfowl and shorebirds, upland game birds, nongame and migratory birds, and reptiles SMALL for big game, aquatic species, amphibians	SMALL to MODERATE for vegetation, terrestrial, and aquatic species
Operations	SMALL for vegetation, terrestrial, and aquatic species	MODERATE for vegetation, small- to medium-sized mammals, raptors, waterfowl and shorebirds, upland game birds, nongame and migratory birds, and reptiles SMALL for big game, aquatic species, amphibians	SMALL to MODERATE for vegetation, terrestrial, and aquatic species
Aquifer Restoration	SMALL for vegetation, terrestrial, and aquatic species	MODERATE for vegetation, small- to medium-sized mammals, raptors, waterfowl and shorebirds, upland game birds, nongame and migratory birds, and reptiles SMALL for big game, aquatic species, amphibians	SMALL for aquatic species and amphibians; SMALL to MODERATE for vegetation and terrestrial species
Decommissioning	MODERATE before vegetation is reestablished SMALL after vegetation is reestablished	MODERATE before vegetation is reestablished SMALL after vegetation is restablished	MODERATE before vegetation is reestablished SMALL after vegetation is reestablished
*Significance of environmental impact for the combined disposal option is bounded by the significance of environmental impacts for the Class V injection well disposal and land application disposal options.			

applicant proposed (i.e., deep well disposal via Class V injection wells, land application, or combined deep well disposal and land application) are discussed in the following sections.

4.7.1.1 Disposal Via Class V Injection Wells

As described in SEIS Section 2.1.1.1.2.4, the applicant's preferred option for disposal of liquid wastes is deep well disposal via Class V injection wells. Potential environmental impacts on air quality from construction, operations, aquifer restoration, and decommissioning associated with the Class V injection well disposal option at the proposed Dewey-Burdock ISR Project are discussed in the following sections.

4.7.1.1.1 Construction Impacts

To help characterize the magnitude of the proposed project's air effluents, the emission levels are compared to regulatory thresholds, such as the New Source Review program threshold for classification as a major source. The estimated emission levels of NAAQS pollutants for stationary sources for the proposed Dewey-Burdock ISR Project listed in Table 2.1-1 are well below the New Source Review program threshold of 227 metric tons [250 short tons] for classification as a major source as described in SEIS Section 2.1.1.1.6.1.1. The pollutant with the highest stationary source emission level is NO_x at 1.54 metric tons [1.70 short tons]. For the construction phase, all of the estimated annual emission levels of nonradiological pollutants from all sources (i.e., stationary, mobile, and fugitive) were lower than the New Source Review threshold (see Table C–11). The pollutant with the highest emission level is PM_{10} at 172.2 metric tons [189.8 short tons] (see Table 2.1-3). However, for the peak year, the one pollutant emission level that exceeds the New Source Review threshold is PM_{10} at 419.0 metric tons [461.9 short tons] (see Table 2.1-5).

Air emission during the construction phase of the proposed project will consist primarily of combustion emissions and fugitive road dust. The construction phase generates the highest levels of fugitive dust relative to the other phases (see Table 2.1-3). Travel on unpaved roads generates about 84 percent of the PM_{10} emission levels with wind erosion accounting for the remaining 16 percent (see Table 2.1-3). For the mobile combustion emissions, the construction phase generates the highest levels of sulfur dioxide, nitrogen oxides, and carbon monoxide when compared with the other three phases (see Table 2.1-2). For the construction phase combustion emissions, the NAAQS pollutants with the highest emission levels are NO_x and CO (see Table 2.1-2).

The total pollutant concentrations (i.e., the modeling results for the project emissions when added to the background concentration levels) for the initial modeling run reveal that the peak year pollutant concentrations are below the NAAQS, except for the PM_{10} 24-hour estimate (see Table 4.7-1). These concentrations include the stationary sources from Table 2.1-1, the mobile sources from Table 2.1-2, and the fugitive sources from Table 2.1-3. All 50 receptor locations where the PM_{10} 24-hour total pollutant concentration exceeded the NAAQS occur within 500 meters [546.8 yards] of the Dewey-Burdock project boundary and the public road over which commuter traffic accesses the site (IML, 2013a). In fact the receptors with the ten highest PM_{10} 24-hour concentrations occur along the public road rather than the project boundary (IML, 2013a). Fugitive dust sources account for 99.1 percent of the peak year PM_{10} emissions for all sources (see Table C–8). For the construction phase, travel on unpaved roads accounts for 84 percent of the PM_{10} emissions (see Table 2.1-3). This indicates that travel on the unpaved roads is a key source for the fugitive dust estimates. The fact that the exceedences occur for

the 24-hour standard and not the annual standard indicates that potential impacts are associated with the short-term time frame.

The initial modeling run for PM_{10} was conducted without implementing the dry depletion option. The AERMOD dry depletion option accounts for the partial settling and deposition of PM_{10} particles as the dust plume disperses away from the source. In simple terms, heavier particles tend to fall out of the air sooner than lighter particles. A more detailed explanation of dry depletion and the rationale for its use in this SEIS is presented in Appendix C Section C2.3.1. NRC staff will base the impact analyses (i.e. SMALL, MODERATE, or LARGE) in this SEIS on the PM_{10} modeling results that implement the dry depletion option (i.e., the final modeling run). For information purposes, NRC staff will also present the impact analysis for the results that do not implement the dry depletion option (i.e., the initial modeling run). However, the impact assessment in this SEIS will not be based on the PM_{10} estimates generated in the initial modeling run. Implementation of the dry depletion option for the final modeling results only changes the PM_{10} estimates. Put another way, the initial modeling results provide the estimates used in the SEIS for all of the pollutants other than PM_{10}. When the modeling implements the dry depletion option, the peak year total concentration for the PM_{10} 24-hour estimate is below the NAAQS (i.e., 83.1 percent) and the estimated peak year total concentrations for all of the pollutants are below the NAAQS ranging between 3.7 and 86.9 percent of the applicable threshold (see Table 4.7.1). As described in Table C–11, the construction phase contribution to the peak year emissions varies between 40.5 and 70.8 percent depending on the particular pollutant. For the construction phase, the total pollutant concentrations for the initial modeling run (i.e. without implementing dry depletion) are below the NAAQS ranging between 2.4 and 78.6 percent of the applicable standard (see Table C–12). This includes the PM_{10} 24-hour estimate which drops from 78.6 percent of the NAAQS to 50.2 percent when dry depletion is implemented (see Table C–12).

While the NAAQS primarily relate to an area's attainment classification (see SEIS Section 3.7.2), the PSD increments relate to pollution levels made by individual projects. The modeling domain for this project included both Class I areas (i.e., Wind Cave National Park) and Class II areas (i.e., all other areas within the domain). Wind Cave National Park is located about 46.7 km [29.0 mi] northeast of the proposed project area, and the predominant wind direction is from the northwest (see Figure 3.7-1). The Class II analysis will be addressed first followed by the Class I analysis.

For the peak year, the estimated PM_{10} 24-hour project level concentration is above the allowable PSD Class II increment for both the initial and final modeling runs (see Table 4.7-2). The estimated project level PM_{10} 24-hour concentration for the final model run is almost three times the PSD Class II increment and the initial modeling result is over six times the PSD Class II increment. The estimated project level concentrations for all of the other pollutants are below the PSD Class II increments ranging between 3 and 87.8 percent of the applicable threshold (see Table 4.7-2). As described in Table C-11, the construction phase contribution to the peak year emissions varies between 40.5 and 70.8 percent depending on the particular pollutant. For the construction phase, the estimated PM_{10} 24-hour project level concentrations for the final modeling run (34.4 $\mu g/m^3$) and initial modeling run (76.9 $\mu g/m^3$) are both above the allowable PSD Class II increment of 30 $\mu g/m^3$. For all of the other pollutants, the estimated project level concentrations for the construction phase are below the applicable PSD Class II increments.

For the peak year, none of the estimated project level concentrations exceed the allowable Class I PSD increments (see Table 4.7-2). For the final modeling run, the project level

concentration estimates range between zero and 45 percent of the applicable threshold. If the initial modeling run is considered, this range increases to 100 percent due to the PM_{10} 24-hour project level concentrations. As described in Table C–11, the construction phase contribution to the peak year emissions varies between 40.5 and 70.8 percent depending on the particular pollutant. For the construction phase, all of the estimated project level concentrations are below the applicable PSD Class I thresholds.

NRC staff consideration of the Air Quality Related Values begins with the peak year analysis for the visibility. Table 4.7-3 presents the visibility analysis results both with and without PM_{10} included in the emission inventory. For the modeled results without the PM_{10} included, the 98^{th} percentile of the annual, 24-hour average change in deciviews is less than the contribution threshold for both the 3-year average as well as for each individual year. There are no days during the 3-year model period with a change in light extinction exceeding 0.5 deciviews. For the modeled results with the PM_{10} included, the 98^{th} percentile of the annual, 24-hour average change in deciviews is also less than the contribution threshold for both the three-year average, as well as for each individual year. However, there are eleven days during the 3-year model period with a change in light extinction exceeding 0.5 deciviews. Visibility impacts are not generated for the individual project phases. The analyses with and without PM_{10} both reveal that the annual peak year results are below the threshold. The individual phase results, as a fraction of the peak year results, are also below the threshold. In addition, the visibility result is a value computed from several pollutants with varying contributions rather than just a single pollutant. This complicates any attempt to generate phase specific contribution values.

Table 4.7-4 presents the total (i.e., wet and dry) acid deposition peak year results for the Wind Cave National Park. The modeled results for the 3-year average are below the concern threshold. This will remain true even if all of the modeled emissions occur in a single year. The modeled results when combined with the measured 3-year average at Wind Cave National Park are below the estimated critical load. This will remain true if the modeled results are combined with any of the single year measured averages. Acid deposition impacts are not generated for the individual project phases. The annual peak year results are below the threshold. The individual phase results, as a fraction of the peak year results, will also be below the threshold.

The air emission inventory used in this SEIS incorporates the following mitigation measures the applicant committed to implement (IML, 2013a and Powertech, 2012d):

- Lowering the drill rig engine horsepower from 550 horsepower to 300 horsepower, except for the deep well drill rig.
- Using Tier 1, or higher, drill rig engines and Tier 3, or higher, construction equipment engines.
- Car pooling.
- Water suppression for unpaved roads.

The various tiers refer to a phased program of federal standards that requires newly manufactured engines to generate lower pollutant emission levels. Higher tier numbers correlate with stricter emission standards and lower pollutant levels. Section C2.1 describes how changes in engines used are incorporated into the calculation of the revised emissions inventory. Table C–5 describes the effectiveness (i.e., the percentage of emissions reduction)

of the different tier levels based on the associated emission factors. The applicant committed to implement carpooling. Reducing the number of vehicles commuters use results in fewer emissions and lower pollutant levels. Table C–6 described the effectiveness (i.e., the percent that the emissions are reduced) of the carpooling implemented by the applicant. A 60 percent reduction in the fugitive dust emissions associated with travel on unpaved roads within the proposed project boundary is incorporated into the inventory. The watering frequency of more than twice per hour is the basis for using the 60 percent control efficiency. Appendix D of the Ambient Air Quality Final Modeling Protocol and Impact Analysis (IML, 2013a) provides additional details for the project specific watering control of fugitive dust and the 60 percent control efficiency basis. No reduction in the fugitive dust emission associated with travel on the unpaved road outside of the project boundary is incorporated into the emission inventory. The applicant identified other mitigation measures it will implement (see Table 6.2-1); however, these other measures are not incorporated in the calculation of the revised emissions inventory. In addition, the applicant has proposed the following mitigation measures to further reduce and control air emissions (IML, 2013a and Powertech, 2009a):

- Implement standard dust control measures such as speed limits.
- Coordinate dust-producing activities to reduce maximum dust levels.
- Maintain vehicles to meet applicable EPA emission standards.
- Restore and reseed disturbed areas.
- Assist Fall River County in the maintenance and application of dust suppressant on the unpaved road beyond the project boundary.

All phases of the proposed Dewey-Burdock ISR Project will produce greenhouse gas emissions. Table 2.1-6 presents the carbon dioxide emission estimates for the proposed action for each of the four phases and for the various source categories. The only greenhouse gas included in the emission estimates is carbon dioxide. NRC staff consider the exclusion of other greenhouse gases from the inventory acceptable because carbon dioxide is the primary greenhouse gas emitted by the proposed action (IML, 2013a) and the analysis in this SEIS is for disclosure purposes rather than a formal regulatory determination. SEIS Appendix C Section C3 contains additional information on the greenhouse gas emission estimates presented in Table 2.1-6. The estimated carbon dioxide emission level for the stationary sources is lower than the current EPA permitting threshold, as described in SEIS Section 3.7.2. In fact, both the peak year and construction phase emissions levels for all of the sources (i.e., facility, mobile, and electric consumption) are below this threshold. For comparison, the annual estimated greenhouse gas emissions for the peak year from all sources is 38,621 metric tons [42,572 short tons], which is a small fraction of those produced annually in South Dakota {36.5 million metric tons [40.2 million short tons] of gross CO_2e emissions} (Center for Climate Strategies, 2007). NRC staff conclusions concerning potential greenhouse gas impacts are addressed in SEIS Section 5.7 on air quality cumulative effects.

As described in SEIS Section 4.7.1.1, NRC staff will base the impact analyses (i.e. SMALL, MODERATE, or LARGE) in this SEIS using the PM_{10} modeling results that implement the AERMOD dry depletion option (i.e., the final modeling run) and exclude the PM_{10} emissions from the CALPUFF visibility analysis. The proposed action's dispersion modeling results that address fugitive dust emissions as well as emissions from the burning of fossil fuels for the

stationary and mobile sources indicate that pollution concentration levels within the modeling domain are generally low. Pollutant concentrations for both the peak year and construction phase only pollutant concentrations are below the NAAQS. All the estimated project level concentrations for both the peak year and construction phase are below the PSD Class II increments, except for the 24-hour PM_{10} values. As described in SEIS Section 4.7.1, the SDDENR formally determined that the project will not be subject to PSD requirements. Therefore, for this analysis, NRC staff consider comparison of project level pollutant concentrations to PSD increments for disclosure purposes (e.g., indicating the type of project level emission the analysis should focus on for potential environmental impacts) rather than a regulatory concern. For both the peak year and construction phase only, all of the estimated project level concentrations are below the PSD Class I increments. Due to the level (i.e., above PSD Class II increments) and nature of these fugitive PM_{10} emissions, there is a potential for noticeable localized dust emissions for only the peak year and construction phase. Short-term, intermittent impacts are possible to the area in and around the site, particularly when vehicles travel on unpaved roads. At times, the fugitive emissions will result in a MODERATE impact on air quality for the peak year and construction phase. For the visibility analyses, the annual modeled peak year results are below the contribution threshold. In fact, there are no individual days over the three year period modeling period with a change in light extinction exceeding 0.5 deciviews. For the acid deposition results, the peak year results are below the contribution threshold. The modeled results when combined with the measured results at the Wind Cave National Park are below the estimated critical load. The individual phase results, as a fraction of the peak year results will be below the visibility and acid deposition thresholds. Due to the level of the visibility and acid deposition results relative to the applicable thresholds, NRC staff conclude that that the peak year and construction phase project emission will result in a SMALL impact on air quality.

The NRC staff conclude that the overall impact to air quality during the construction phase for the Class V injection well disposal option will range from SMALL to MODERATE. The NRC staff reiterate that the peak year represents the greatest project impacts and conclude that the peak year impact will range from SMALL to MODERATE.

For information purposes, NRC staff will also present the impact analyses using the PM_{10} modeling results that do not implement the AERMOD dry depletion option (i.e., the initial modeling run) and include the PM_{10} emissions in the CALPUFF analysis. The tables and discussion in the SEIS text already include the information for the initial AERMOD modeling results and inclusion of the PM_{10} emission in the CALPUFF visibility analysis. This discussion will focus on distinctions between the two analyses (i.e., the analysis NRC is using to determine the impact magnitude for this SEIS and the analysis the NRC is presenting for informational purposes only) that could result in a different impact magnitude conclusion.

There is an important distinction between the initial and final AERMOD modeling runs in terms of the results relative to the NAAQS. For the peak year, the total pollutant concentrations for the initial modeling run reveal that the concentrations for each of the NAAQS pollutants are below the NAAQS except for the PM_{10} 24-hour estimate (see Table 4.7-1). Implementation of the dry depletion option for the peak year total concentrations results in this value being below the standard. The NRC will characterize the initial modeling run results for the peak year concentrations as a LARGE impact, if mitigating measures are not incorporated by the applicant. One factor or measure that could reduce concentrations is the incorporation of mitigation into the emission inventory calculation such as water suppression for travel on unpaved roads beyond the boundary of the proposed project. Other factors that can be

considered are the implementation of particulate monitoring and an associated contingency plan that identifies steps that will be undertaken, if the monitoring shows that fugitive dust is an issue. In the Ambient Air Quality Final Modeling Protocol and Impact Analysis, the applicant expressed willingness to perform air monitoring. During interactions with the NRC, EPA staff recommended the development of a contingency plan associated with such monitoring. However, NRC staff will not require additional measures be undertaken by the applicant because the impact analyses based on the modeling results implementing the deviations from the default conditions correctly estimate the impact magnitude. NRC suggests that the applicant coordinate with appropriate entities, such as Fall River County, for mitigation to the unpaved public road outside the proposed project boundary, or the SDDENR and EPA for fugitive dust monitoring and associated contingency plans.

Although there is a distinction between the initial and final AERMOD modeling runs for the peak year analysis, this is not an issue for the construction phase analysis because both the initial and final modeling PM_{10} 24-hour results are below the NAAQS. NRC staff acknowledge that, for the visibility analysis that includes PM_{10}, there are eleven days during the three-year modeling period where the change in light extinction exceeds 0.5 deciviews. NRC staff further acknowledge that some may consider a statistic other than the 98th percentile (e.g., the maximum change in deciviews or the number of day greater than a 0.5 change in deciviews) the appropriate value to determine the impact magnitude. However, NRC staff considers the 98^{th} percentile statistic as an appropriate basis for determining the impact magnitude. As a result, there is no difference in impact magnitude between the analyses with and without PM_{10}.

4.7.1.1.2 Operations Impacts

The estimated emission levels of NAAQS pollutants for stationary sources for the proposed action listed in Table 2.1-1 are well below the Title V or operating permit threshold of 90.7 metric tons [100 short tons] for classification as a major source in an attainment area as described in SEIS Section 2.1.1.1.6.1.1. The pollutant with the highest stationary source emission level is NO_x at 1.54 meteric tons [1.70 short tons]. For the operation phase, all of the estimated annual emission levels of nonradiological pollutants from all sources were lower than the operating permit threshold, except for PM_{10} at 138.3 metric tons [152.4 short tons] (see Table 2.1-3 and Table C–11). For the peak year, the only pollutant emission level that exceeds the operating permit threshold is PM_{10} at 419.0 metric tons [461.9 short tons] (see Table 2.1-5).

Air emissions during the operation phase of the proposed Dewey-Burdock ISR Project will consist primarily of combustion emissions and fugitive road dust. Travel on unpaved roads generates about 81 percent of the PM_{10} emission levels with wind erosion accounting for the remaining 19 percent (see Table 2.1-3). For the operations phase combustion emissions, the NAAQS pollutants with the highest emission levels are NO_X and CO (see Table 2.1-2). The construction phase analysis in SEIS Section 4.7.1.1.1 discusses the inclusion of mitigation in the calculation of the emissions inventory and the effectiveness of this mitigation. This information also applies to the operation phase impact analysis. In addition, the applicant has proposed other mitigation measures to further reduce and control air emissions (see Table6.2-1).

The discussion of the peak year project level emissions compared to the NAAQS, Class II PSD increments, and Class I PSD increments presented in the construction phase analysis in SEIS Section 4.7.1.1.1 remains the same. As described in Table C–11, the operation phase contribution to the peak year emissions varies between 15.8 and 33.0 percent depending on the

GEIS Construction Phase Summary

As discussed in GEIS Section 4.4.8.1, the potential impacts during ISR facility construction may include loss of or damage to historic and cultural resources due to excavation and earthmoving activities. An NRC licensee condition that requires the stoppage of work upon discovery of undocumented historic or cultural resources may be imposed. Such a condition will require notification of the appropriate federal, tribal, and state agencies to implement mitigation measures. NRC staff concluded in the GEIS that potential impacts to historic and cultural resources from construction will be SMALL to LARGE depending on whether historic and cultural resources are present within the project area. Mitigation measures identified in the licensee's management plan or site specific Memorandum of Agreement (MOA) or Programmatic Agreement (PA) could reduce an adverse impact to a historic or cultural resource by reducing the adverse effect on a historic property. (NRC, 2009a)

GEIS Operations Phase Summary

As discussed in GEIS Section 4.4.8.2, it is expected potential impacts to historic and cultural resources from operations will be less than during construction, because less land disturbance occurs during this phase. Additionally, conditions in the NRC license typically require the licensee to stop work upon discovery of previously undocumented historic or cultural resources and to notify the appropriate federal, tribal, and state agencies to implement mitigation measures. For these reasons, NRC staff determined in the GEIS that potential impacts to historic and cultural resources from ISR operations will be SMALL. (NRC, 2009a)

GEIS Aquifer Restoration Phase Summary

In GEIS Section 4.4.8.3, NRC staff determined that potential impacts to historic and cultural resources from aquifer restoration are expected to be similar to, or less than, potential impacts from operations. Aquifer restoration activities are generally limited to the existing infrastructure and previously disturbed areas (e.g., access roads, central processing plant). Additionally, typical conditions in the NRC license regarding the discovery of previously undocumented historic or cultural resources will remain in effect and could minimize potential adverse impacts. For these reasons, NRC staff concluded in the GEIS that the potential impacts from aquifer restoration on historic and cultural resources will be SMALL. (NRC, 2009a)

GEIS Decommissioning Phase Summary

GEIS Section 4.4.8.4 discussed potential impacts from decommissioning to historic and cultural resources. Decommissioning and reclamation activities will focus on those areas that have been disturbed; therefore, historic and cultural resources within the potential area of effect will already be known. For these reasons, NRC staff determined in the GEIS the potential impacts to historic, cultural, and archaeological resources during decommissioning and reclamation will be SMALL. (NRC, 2009a)

The potential impacts to historic and cultural resources from construction, operations, aquifer restoration, and decommissioning for the proposed Dewey-Burdock ISR Project are discussed in the following sections.

4.9.1.1.1 Construction Impacts

As discussed in the SEIS Section 4.2.1.1.1, a total of 98.3 ha [243 ac] or 2.3 percent of the proposed permit area will be potentially disturbed by activities associated with construction of site buildings, pipelines, wellfields, ponds, and access roads for the Class V injection well disposal option (Powertech, 2010a). As described previously, the APE for facility construction and operations for the Class V injection well disposal option totals 1,067 ha [2,673 ac] as illustrated in Figure 3.9-1. This area includes a 969-ha [2,394-ac] buffer zone surrounding the 98.3-ha [243-ac] area of projected land disturbance.

As part of the environmental review of historic and cultural resources, the NRC evaluated the results of historic and cultural resource surveys conducted at the proposed Dewey-Burdock ISR Project site (see SEIS Section 3.9.3). These surveys included: (i) a Level III cultural resource investigation conducted as part of prelicense application activities; (ii) a tribal cultural survey; and (iii) a visual impacts assessment. In addition to the visual impacts assessment, NRC evaluated whether the proposed project has the potential to introduce new auditory changes to the project area that could impact historic properties located within or outside the limits of proposed ground disturbance.

In making recommendations on the eligibility of historic properties for the National Register for Historic Places (NRHP), NRC applies the criteria found in the National Historic Preservation Act (NHPA) implementing regulations at 36 CFR 60.4(a)–(d). The criteria are: (A) association with significant events in history; (B) association with the lives of persons significant in the past; (C) embodiment of distinctive characteristics of type, period, or construction; and (D) sites or places that have yielded or are likely to yield important information (ACHP, 2012). The NRC NRHP eligibility determinations and impact assessment for cultural and historic properties identified at the Dewey-Burdock site are discussed in the sections below.

Level III Cultural Resource Investigations

As described in SEIS Section 3.9.3.1, NRC staff reviewed Level III cultural resource investigations and evaluative testing reports prepared by the Archaeology Laboratory, Augustana College (ALAC) on behalf of the applicant for the Dewey-Burdock site (Kruse, et al., 2008; Palmer and Kruse, 2008; Palmer 2008, 2009, 2012). More than 200 archaeological sites were recorded during archeological field investigations. One-hundred and forty-nine (149) sites were recommended as ineligible for listing in the NRHP. Seventy-nine (79) of these sites consisted of isolated finds lacking physical integrity or context. Approximately 140 ineligible sites were mostly prehistoric sites located on high disturbed and eroded landforms and have little potential to possess intact, significant buried cultural deposits. Sites that are not eligible for listing in the NRHP are not expected to be impacted by activities associated with facility construction and operations. Therefore, NRC staff expects SMALL impacts to these sites during the construction phase for the Class V injection well disposal option.

Based on archaeological field investigations, a total of 18 historic properties within the proposed project area are listed or recommended as eligible for listing in the NRHP. Table 4.9-1 lists these sites, as well as the NRC NRHP-eligibility determinations, the locations of eligible sites within the APE affected by facility construction and operations, the NRC assessment of the significance of impact, and NRC management recommendations. The South Dakota State Historic Presevation Office (SD SHPO) concurred on the NRC determination of sites eligible to

Table 4.9-1. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Historic Properties Within the Proposed Project Area Listed in NRHP or Recommended as Eligible for Listing in the NRHP (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

StateSite Number	Description	NRC's NRHP Determination	Location with Respect to the Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation
Historic District 90000949- Edna and Ernest Young Ranch	This historic district covers 52.6 ha [130 ac] and is located approximately 4.8 km [3 mi] south of Dewey and south of Beaver Creek. The area of significance is exploration/settlement during 1900–1924 and 1925–1949. There are 13 contributing buildings, one contributing structure, and one non-contributing structure.	Eligible, Criteria A and C	Outside APE	SMALL; no impact anticipated	Listed in the NRHP in 1990. National Register Historic District will be avoided.
Bakewell Ranch (Structure CU00000050)	The Bakewell Ranch is located within the Edna and Ernest Young Ranch National Register Historic District.	Eligible, Criteria A and C	Outside APE	SMALL; no impact anticipated	Listed on the NRHP. Historic property will be avoided.
Log Barn (Structure CU02500002)	Log barn at the Richardson Homestead was found eligible for listing on NRHP in April 2012 under Criteria A.	Eligible, Criterion A	Wiithin APE for LA	LARGE potential impact	Site is located approximately 76 m [250 ft] south of land application areas. The site will be fenced off to ensure avoidance.
39CU0271	Native American and Archaic artifact scatter and occupation site on a ridge slope with a cairn feature.	Eligible, Criterion D	Within APE for DDW and LA	LARGE potential impact	Site is located approximately 61 m [200 ft] east of proposed wellfield areas. Site will be avoided.
39CU0577	Native American/ Euroamerican/ Occupation site; artifact scatter.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU0578	Euroamerican/Native American Historic dump and occupation site located on a ridge slope.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU0584	Native American occupation site and burial (affiliation unknown) on a ridge slope.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU0586	Native American and Late Archaic occupation site on a ridge crest.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.

Table 4.9-1. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Historic Properties Within the Proposed Project Area Listed in NRHP or Recommended as Eligible for Listing in the NRHP (Cont'd) (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

StateSite Number	Description	NRC's NRHP Determination	Location with Respect to the Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation
39CU0588	Native American occupation site on a ridge crest.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU0590	Native American artifact scatter on a ridge saddle.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU0593	Native American and Euroamerican occupation and artifact scatter on a hillslope.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU2000	Historic Railroad.	Eligible, Criteria A and C	Within APE for DDW and LA	LARGE potential impact	Site crosses proposed wellfield areas. Site will be avoided.
39CU2733	Native American hearth and artifact scatter on a ridge slope.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU2735	Archaic- Prehistoric occupation site.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU2738	Native American occupation site on a ridge crest.	Eligible, Criterion D	Outside APE	SMALL; no impact anticipated	Site will be avoided.
39CU3592	Native American artifact scatter and hearth site.	Eligible, Criterion D	Within APE for DDW and LA	LARGE potential impact	Site is located within a proposed wellfield area south of the Dewey satellite facility. Site will be fenced off to ensure avoidance.
39FA1941	Native American artifact scatter and hearth site.	Eligible, Criterion D	Within APE for DDW and LA	LARGE potential impact	Site is located approximately 91 m [300 ft] east of the proposed Burdock central processing plant and is within a proposed wellfield area. Site will be avoided or mitigated as necessary.
39FA2000	Historic Railroad.	Eligible, Criteria A and C	Within APE for DDW and LA	LARGE potential impact	Site crosses proposed wellfield areas. Site will be avoided.

the NRHP in Table 4.9-1 (SD SHPO, 2012, 2014). Avoidance of historic properties is the goal during development and production phases of the proposed project (Powertech, 2009a). Archaeological and tribal monitors are expected to be present during ground disturbing activities in order to protect known historic properties (Powertech, 2009a). The 18 historic properties currently listed or recommended eligible for listing in the NRHP are discussed next. Sites 39CU0577, 39CU0578, 39CU0586, 39CU0588, 39CU2733, 39CU2738, and 39CU0590 are Native American occupation sites. Site 39CU2735 is an Archaic occupation site. Site 39CU0593 contains both Native American and Euroamerican components, with artifact scatters extending down a hillslope. Site 39CU0584 is a Native American occupation site and burial (affiliation unknown) located on a ridge slope. Each of these sites is recommended as eligible for listing in the NRHP (Kruse, et al., 2008). However, all are located outside the APE for facility construction and operations. Because these properties are not threatened by site activities and will be avoided, no impacts to these sites are anticipated.

The Edna and Ernest Young Ranch Historic District (90000949) and the Bakewell Ranch (CU0000050) within this historic district are listed on the NRHP and were described in detail in SEIS Section 3.9.3.1.2. The properties are located south of Beaver Creek in the northwestern part of the project area, southwest of the proposed wellfield areas in the Dewey area. These properties are located outside the APE for facility construction and operations and will be avoided. Therefore, no potential impacts to these historic properties from ground disturbing activities are anticipated.

Five historic properties (39CU3592, 39CU0271, 39FA1941, 39CU2000, and 39FA2000) may be impacted by proposed construction activities associated with the Class V injection well disposal option. These sites are described next.

Site 39CU3592 is a Native American artifact scatter and hearth site located within a proposed wellfield area south of the Dewey satellite facility. NRC staff has recommended that a buffer zone and protective fencing be erected around 39CU3592 to ensure this historic property is not adversely impacted during project activities. The applicant committed to protect this property by establishing a buffer zone and installing protective fencing around the site (Powertech, 2012e).

Site 39CU0271 is an Archaic occupation site with 238 associated hearth features and a cairn feature. Site 39CU0271 is located to the east of a proposed monitoring well ring in the Dewey area. NRC staff recommend avoidance of site 39CU271 and the applicant committed to avoid this site (Powertech, 2012e). During the tribal cultural survey, site 39CU0271 was visited and recorded but the tribes did not provide an eligibility recommendation for this site. The Tribal Cultural Survey is discussed later in this section.

Site 39FA1941 is an Archaic artifact scatter and hearth site located on a ridgetop, east of the proposed Burdock central processing plant. The southern portion of this site lies within a proposed wellfield area. NRC staff recommend avoidance of site 39FA1941 and the applicant committed to avoid this site and if necessary to mitigate impacts (Powertech, 2012e). If avoidance of this historic property is not possible, NRC staff recommend a treatment plan for mitigation and data recovery measures be developed by the applicant in consultation with the NRC, SD SHPO, BLM, and tribal representatives.

Sites 39CU2000 and 39FA2000 are historic properties containing 1889 portions of the Burlington Northern Railroad, which runs the length of the project area. Site 39CU2000 crosses proposed wellfield areas east of the proposed Dewey satellite facility. Additionally, a portion of

site 39FA2000 crosses a proposed wellfield area located southwest of the Burdock central processing plant. NRC staff recommends avoidance of the railroad segments and the applicant has committed to avoid these historic properties (Powertech, 2012e).

One historic property (CU02500002; a log barn structure) may be impacted by proposed construction activities associated with land application disposal. Site CU02500002 is discussed in SEIS Section 4.9.1.2.1.

As described in SEIS Section 3.9.3.1.1, sixty-eight (68) recorded archaeological sites within the proposed project area have not been evaluated for NRHP eligibility. NRC treats unevaluated archaeological sites as eligible for listing in the NRHP under Criterion D. Assessments of unevaluated archaeological sites containing burial and cairn features, as well as unevaluated archaeological sites that may be impacted by ground disturbance activities are discussed next.

As discussed in SEIS Sections 3.9.3.1.1, historic and ethnographic evidence indicate cairn features served as markers for trails, camps, burials, caches, and ceremonial centers. Sites containing burial or cairn features are protected by law in South Dakota, pursuant to South Dakota Codified Law 34-27. Unevaluated sites with burials or cairn features that were identified and recorded during archaeological field investigations are listed in Table 4.9-2 along with NRC NRHP-eligibility determinations, the locations of eligible sites within the APE affected by facility construction and operations, the NRC assessment of the significance of impacts, and NRC management recommendations.

As noted previously, NRC considers unevaluated sites eligible for listing in the NRHP under Criterion D. NRC staff recommend avoidance of unevaluated sites pending further evaluation to determine NRHP eligibility.

Site 39FA1902 is a historic site with a possible Euroamerican burial located approximately 152 m [500 ft] west of the proposed Burdock central processing plant and will not be disturbed by project construction or operational activities. As described in SEIS Section 3.9.3.1.2, this site contains a historic bridge structure (FA00000151). Because the site has not been evaluated for eligibility for listing on the NRHP, the applicant has committed to avoid this site by means of a buffer zone and protective fencing (Powertech, 2012f). During the tribal cultural survey, site 39FA1902 was identified as of no interest to the Northern Cheyenne and Northern Arapaho tribes (see SEIS Section 3.9.3.2.2). Representatives of both tribes examined the possible gravesite and determined it most likely did not have a tribal affiliation because modern materials including broken concrete were among the stones marking the location.

During tribal cultural surveys of the Dewey-Burdock site, five of the unevaluated archaeological sites listed in Table 4.9-2 (39CU3620, 39FA1862, 39FA1881, 39FA1890, and 39FA1927) were visited, recorded, and recommended eligible for listing in the NRHP under one or more criteria of eligibility (see Table 3.9-5). The following section (Tribal Cultural Survey) provides the NRC NRHP-eligibility determination, the significance of impact, and management recommendations for these five sites based on information from the tribal cultural survey. Four unevaluated burial and cairn sites listed in Table 4.9-2 (39CU0530, 39CU3564, 39CU3587, and 39FA1863) are located outside the APE for facility construction and operations for the Class V injection well disposal option and, therefore, potential impacts to these sites are not anticipated. One unevaluated site listed in Table 4.9-2 (39CU3584) is located within the APE for facility construction and operations for the land application disposal option. Site 39CU3584 is discussed in SEIS Section 4.9.1.2.1.

Table 4.9-2. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Unevaluated Sites Containing Burial and Cairn Features Identified During Archaeological Field Investigations.
(DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

StateSite Number	Description	NRC's NRHP Determination*	Location with Respect to the Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation
39CU0530	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39CU3564	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39CU3584	Cairn site	Unevaluated	Within APE for LA	LARGE potential impact	Avoidance
39CU3587	Two historic Euroamerican burials	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39CU3620	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1862	Cairn site with stone circles	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1863	Cairn site with stone circles	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1881	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1890	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1902	Historic site with Euroamerican burial	Unevaluated	Outside APE	SMALL; no impact anticipated	Euroamerican burial site is located approximately 152 m [500 ft] west of the proposed Burdock central processing plant. Site will be protected by a buffer zone and fencing.
39FA1927	Cairn site	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance
*Unevaluated sites are considered eligible for listing on the NRHP under Criterion D pending further evaluation.					

As described in SEIS Section 3.9.3.1.1, several unevaluated archaeological sites are located within or adjacent to the APE for facility construction and operations and, therefore, could be potentially impacted by ISR activities. These unevaluated archaeological sites are listed in Table 4.9-3 along with NRC's NRHP eligibility determination, the location of eligible sites within the APE affected by facility construction and operations, the NRC assessment of the significance of impacts, and NRC management recommendations.

Table 4.9-3. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis on Unevaluated Sites Identified During Archaeological Field Investigations Within the APE for Facility Construction and Operations. (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

StateSite Number	Description	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation
39CU0554	Artifact scatter	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39CU0558	Artifact scatter	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39CU0653	Artifact scatter	Unevaluated	Within APE for LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39CU3603	Artifact scatter, hearth	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39CU3615	Artifact scatter	Unevaluated	Within APE for LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39CU3624	Artifact scatter	Unevaluated	Adjacent to APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Site will be avoided.
39FA0096	Historic cabin	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed
39FA0274	Artifact scatter	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39FA0556	Artifact scatter	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39FA0740	Artifact scatter	Unevaluated	Adjacent to APE for LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39FA0777	Artifact scatter	Unevaluated	Adjacent to APE for LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39FA0778	Historic farmstead	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing and mitigation, as necessary. Avoid until testing is completed.

Table 4.9-3. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis on Unevaluated Sites Identified During Archaeological Field Investigations Within the APE for Facility Construction and Operations (Cont'd). (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

StateSite Number	Description	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation
39FA1880	Artifact scatter	Unevaluated	Adjacent to APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed.
39FA1920	Artifact scatter	Unevaluated	Adjacent to APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Site will be protected by fencing and avoided.
*Unevaluated sites are considered eligible for listing on the NRHP under Criterion D pending further evaluation.					

Site 39FA0778 is an historic farmstead located near the center of the proposed Burdock central processing plant footprint. NRC staff recommends that construction activities be delayed until evaluative testing is completed and a determination of eligibility for listing on the NRHP is made. The applicant committed to further evaluative testing of site 39FA0778 and implementation of mitigation measures, as necessary (Powertech, 2012e,f).

Site 39FA0096, located at the south-central portion of the proposed project area, is a large occupation site with components that may date from the Paleolithic through the Historic period. As discussed in SEIS Section 3.9.3.1.1, Area 8 is a historic component of this multi-component site. Evaluative testing of the prehistoric component of site 39FA0096 demonstrated the prehistoric component is a deflated surface scatter of artifacts and hearths and therefore not eligible for listing on the NRHP, under Criterion D (Palmer and Kruse, 2012; BLM, 2012f). However, preliminary information gathered through consultation with the tribes indicates Areas 1 and 6 at site 39FA0096 have the potential to be of religious and cultural significance to the tribes because of the large size of these areas and the number of hearth features identified.

During the tribal cultural survey, site 39FA0096 was visited, recorded, and recommended as eligible for listing in the NRHP under Criterion A (see Table 3.9.5). Tribal consultation regarding the nature of the features and cultural deposits located at site 39FA0096 and the cultural importance of the site is ongoing. As described in SEIS Section 3.9.3.1.1, a small portion of site 39FA0096 extends onto BLM surface lands. Therefore, BLM requested that site 39FA0096 be designated as "unevaluated" until further information is obtained to support a Criterion A eligibility determination (BLM, 2014). Therefore, NRC staff considers site 39FA0096 as "unevaluated" pending further evaluation by BLM staff. Until evaluation is completed, BLM will require the site boundaries be avoided by all project-related activities with a standard 61 m [200 ft] buffer surrounding the site boundary.

Sites 39CU0554, 39CU0558, 39CU3624, 39FA0274, 39FA0556, 39FA1880, and 39FA1920 are artifact scatters within or adjacent to proposed wellfield areas. Sites 39CU0554, 39FA0274, and 39FA0556 are located within proposed wellfield areas in the Burdock area and site 39CU0558 is located within proposed wellfied areas in the Dewey area. Site 39CU3624 is located south of

Pass Creek and is less than 30.5 m [100 ft] north of a proposed wellfield area in the Burdock area. The applicant has committed to avoid site 39CU3624 (Powertech, 2012e). Site 39FA1880 is located approximately 30.5 m [100 ft] south of a proposed wellfield area in the Burdock area. Site 39FA1920 is located at the southeast corner of the project area and is approximately 30.5 m [100ft] south of a proposed wellfield area in the Burdock area. The applicant committed to protect this property by installing protective fencing around the site (Powertech, 2012e). NRC staff recommend that these unevaluated sites undergo further evaluative testing. Until testing is completed, avoidance of these sites is recommended.

Site 39CU3603 is an artifact scatter and hearth site located within the right of way of a proposed pipeline connecting the Burdock central processing plant and the Dewey satellite facility. NRC staff recommend that this site undergo further evaluative testing. Until testing is completed, avoidance of site 39CU3603 is recommended.

Sites 39CU0653, 39CU3615, 39FA0740, and 39FA0777 are artifact scatters within or adjacent to land applications areas. Sites 39CU0653 and 39CU3615 are located within land application areas in the Burdock area. Site 39FA0740 is located approximately 3.05 m [10 ft] southwest of land application areas in the Burdock area and site 39FA0777 is located approximately 3.05 [10 ft] southeast of land application areas in the Burdock area. NRC staff recommend that these sites undergo further evaluative testing and that the sites be avoided until testing is completed.

Archaeological investigations did not identify other sites (unevaluated, NRHP-listed, or NRHP-eligible) within or in the vicinity of construction impact areas for the Class V injection well disposal option. Based on its review and evaluation of archaeological field investigations, NRC concludes 15 historic properties may experience LARGE potential impacts because they are located within or adjacent to the APE for facility construction and operations for the deep Class V injection well disposal option. Included are five properties eligible for listing in the NRHP (see Table 4.9-1) and ten unevaluated properties considered eligible for listing in the NRHP, under Criterion D (see Table 4.9-3).

The applicant stated the overall goal during development and production of the proposed project is the avoidance of archaeological sites (Powertech, 2009a, Section 3.8.1). As discussed previously, the applicant has committed to protect historic and unevaluated sites by avoidance or for certain sites by constructing protective fencing (Powertech, 2012e,f). In addition, construction personnel will be notified of the location of historic properties and unevaluated sites prior to any ground-disturbing activities (Powertech, 2009a). By license condition, the applicant is required to stop any work resulting in the discovery of previously unknown cultural artifacts (NRC, 2013; License Condition 9.8). All newly discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. The use of archaeological and tribal monitors to protect known historic properties was proposed during ground disturbing activities (Powertech, 2009a). The NRC staff is currently developing a PA with all consulting parties to develop measures to avoid, minimize, or mitigate sites that could be impacted such as those listed in Table 4.9-1 and 4.9-3). A license condition to ensure successful implementation of any agreement made in the PA will lessen the impacts to historic properties from this undertaking (NRC, 2013; License Condition 9.8). Based on implementation of mitigation measures and management recommendations documented here and within the PA, potential impacts to historic properties and unevaluated sites identified during archaeological field investigations are not anticipated.

Tribal Cultural Survey

SEIS Section 3.9.3.2.2 presents the results of tribal cultural surveys and NRHP-eligibility recommendations for previously recorded archaeological sites, as well as newly discovered tribal sites described by the Tribal Historic Preservation Officers (THPOs) for the Northern Cheyenne Tribe, the Northern Arapaho Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, and the Crow Nation. Sites identified during the tribal cultural survey with management recommendations are detailed in a tribal cultural survey report included as Appendix F of this SEIS.

Previously Recorded Archaeological Sites

Tribal survey teams recorded 81 cultural features within the boundaries of 24 known archaeological sites. Tribal survey teams also provided specific recommendations on four (4) archaeological sites that were investigated without identifying new cultural features. Tribal survey teams collectively recommended that 17 known archaeological sites be considered as eligible for listing in the NRHP under one or more eligibility criteria. A summary of these recommendations is provided in Table 3.9-5. NRHP-eligibility recommendations were not provided by tribes for other known archaeological sites.

The NRC NRHP-eligibility determinations, the NRC assessment of the significance of impacts, and management recommendations for known archaeological sites identified during the tribal cultural surveys are summarized in Table 4.9-4. In assessing the significance of impacts to these sites, NRC considered its NRHP-eligibility determinations and the locations of eligible sites within the APE affected by facility construction and operations. In cases where the tribes did not make recommendations for known archaeological sites, NRC used data from the Level III cultural resources investigations to make NRHP-eligibility determinations, assessments of significance of impacts, and management recommendations.

Table 4.9-4. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Previously Recorded Archaeological Sites Also Identified During Tribal Cultural Surveys (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

State Site Number	Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
39CU0251	TS096	Stone Circle	Not Eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.

Table 4.9-4. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Previously Recorded Archaeological Sites Also Identified During Tribal Cultural Surveys (Cont'd)
(DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

State Site Number	Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
39CU0271	TS019 TS035 TS130	Cairn; Possible Gravesite; Earth Paint	Eligible Criterion D	Within APE for DDW and LA	LARGE potential impact	Tribes recorded site but did not make eligibility recommendations. Site is located approximately 61 m [200 ft] east of proposed wellfield areas. Site will be avoided as possible gravesite.
39CU0459	TS108-111	Cairn; stone circle; fasting/prayer circles	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance. The boundary for 39CU0459 also includes two smaller artifact scatters: 39CU0461 and 39CU0528. Tribes recommended site eligible under Criteria A and C†
39CU0584	TS043-046, TS053, TS132-140	possible medicine wheel, 4 directions marker, burial, fasting site, cairns, stone circle, hearth	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recommended site eligible under Criteria A and C†
39CU3567	TS031-033, TS141	3 stone circles, scattered hearth	Eligible Criterion A	Within APE for LA	LARGE potential impact	Avoidance with no less than 300 m [984 ft] protective barrier. Tribes recommended site eligible under Criteria A and D†
39CU3572	TS034	Stone circles; possible medicine wheel	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39CU3574	TS021-022	stone circle, scraper	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39CU3576	TS020	tested cobble	Not eligible	Within APE for LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39CU3584	TS025-027, TS-029	cairn alignment, stone circle	Unevaluated	Within APE for LA	LARGE potential impact	Avoidance. Tribes recorded site but did not make eligibility recommendations.

Table 4.9-4. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Previously Recorded Archaeological Sites Also Identified During Tribal Cultural Surveys (Cont'd)
(DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

State Site Number	Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
39CU3593	TS055	Cairn	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39CU3596	TS054	disturbed	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39CU3600	TS114-115	2 fasting/prayer circles	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A and C†
39CU3602	TS119	scattered hearth	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
39CU3604	TS121-122	fasting/prayer circles	Eligible Criterion A	Within APE for DDW and LA	LARGE potential impact	Avoidance Tribes recommended site eligible under Criteria A and C†
39CU3607	TS116-117	chert core & flake	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
39CU3620		Cairn, Prayer/ fasting circle	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance. Partly located on USFS property. Possibly associated with TS106 and TS107. Tribes recommended site eligible under Criteria A and C†
39FA0096	TS001, TS004, TS013	hearth, earth paints	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site will undergo further evaluative testing. Avoid until testing is completed. Tribes recommended site eligible under Criteria A
39FA1862	TS112-113	stone circles	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance. Located outside license boundary
39FA1881		cairn	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A and D†

Table 4.9-4. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP)-Eligibility and Impact Analysis for Previously Recorded Archaeological Sites Also Identified During Tribal Cultural Surveys (Cont'd)
(DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

State Site Number	Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Area of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
39FA1890	TS012	2 Cairns	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1902		Artifact Scatter; Well/cistern; Burial, Road	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. No interest to tribes.
39FA1922	TS014-017	3 stone circles, possible medicine wheel	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance. Located on BLM property.
39FA1923	TS018, TS142-143	2 cairns	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoidance. Located on BLM property.
39FA1926	TS067-074, TS076-078	6 stone circles	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A, C, and D†
39FA1927		6 cairns	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1952	TS123-124	scattered hearth, flake	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
39FA1962	TS056-060	cairn, stone circles	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
39FA1964	TS099-105	2 hearths, alignment, 4 fasting/prayer circles	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.

*Unevaluated sites are considered eligible for listing on the NRHP under Criterion D pending further evaluation.
†SD SHPO concurred with NRC's Criterion A NRHP-eligibility determinations for previously recorded archaeological sites listed above (SD SHPO, 2014). However, SD SHPO indicated that submission of additional information will be required to evaluate tribal NRHP-eligibility recommendations under Criteria C and D for previously recorded archaeological sites (SD SHPO, 2014).

As described in SEIS Seciton 3.9.3.2.2, the tribal survey teams recommended sites 39CU3602, 39CU3607, 39FA0096, 39FA1890, 39FA1862 (outside APE), and 39FA1952 as eligible for listing in the NRHP under Criterion A. Sites 39CU0459, 39CU0584, 39CU3600, 39CU3604, and 39CU3620 were recommended eligible under criteria A and C. Sites 39CU3567, 39FA1881, and 39FA1927 were recommended eligible under criteria A and D. Site 39FA1926 was recommended eligible under criteria A, C, and D. The tribes recommended avoidance for all sites recommended eligible for listing in the NRHP (see Appendix F of this SEIS). SD SHPO indicated that submission of additional information will be required to assess tribal

NRHP-eligibility recommendations under Criteria C and D for the previously recorded archaeological sites listed above (SD SHPO, 2014).

As described previously, tribal consultation regarding the nature of the features and cultural deposits located at site 39FA0096 and the cultural importance of the site is ongoing. Because the site is partially located on BLM property, BLM requested that the site be designated as "unevaluated" until its NRHP eligibility is evaluated by BLM staff (BLM, 2014). Therefore, NRC staff considers site 39FA0096 as "unevaluated" pending further evaluation. Until evaluation is completed, BLM will require the site boundaries be avoided by all project-related activities with a standard 61 m [200 ft] buffer surrounding the site boundary.

In addition, tribal survey teams recommended two (2) sites (39FA1922 and 39FA1923) located on BLM property as NRHP-eligible (see SEIS Section 3.9.3.2.2). Site 39FA1922 was recommended as eligible under Criteria A, C, and D and site 39FA1923 was recommended as eligible under Criteria A and C. Because the sites are located on BLM property, BLM requested that these sites be designated as "unevaluated" until their NRHP eligibility is evaluated by BLM staff (BLM, 2014). Therefore, NRC staff considers sites 39FA1922 and 39FA1923 as "unevaluated" pending further evaluation by BLM staff. Until evaluation is completed, BLM will require the site boundaries be avoided by all project-related activities with a standard 61 m [200 ft] buffer surrounding the site boundary.

No NRHP-eligibility recommendations were offered by tribal survey teams for sites 39CU0251, 39CU0271, 39CU3572, 39CU3574, 39CU3576, 39CU3584, 39CU3593, 39CU3596, 39FA1962, and 39FA1964. NRC has determined site 39CU0271 is eligible for listing in the NRHP under Criterion D (see Table 4.9-1). The site is located approximately 61 m [200 ft] east of proposed wellfield areas and will be avoided. Site 39CU3584 is an unevaluated cairn site located within a land application area and is considered eligible for listing in the NRHP under Criterion D (see Table 4.9-2). Site 39CU3584 is discussed in SEIS Section 4.9.1.2.1. NRC considers the remaining sites with no NRHP eligibility recommendations as being "not eligible" for listing in the NRHP.

Site 39FA1902 was specifically identified as being of no interest to the Northern Cheyenne and Northern Arapaho tribes. Site 39FA1902 marks the location of a historic artifact scatter and a possible gravesite; it is likely an historic homestead. Northern Cheyenne and Northern Arapaho representatives examined the possible gravesite and because of the presence of broken concrete among the stones, they determined it was not likely of tribal origin. NRC considers site 39FA1902 unevaluated and, therefore, should be treated as eligible for listing in the NRHP under Criterion D (see Table 4.9-2). The applicant committed to installing protective fencing around the Euroamerican burial site identified on site 39FA1902 before undertaking land disturbing activities in the area (Powertech, 2012f).

Tribal Sites: New Discoveries

A total of 47 new discoveries were recorded as a result of the tribal cultural survey. A summary of tribal NRHP-eligibility recommendations for these sites is provided in Table 3.9.6. The NRC NRHP-eligibility determinations, the NRC assessment of the significance of impacts, and management recommendations for new sites identified during the tribal cultural surveys are summarized in Table 4.9-5 and discussed below. In assessing the significance of impact to these sites, NRC considered its NRHP-eligibility determinations and the location of the site with respect to the APE for facility construction and operations.

Table 4.9-5. U.S. Nuclear Regulatory Commission (NRC) Determination of NRHP Eligibility and Impact Analysis for New Discoveries Identified and Recorded During Tribal Cultural Surveys (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Are of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
TS002	Stone circle	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
TS003	Buffalo bones	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS005	Flake	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS006	Cairn	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoid as gravesite Tribes recommended site eligible under Criteria A, C, and D†
TS007-011	Stone circle; alignment	Eligible Criterion A	Within APE for DDW and LA	LARGE potential impact	Avoid with no less than a 300 m [984 ft] protective buffer. Tribes recommended site eligible under Criteria A and D†
TS023	Burial	Not eligible	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recorded site but did not make eligibility recommendations.
TS024	Stone circle	Unevaluated	Outside APE	SMALL; no impact anticipated	Outside license boundary. Tribes recorded site but did not make eligibility recommendations.
TS028	Stone circles (3); campsite; ceremonial site	Not eligible	Within APE for LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS030	stone circle	Not eligible	Within APE for LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS036	Small cairn or marker	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS037	Small cairn	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS040	Ceremonial site	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A and C†
TS041-042	Ceremonial site	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A and C†

Table 4.9-5. U.S. Nuclear Regulatory Commission (NRC) Determination of NRHP Eligibility and Impact Analysis for New Discoveries Identified and Recorded During Tribal Cultural Surveys (Cont'd) (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Are of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
TS047	Ceremonial site	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance Tribes recommended site eligible under Criteria A and C†
TS048	bBial	Not eligible	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recorded site but did not make eligibility recommendations.
TS049	Burial	Not eligible	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recorded site but did not make eligibility recommendations.
TS050	Burial	Not eligible	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recorded site but did not make eligibility recommendations.
TS051	Fasting site	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS052	Stone circle	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS061	Stone circle	Unevaluated	Outside APE	SMALL; no impact anticipated	Site will be avoided. Located just outside license boundary.
TS062	Effigy	Unevaluated	Outside APE	SMALL; no impact anticipated	Located 600 m [1,968 ft] outside license boundary
TS063	No identification	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS064	Stone circle	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS065	Fasting site	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS066	Cairn	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS075	Cairn	Unevaluated	Outside APE	SMALL; no impact anticipated	Located 60 m [196 ft] outside license boundary.
TS079	Stone circle	Unevaluated	Outside APE	SMALL; no impact anticipated	Located 230 m [754 ft] outside license boundary.
TS080-089, TS098	Alignment and Arc; ceremonial site; pipe ceremony location	Eligible Criterion A	Within APE for DDW and LA	LARGE potential impact	Avoidance Tribes recommended site eligible under Criteria A and C†
TS090	Cairn	Not eligible	Outside APE	SMALL; no impact anticipated	Located outside but near 39CU3622. Tribes recorded site but did not make eligibility recommendations.

Table 4.9-5. U.S. Nuclear Regulatory Commission (NRC) Determination of NRHP Eligibility and Impact Analysis for New Discoveries Identified and Recorded During Tribal Cultural Surveys (Cont'd) (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Are of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
TS091	Ceremonial site	Not eligible	Outside APE	SMALL; no impact anticipated	Located outside but near 39CU3621. Tribes recorded site but did not make eligibility recommendations.
TS092	Cairn	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS093	Possible cairn	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS094	Cairn	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS095	Disturbed cairn (modern survey marker)	Not eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS097	Cairn	Not eligible	Outside APE	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS106	Fasting circle	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Located on U.S. Forest Service (USFS) property 40 m [131 ft] outside license boundary. Possibly associated with 39CU3620. Tribes recommended site eligible under Criteria A and C†
TS107	Possible gravesite and fasting circle	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Located on USFS property 60 m [196 ft] outside license boundary. Avoid as possible gravesite. Possibly associated with 39CU3620. Tribes recommended site eligible under Criteria A and C†
TS118	Hearth	Eligible Criterion A	Outside APE	SMALL; no impact anticipated	Avoidance
TS120	Hearth	Eligible Criterion A	Within APE for DDW and LA	LARGE potential impact	Avoidance
TS125	Burial	Unevaluated	Outside APE	SMALL; no impact anticipated	Avoid as possible gravestie. Located on U.S. Bureau of Land Management (BLM) property 60 m [196 ft] outside license boundary
TS126	Staff	Unevaluated	Outside APE	SMALL; no impact anticipated	Located on BLM property180 m [590 ft] outside license boundary
TS127	Fasting site	Unevaluated	Outside APE	SMALL; no impact anticipated	Located on BLM property 200 m [656 ft] outside license boundary

Table 4.9-5. U.S. Nuclear Regulatory Commission (NRC) Determination of NRHP Eligibility and Impact Analysis for New Discoveries Identified and Recorded During Tribal Cultural Surveys (Cont'd) (DDW=Deep Class V Disposal Well Option; LA=Land Application Option)

Tribal Survey Number(s)	Tribal Features	NRC's NRHP Determination*	Location with Respect to Are of Potential Effect (APE) for Facility Construction and Operations	Significance of Impact	Management Recommendation/ Comments
TS128	Fasting site	Unevaluated	Outside APE	SMALL; no impact anticipated	Located on BLM property 200 m [656 ft] outside license boundary
TS129	Fasting site/ring	Unevaluated	Outside APE	SMALL; no impact anticipated	Located on BLM property 290 m [951 ft] outside license boundary
TS131	Possible grave	Not eligible	Outside APE	SMALL; no impact anticipated	Avoid as possible gravesite. Tribes recorded site but did not make eligibility recommendations.
TS144	Cairn	Not Eligible	Within APE for DDW and LA	SMALL; no impact anticipated	Tribes recorded site but did not make eligibility recommendations.
TS145	Prayer/ offering location	Unevaluated	Within APE for DDW and LA	LARGE potential impact	Site location was not recorded by GPS but is known to be within an 32.4-ha [80-ac] parcel. Would require relocation to assess potential for site avoidance. Tribes recommended site eligible under Criterion D†

*Unevaluated sites are considered eligible for listing on the NRHP under Criterion D pending further evaluation.
†SD SHPO concurred with NRC's Criterion A NRHP-eligibility determinations for newly discovered tribal sites listed above (SD SHPO, 2014). However, SD SHPO indicated that submission of additional information will be required to evaluate tribal NRHP-eligibility recommendations under Criteria C and D for newly discovered tribal sites (SD SHPO, 2014).

Twelve (12) of the 47 newly discovered cultural features were identified outside the license boundary. These features include five (5) discoveries on private land (TS024, TS061, TS062, TS075, TS079), five (5) discoveries on BLM property (TS125, TS126, TS127, TS128, TS129), and two (2) discoveries on U.S. Forest Service property (TS106, TS107). TS106 and TS107 were recommended as eligible for listing in the NRHP under criteria A and C. No eligibility recommendations were provided for the other 10 cultural features or sites. NRC considers these 10 sites as "unevaluated" and eligible for listing in the NRHP under Criterion D pending further evaluation.

Thirty-five (35) of the 47 new discoveries were identified within the project's license boundary. Ten (10) of these tribal sites were recommended as eligible for listing on NRHP under one or more eligibility criteria. TS002, TS118, TS120 were recommended as eligible under Criterion A. TS145 is recommended as eligible under Criterion D. TS007-011 is recommended as eligible under criteria A and D. TS040, TS041-TS042, TS047, and TS080-T089, TS098 are recommended as eligible under criteria A and C. TS006, a gravesite, is recommended as eligible under criteria A, C, and D. The tribes recommended avoidance for all sites recommended eligible for listing in the NRHP (see Appendix F of this SEIS). SD SHPO indicated that submission of additional information will be required to assess tribal NRHP-eligibility recommendations under Criteria C and D for the newly discovered tribal sites listed above (SD SHPO, 2014).

NRHP recommendations were not provided for 25 of the 44 new discoveries recorded within the project license boundary (TS003, TS005, TS023, TS028, TS030, TS036, TS037, TS048, TS049, TS050, TS051, TS052, TS063, TS064, TS065, TS066, TS090, TS091, TS092, TS093, TS094, TS095, TS097, TS131, and TS144). Where no NHRP eligibility recommendations were offered by the tribes for new discoveries within the project's license boundary, NRC assumed the tribal site to be "not eligible" for listing on NRHP. These sites included locations identified as artifact finds, animal bone concentrations, stone circles, cairns, and possible fasting sites. NRC notes that five specific tribal sites included in this group were identified during the field survey as possible gravesites (TS023, TS048, TS049, TS050, and TS131). NRC recommends avoidance of these sites due to the potential for human remains to be present even though tribes and NRC may not consider these locations eligible for listing in the NRHP.

Based on its review and evaluation of tribal cultural surveys, NRC concludes that two previously recorded archaeological sites (39CU3604 and 39FA0096), two tribal sites represented by single survey numbers (TS120 and TS145), and two tribal sites represented by multiple survey numbers (TS007-011 and TS080-089, TS098) may experience LARGE potential impacts due to their location within the APE for facility construction and operations for the deep Class V injection well disposal option (see Tables 4.9-4 and 4.9-5). Sites 39CU3604, TS210, TS007-011, and TS080-089, TS098 have been recommended eligible for listing in the NRHP under one or more eligibility criteria. As previously described, NRC staff considers sites 39FA0096 as "unevaluated" pending further evaluation. SD SHPO recommended that site TS145 be designated "unevaluated" until further information is obtained to support a Criterion D eligibility determination (SD SHPO, 2014). Therefore, NRC staff considers site TS145 as "unevaluated' pending further evaluation. Avoidance is recommended for all of these sites.

Potential impacts to previously recorded archaeological and tribal sites identified during the tribal cultural surveys will be reduced through mitigation strategies developed during NHPA Section 106 consultations. As discussed in SEIS Section 1.7.3.5, consultation involving NRC, the applicant, SD SHPO, BLM, and interested Indian tribes is being conducted to determine what measures can be used to avoid, minimize, or mitigate adverse impacts to historic properties that may be impacted by site activities. Before beginning construction activities at the proposed project site, an agreement between NRC, SD SHPO, BLM, ACHP, interested Native American tribes (tribal government or designated THPO), the applicant, and other interested parties will be developed in accordance with 36 CFR 800.14(b)(2). The agreement will outline the mitigation process for each affected resource identified at the site pursuant to 36 CFR 800.6. Therefore, potential impacts to previously recorded archaeological sites and newly discovered tribal sites identified during tribal cultural surveys are not anticipated.

Visual Impacts Assessment

As described in SEIS Section 3.9.3.3, the NRC staff completed an assessment of potential visual impacts on historic properties (i.e., properties of any type listed in or considered eligible for listing in the NRHP). NRC's assessment of visual impacts included historic properties situated within a 4.8-km [3-mi] radius of the tallest or most prominent building within each processing facility. The tallest building within each processing facility is the satellite facility (SF) in the Dewey area and the central processing plant (CPP) in the Burdock area.

NRC staff compiled a list of 31 historic properties that are either listed on the NRHP or considered eligible for listing on the NRHP under criteria A and/or C due in part to their integrity of setting and are also located within a 4.8-km [3-mi] radius of the SF in the Dewey area and the

CPP in the Burdock area (Table 4.9-6). Historic properties considered eligible for the NRHP solely under Criterion D were not evaluated for potential visual impacts because integrity of setting is not often considered a contributing characteristic for properties considered eligible on the basis of their historic information contents (i.e., Criterion D). The group of 31 historic sites evaluated for visual impacts includes one NRHP-listed historic district, the Edna and Ernest Young Ranch (90000949) also known as the Bakewell Ranch (CU00000050). The Young Ranch historic district includes several contributing ranch buildings including the principal residence. A nearby homestead district, known as the Richardson Homestead (CU00000052), includes one individually eligible log barn (CU02500002). Other NRHP-eligible properties include one historic bridge (Beaver Creek Bridge, FA00000111), and 28 sites that include 19 archaeological sites and 9 tribal sites.

Table 4.9-6. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP) Eligibility and Impact Analysis for Historic Properties Included in the Visual Impacts Assessment. (SF=Dewey Satellite Facility; CPP=Burdock Central Processing Plant)

State Property Number	Tribal Survey Number(s)	NRC's NRHP Determination	Facilities Visible From Property	Distance to Nearest Visible Facility	Mitigating Considerations	Significance of Impact	Recommended Action/ Comments
Bakewell Ranch (CU00000050)/ Edna and Ernest Young Ranch Historic District (90000949)		Eligible, Criterion A	SF only	1.6 km [1.0 mi]	None	MODERATE; no adverse visual impact	Minimize visual effect of building with low profile design and compatible exterior color to avoid potential adverse effect
Building 1 (CU02500002) at the Richardson Homestead (CU00000052)		Eligible, Criterion A	CPP only	2,25 km [1.4 mi]	Diminished integrity of overall homestead	MODERATE; no adverse visual impact	
Beaver Creek Bridge (24020020)		Eligible Criterion C	Neither	4.5 km [2.8 mi]	None	SMALL; no visual impact	
39CU0459	TS108-111	Eligible, Criterion A	Both	2.7 km [1.7 mi] (SF)	Other modern intrusions	MODERATE; no adverse visual impact	
39CU0584	TS043-046, TS053, TS132-140	Eligible, Criteria A, D	SF only	2.25 km [1.4 mi]	Viewshed obstructed by tree cover	SMALL; no visual impact	Maintain existing tree cover
39CU2000		Eligible, Criteria A, C	Both	0.8 km [0.5 mi] (SF)	Setting is confined to narrow corridor along railroad	MODERATE; no adverse visual impact	
39CU3567	TS031-033, TS141	Eligible, Criterion A	SF only	0.96 km [0.6 mi]	Other modern intrusions	MODERATE; no adverse visual impact	
39CU3600	TS114-115	Eligible, Criterion A	CPP only	3.1 km [1.9 mi]	Other modern intrusions	MODERATE; no adverse visual impact	
39CU3602	TS119	Eligible, Criterion A	SF only	2.25 km [1.4 mi]	Viewshed obstructed by tree cover	SMALL; no visual impact	Maintain existing tree cover
39CU3604	TS121-122	Eligible, Criterion A	Both	2.9 km [1.8 mi]	Other modern intrusions	MODERATE; no adverse visual impact	

Table 4.9-6. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP) Eligibility and Impact Analysis for Historic Properties Included in the Visual Impacts Assessment (Cont'd). (SF=Dewey Satellite Facility; CPP=Burdock Central Processing Plant)

State Property Number	Tribal Survey Number(s)	NRC's NRHP Determination	Facilities Visible From Property	Distance to Nearest Visible Facility	Mitigating Considerations	Significance of Impact	Recommended Action/ Comments
39CU3607	TS116-117	Eligible, Criterion A	SF only	2.6 km [1.6 mi]	Viewshed obstructed by tree cover	SMALL; no visual impact	Maintain existing tree cover
39CU3620		Eligible, Criterion A	CPP only	3.4 km [2.1 mi]	Viewshed obstructed by tree cover	SMALL; no visual impact	Maintain existing tree cover
39FA0096	TS001, TS004, TS013	Unevaluated	Both	1.4 km [0.9 mi]	Viewshed obstructed by tree cover; Other modern intrusions	MODERATE; no adverse visual impact	Maintain existing tree cover Included in visual impacts assessment because Tribes considered site eligible under Criterion A
39FA1862	TS112-113	Eligible, Criterion A	SF only	2.9 km [1.8 mi] (SF)	Other modern intrusions	MODERATE; no adverse visual impact	
39FA1881		Eligible, Criterion A	CPP only	1.3 km [0.8 mi]	Partially screened by topography; other modern intrusions	MODERATE; no adverse visual impact	
39FA1890	TS012	Eligible, Criterion A	Neither	-	None	SMALL; no visual impact	
39FA1922	TS014-017	Unevaluated	Neither	-	None	SMALL; no visual impact	Included in visual impacts assessment because Tribes considered site eligible under Criterion A
39FA1923	TS018, TS142-143	Unevaluated	Neither	-	None	SMALL; no visual impact	Included in visual impacts assessment because Tribes considered site eligible under Criterion A
39FA1926	TS067-074, TS076-078	Eligible, Criterion A	Neither	-	None	SMALL; no visual impact	
39FA1927		Eligible, Criterion A	Neither	-	None	SMALL; no visual impact	
39FA1952	TS123-124	Eligible, Criterion A	SF only	2.4 km [1.5 mi]	Other modern intrusions	MODERATE; no adverse visual impact	
39FA2000		Eligible, Criteria A, C	Both	0.8 km [0.5 mi] (SF)	Setting is confined to narrow corridor along railroad	MODERATE; no adverse visual impact	
	TS002	Eligible, Criterion A	CPP only	0.96 km [0.6 mi]	Other modern intrusions	MODERATE; no adverse visual impact	

Table 4.9-6. U.S. Nuclear Regulatory Commission (NRC) Determination of National Register of Historic Places (NRHP) Eligibility and Impact Analysis for Historic Properties Included in the Visual Impacts Assessment (Cont'd). (SF=Dewey Satellite Facility; CPP=Burdock Central Processing Plant)

State Property Number	Tribal Survey Number(s)	NRC's NRHP Determination	Facilities Visible From Property	Distance to Nearest Visible Facility	Mitigating Considerations	Significance of Impact	Recommended Action/ Comments
	TS006	Eligible, Criterion A	CPP only	1.9 km [1.2 mi]	Other modern intrusions	MODERATE; no adverse visual impact	
	TS007-0011	Eligible, Criterion A	CPP only	0.64 km [0.4 mi]	Other modern intrusions	MODERATE; no adverse visual impact	
	TS040	Eligible, Criterion A	Both	2.25 km [1.4 mi]	Partially screened by timber; other modern intrusions	MODERATE; no adverse visual impact	Maintain existing tree cover
	TS041-042	Eligible, Criterion A	Both	2.25 km [1.4 mi]	Partially screened by timber; other modern intrusions	MODERATE; no adverse visual impact	Maintain existing tree cover
	TS047	Eligible, Criterion A	CPP only	5.9 km [3.7 mi]	Distance between site and facility > 4.8 km [3 mi]	SMALL; no visual impact	
	TS080-089, TS098	Eligible, Criterion A	CPP only	0.64 km [0.4 mi]	Mostly screened by topography; other modern intrusions	MODERATE; no adverse visual impact	
	TS118	Eligible, Criterion A	SF only	2.4 km [1.5 mi]	Viewshed obstructed by tree cover	SMALL; no visual impact	Maintain existing tree cover
	TS120	Eligible, Criterion A	SF only	2.0 km [1.25 mi]	Other modern intrusions	MODERATE; no adverse visual impact	

Only one historic property located outside the license boundary was included in this review. The Beaver Creek Bridge (Structure FA00000111) is located southwest of the project boundary but falls within the 4.8-km [3-mi] radius for the central processing plant. Two rock art sites in Fall River County (39FA2530, 39FA2531) fell just outside the 4.8-km [3-mi] range for the central processing plant. No other NRHP-listed or eligible properties were identified outside the license boundary.

NRC staff used a Geographic Information System (GIS)-based Line of Sight (LOS) analysis to determine whether the proposed processing facilities would be visible from the vantage point of each individual historic property. This analytical approach uses GIS software to estimate the viewshed surrounding each historic property. It uses variation in elevation and ground terrain to determine whether a direct line of sight exists between two points, in this case a line-of-sight between the historic property and each of the two processing facilities. The analysis produces a map of the area with visible portions of the landscape shaded to illustrate what portions would be visible. While this approach is useful for showing where elevated terrain will interfere with or block the view of the facilities, it does not account for other types of potential visual obstructions such as trees or buildings. It does however provide a quantitative means to determine if a potential visual effect is present (i.e., if one or both of the processing facilities would be visible from the vantage point of each historic property). NRC's determination of impact and NRC's

assessment of the magnitude of that impact is then based on consideration of the LOS data, the type of historic property involved, and the distance between the historic property and the proposed processing facility.

Based on the LOS analysis, NRC calculates that the proposed project will have a SMALL visual impact on 12 of the 31 historic properties included in this study (Table 4.9.6). Neither of the facilities will be visible from six (6) historic properties (Beaver Creek Bridge-24-020-020; 39FA1890, 39FA1922, 39FA1923, 39FA1926, 39FA1927). One (1) historic property (TS047) is located in area where at least one facility would be visible, but at a distance of 5.9 km [3.7 mi] that is greater than the estimated 4.8-km [3-mi] range considered to have potential effect. Five (5) other historic properties (39CU0584, 39CU3602, 39CU3607, 39CU3620, TS118) are located in areas where the local terrain would permit a view of at least one facility; however, in each instance the viewshed in the direction of the proposed facility is obstructed by existing tree cover. As long as the existing tree cover is not altered by the proposed project, NRC has concluded that the existing conditions warrant a finding of a SMALL visual impact.

A total of 19 historic properties have been assessed as having potential visual impacts based the results of the LOS analysis. The NRC considered the significance of a site, qualities that contribute to the significance of sites, and environmental factors and conditions in assessing sites. The NRC concluded modern intrusions, such as public roads, an active railroad corridor, several modern residences and farms, and former open pit mines diminished the qualities of setting, feeling and association of 15 archaeological and tribal cultural properties with potential visual effects (39CU0459, 39CU3567, 39CU3600, 39CU3604, 39FA0096, 39FA1862, 39FA1881, 39FA1952, TS002, TS006, TS007-011, TS040, TS041-042, TS080-089/098, TS120). NRC concluded the introduction of new visual changes to the viewsheds of the Bakewell Ranch (CU00000050)/Edna and Ernest Young Ranch Historic District (NRIS #90000949) and the Burlington Northern Railroad (39CU2000 and 39FA2000) will have minimal effect based on distances from the properties. NRC also judged that new visual changes to the viewshed of the Richardson Log Barn (CU02500002) will be minimal due to the diminished integrity of the abandoned building and the surrounding homestead property (CU00000052). Based on these assessments, NRC staff has concluded that the proposed project will have MODERATE visual impacts on this group of 19 historic properties.

It is important to note that these assessments of impact are based on current designs for the processing facilities, existing topography, and other environmental conditions including tree cover. Other project activities such as grading for project construction or clearing of vegetation could result in changes to the immediate surroundings of individual historic properties that could increase the potential for adverse impacts. Therefore, unanticipated changes in these conditions may warrant reconsideration of these assessments.

Auditory Impact Assessment

This assessment considers whether the proposed project will have the potential to introduce new auditory changes that could impact historic properties within or outside the limits of proposed ground disturbance. NRC staff concluded in the GEIS that activities associated with construction and operations at ISR facilities will not introduce significant audible elements to the project area (NRC, 2009a). NRC's assessment of auditory impacts included the 31 historic properties that are either listed on the NRHP or considered eligible for listing on the NRHP under criteria A and/or C due in part to their integrity of setting and are also located within a 4.8-km [3-mi] radius of the SF in the Dewey area and the CPP in the Burdock area

(Table 4.9-6). As discussed previously, historic properties considered eligible for the NRHP solely under Criterion D were not evaluated for potential visual impacts because integrity of setting is not often considered a contributing characteristic for properties considered eligible on the basis of their historic information contents (i.e., Criterion D).

NRC concluded in the GEIS that impacts from noise will be greatest during the construction and decommissioning phases of an ISR project due to noise generated by earthmoving, excavation, building construction, and demolition activities (NRC, 2009a). Noise levels decrease with distance from the source and NRC determined that noise impacts will be SMALL for residences, communities, and sensitive areas that are located more than 305 m [1,000 ft] from specific noise-generating activtives (NRC, 2009a). None of the historic properties included in this assessment are located closer than 640 m [2,100 ft] from the nearest processing facility, which exceeds the estimated 305 m [1,000 ft] zone for potential auditory impacts. Therefore, NRC staff conclude that potential auditory impacts on historic properties during the construction phase for the deep Class V injection well disposal option will be SMALL.

Construction Impacts Conclusion

The NRC environmental review of historic and cultural resources is based on analyses of historic and cultural resource investigations (Kruse, et al., 2008; Palmer and Kruse, 2008; Palmer 2008, 2009, 2012); tribal cultural surveys (SEIS Appendix F); visual and auditory impact assessments conducted by NRC staff; and commitments made by the applicant to implement mitigation measures for potentially impacted sites. Based on results of the environmental review, NRC staff conclude that the potential impacts to historic and cultural resources during the construction phase of the proposed project for the Class V injection well disposal option will range from SMALL to LARGE.

4.9.1.1.2 Operations Impacts

As discussed in the GEIS, it is expected that potential impacts to historic and cultural resources from operations will be less than during construction, because less land disturbance occurs during this phase (NRC, 2009a). In addition, there will be minimal impacts from facility operations or maintenance on identified historic and cultural resources because any potential impacts to these sites will be mitigated prior to facility construction. Potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.1.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If there is a discovery of historic and cultural resources during routine maintenance activities, the applicant is required by license condition to stop work (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. For these reasons, the potential impacts to historic and cultural resources during the operations phase for the Class V injection well disposal option will be SMALL to MODERATE.

4.9.1.1.3 Aquifer Restoration Impacts

As discussed in the GEIS, it is expected that aquifer restoration impacts to historic and cultural resources will be similar to, or less than, potential impacts from operations (NRC, 2009a). Aquifer restoration activities are generally limited to the existing infrastructure and previously disturbed areas (e.g., access roads, satellite facility, and central processing plant). Potential

impacts to identified historic and cultural resources will have been mitigated prior to facility construction. Potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.1.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If there is a discovery of historic and cultural resources during routine maintenance activities, the applicant is required by license condition to stop work and notify NRC, SD SHPO, and BLM (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. Therefore, the potential impacts to historic and cultural resources during the aquifer restoration phase for the Class V injection well disposal option will be SMALL to MODERATE.

4.9.1.1.4 Decommissioning Impacts

As discussed in the GEIS, decommissioning and reclamation activities will be limited to previously disturbed areas, and historic and cultural resources within the APE will already be known (NRC, 2009a). There will be minimal impacts on historic and cultural resources because potential impacts to identified historic properties will have been mitigated. Identified historic sites will have been avoided from the construction phase through the decommissioning phase. Until processing facilities and infrastructure is dismantled and removed, potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.1.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). Potential visual impacts will be reduced to SMALL after processing facilities are dismantled and removed. If historic and cultural resources are encountered during decommissioning and reclamation activities, the applicant is required by license condition to stop work and notify NRC, SD SHPO, and BLM (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. Therefore, the overall potential impacts to historic and cultural resources during decommissioning for the Class V injection well disposal option will be SMALL.

4.9.1.2 Disposal Via Land Application

If a permit for Class V injection wells is not obtained from EPA, the applicant proposes to dispose of liquid waste generated at the proposed Dewey-Burdock ISR Project by land application (see SEIS Section 2.1.1.1.2.4.2). The potential impacts on historic and cultural resources during construction, operations, aquifer restoration, and decommissioning associated with the land application liquid waste disposal option are discussed in the following sections.

4.9.1.2.1 Construction Impacts

As noted in SEIS Section 4.9.1, if land application is used for liquid waste disposal, the APE for facility construction and operations will include an additional maximum area of approximately 506 ha [1,250 ac] surrounding proposed land application areas (see Figure 3.9-1). As with the Class V injection well disposal option, mitigation measures, such as limiting construction of new access and secondary roads, will minimize surface disturbance (Powertech, 2009a) during this option and will limit potential impacts to historic and cultural resources.

As discussed in SEIS Section 4.9.1.1.1, as part of the environmental review of historic and cultural resources, the NRC evaluated the results of historic and cultural resource surveys

conducted at the proposed Dewey-Burdock ISR Project site (see SEIS Section 3.9.3). These surveys included (i) a Level III cultural resource investigation conducted as part of prelicense application activities; (ii) a tribal cultural survey; and (iii) a visual impacts assessment. In addition to the visual impacts assessment, NRC evaluated whether the proposed project has the potential to introduce new auditory changes to the project area that may impact historic properties located within or outside the limits of proposed ground disturbance. NRC's NRHP eligibility determinations and assessment for cultural and historic properties identified at the Dewey-Burdock site that may be impacted by the land application disposal option are discussed in the sections below.

Level III Cultural Resource Investigation

As described in SEIS Section 4.9.1.1.1, archaeological field investigations identified a total of 18 historic properties within the proposed project area that are listed or recommended as eligible for listing in the NRHP. These sites are listed in Table 4.9-1 along with the NRC NRHP-eligibility determinations, the locations of eligible sites within the APE affected by facility construction and operations, NRC assessment of the significance of impact, and NRC management recommendations. With the exception of site CU02500002, the impacts of construction activities and recommended mitigation measures for these sites are expected to be identical to those described in SEIS Section 4.9.1.1.1 for the Class V injection well disposal option.

Site CU02500002 is a log barn structure located approximately 76 m [250 ft] south of proposed land application areas in the Burdock area. Site CU02500002 is part of the Richardson Homestead (CU00000052), which contains three other standing structures (CU02500001, CU02500003, and CU02500004). SD SHPO indicated that all four standing structures at the Richardson Homestead are related and should be considered as a district (SD SHPO, 2014). In this context, SD SHPO recommended that the Richardson Homestead be considered eligible under Criterion A. In addition, SD SHPO recommended that the archaeological component of the Richardson Homestead represented by site 39CU3619 be considered "unevaluated" until additional information is submitted (SD SHPO, 2014). NRC recommends that the NRHP-eligibility of sites CU00000052 (Richardson Homestead) and 39CU3619 be further evaluated during development of a PA associated with ongoing Section 106 consultation activities.

Site CU02500002 (the log barn structure) is located within the APE for facility construction and operations for the land application option. NRC recommended and the applicant committed to creating a buffer zone and erecting protective fencing around the perimeter of the log barn structure to minimize potential impacts during construction (Powertech, 2012e). If avoidance is not possible, NRC recommends that the structure be mitigated through Historic American Buildings Survey (HABS) level documentation.

As noted in SEIS Section 3.9.3.1.1, historic and ethnographic evidence indicate that cairn features may have served as markers for trails, camps, burials, caches, and ceremonial centers for Native American tribes. Unevaluated sites with burials or cairn features are listed in Table 4.9-2 along with the NRC NRHP-eligibility determinations, the locations of eligible sites within the APE affected by facility construction and operations, NRC assessment of the significance of impact, and NRC management recommendations (see SEIS Section 4.9.1.1.1). NRC considers unevaluated archaeological sites eligible for listing in the NRHP under Criterion D. With the exception of site 39CU3584, impacts of construction activities and recommended mitigation measures for these sites are expected to be identical to those

described in SEIS Section 4.9.1.1.1 for the Class V injection well disposal option. Cairn site 39CU3584 is located within a proposed land application area at the Dewey site. As described in SEIS Section 3.9.3.1.1, site 39CU3584 underwent archaeological testing and was recommended ineligible for listing in the NRHP under Criteria D, based on a lack of diagnostic artifacts and intact cultural deposits (Kruse, et al., 2008; Palmer and Kruse, 2012). SD SHPO recommended that site 39CU3584 be considered unevaluated for listing on the NRHP until all eligibility criteria have been determined (SD SHPO, 2012). Site 39CU3584 was visited and recorded during tribal cultural surveys; however, the tribes offered no NRHP recommendations for this site (see SEIS Section 3.9.3.2.2). NRC recommends avoidance of site 39CU3584 and considers this site eligible for listing in the NRHP under Criterion D pending further evaluation. With the exception of 39CU3584, no other unevaluated cairn sites are located within proposed construction impact areas for the land application disposal option.

As described in SEIS Section 3.9.3.1.1, several unevaluated archaeological sites are located within or adjacent to the APE for facility construction and operations and, therefore, could be potentially impacted by ISR activities. These unevaluated archaeological sites are listed in Table 4.9-3 along with the NRC NRHP-eligibility determinations, the locations of eligible sites within the APE affected by facility construction and operations, NRC assessment of the significance of impact, and NRC management recommendations. NRC considers unevaluated archaeological sites eligible for listing in the NRHP under Criterion D. As discussed in SEIS Section 3.9.3.1.1, unevaluated sites 39CU0653, 39CU3615, 39FA0740, and 39FA0777 are artifact scatters within or adjacent to land applications areas. With the exception of these sites, impacts and recommended mitigation measures to ensure that unevaluated sites are not impacted by construction activities will be identical to those described in SEIS Section 4.9.1.1.1 for the Class V injection well disposal option. Sites 39CU0653 and 39CU3615 are located within land application areas in the Burdock area. Site 39FA0740 is located approximately 3.05 m [10 ft] southwest of land application areas in the Burdock area and site 39FA0777 is located approximately 3.05 [10 ft] southeast of land application areas in the Burdock area. NRC staff recommend that these sites undergo further evaluative testing to determine their eligibility for listing in the NRHP. Until testing is completed, avoidance of these sites is recommended.

Archaeological investigations have not identified other unevaluated or NRHP-eligible sites within or in the vicinity of construction impact areas for the land application disposal option. Based on its review and evaluation of archaeological field investigations, NRC concludes that six (6) historic properties could experience LARGE potential impacts due solely to their location within or adjacent to the APE for facility construction and operations for the land application disposal option. This includes one (1) property eligible for listing in the NRHP (CU02500002) and five (5) unevaluated properties considered eligible for listing in the NRHP under Criterion D pending further evaluation (39CU3584, 39CU0653, 39CU3615, 39FA0740, and 39FA0777).

The applicant stated the overall goal during development and production of the proposed project is the avoidance of archaeological sites (Powertech, 2009a, Section 3.8.1). As discussed previously, the applicant has committed to protect historic and unevaluated sites by avoidance or in some cases constructing protective fencing to ensure avoidance (Powertech, 2012e, f). In addition, construction personnel will be advised of the location of historic properties and unevaluated sites prior to any ground-disturbing activities (Powertech, 2009a). By license condition, the applicant is required to stop any work resulting in the discovery of previously unknown cultural artifacts (NRC, 2013; License Condition 9.8). All newly discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. The use of archaeological

and tribal monitors to protect known historic properties was proposed during ground disturbing activities (Powertech, 2009a). The NRC staff is currently developing a PA with all consulting parties to develop measures to avoid, minimize, or mitigate sites that could be impacted such as those listed in Tables 4.9-1 and 4.9-3). A license condition to ensure successful implementation of any agreement made in the PA will lessen the impacts to historic properties from this undertaking (NRC, 2013, License Condition 9.8). Based on implementation of mitigation measures and management recommendations documented here and within the PA, potential impacts to historic properties and unevaluated sites identified during archaeological field investigations are not anticipated.

Tribal Cultural Survey

SEIS Section 3.9.3.2.2 presents the results of tribal cultural surveys and eligibility recommendations for recorded archaeological sites and newly discovered tribal sites provided by the THPOs for the Northern Cheyenne Tribe, the Northern Arapaho Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, and the Crow Nation. Sites identified during the tribal cultural survey with management recommendations are included as Appendix F of this SEIS.

The NRC NRHP-eligibility determinations, assessment of significance of impact, and management recommendations for known archaeological sites and newly discovered tribal sites identified during the tribal cultural surveys are presented in Tables 4.9-4 and 4.9-5, respectively. In assessing the significance of impact to these sites, NRC considered its NRHP eligibility determination and the location of the site with respect to the APE for facility construction and operations. With the exception of site 39CU3567, impacts and recommended mitigation measures to ensure that these sites are not impacted by construction activities will be identical to those described in SEIS Section 4.9.1.1.1 for the Class V injection well disposal option. Site 39CU3567 is a previously recorded archaeological site that could experience LARGE potential impacts due to its location within the APE for facility construction and operations for the land application option (see Table 4.9-4). Tribal survey teams recommended avoidance of this site with no less than a 300 m [964 ft] protective buffer.

Potential impacts to known archaeological and newly discovered tribal sites identified during the tribal cultural surveys will be reduced through mitigation strategies developed during National Historic Preservation Act (NHPA) Section 106 consultations. As discussed in SEIS Section 1.7.3.5, consultation involving NRC, the applicant, SD SHPO, BLM, and interested Indian tribes is being conducted to determine what measures can be used to avoid, minimize, or mitigate adverse impacts to historic properties that may be impacted by site activities. Before beginning construction activities at the proposed project site, an agreement between NRC, SD SHPO, BLM, ACHP, interested Native American tribes (tribal government or designated THPO), the applicant, and other interested parties will be developed in accordance with 36 CFR 800.14(b)(2). The agreement will outline the mitigation process for each affected resource identified at the site pursuant to 36 CFR 800.8(c)(1)(v). Therefore, potential impacts to previously recorded archaeological sites and newly discovered tribal sites identified during tribal cultural surveys are not anticipated.

Visual Impact Assessment

As described in SEIS Section 3.9.3.3, NRC staff completed an assessment of the proposed project's potential to have visual impacts on historic properties (i.e., properties of any type listed in or considered eligible for listing in the NRHP). As discussed in SEIS Section 4.9.1.1.1, NRC's

assessment of visual impacts included 31 historic properties that are either listed on the NRHP or considered eligible for listing on the NRHP under criteria A and/or C due in part to their integrity of setting. They are also located within a 4.8-km [3-mi] radius of the SF in the Dewey area and the CPP in the Burdock area (Table 4.9-6). Historic properties eligible for the NRHP solely under Criterion D were not evaluated for potential visual impacts because integrity of setting is not a contributing characteristic for these types of properties eligible for their historic information contents (i.e., Criterion D).

NRC staff used a GIS-based LOS analysis to determine whether the proposed processing facilities would be visible from the vantage point of each individual historic property. The Dewey SF and the Burdock CPP will be situated at identical locations for both the land application and Class V injection well disposal options. Therefore, potential visual and auditory impacts to historic properties for the land application option will be identical to those described in SEIS Section 4.9.1.1.1 for the Class V injection well disposal option. Based on the LOS analysis, NRC calculates that the proposed project will have a SMALL visual impact on 12 of the 31 historic properties included in this study (Table 4.9.6) and a MODERATE visual impact on 19 historic properties included in the visual impact assessment (see SEIS Section 4.9.1.1.1 and Table 4.9-6).

Auditory Impact Assessment

NRC concluded in the GEIS that impacts from noise will be greatest during the construction and decommissioning phases of an ISR project due to noise generated by earthmoving, excavation, building construction, and demolition activities (NRC, 2009a). Noise levels decrease with distance from the source and NRC determined that noise impacts will be SMALL for residences, communities, and sensitive areas that are located more than 305 m [1,000 ft] from specific noise-generating activtives (NRC, 2009a). NRC's assessment of auditory impacts included the 31 historic properties that are either listed on the NRHP or considered eligible for listing on the NRHP under criteria A and/or C due in part to their integrity of setting and are also located within a 4.8-km [3-mi] radius of the SF in the Dewey area and the CPP in the Burdock area (Table 4.9-6). None of the historic properties included in this assessment are located closer than 640 m [2,100 ft] from the nearest processing facility, which exceeds the estimated 305 m [1,000 ft] zone for potential auditory impacts. Therefore, NRC staff conclude that potential auditory impacts on historic properties during the construction phase for the land application disposal option will be SMALL.

Construction Impacts Conclusion

The NRC environmental review of historic and cultural resources is based on analyses of historic and cultural resource investigations ((Kruse, et al., 2008; Palmer and Kruse, 2008; Palmer 2008, 2009, 2012); tribal cultural surveys (SEIS Appendix F); visual and auditory impact assessments conducted by NRC staff; and commitments made by the applicant to implement mitigation measures for potentially impacted sites. Based on results of the environmental review, NRC staff conclude that the potential impacts to historic and cultural resources during the construction phase of the proposed project for the land application disposal option will range from SMALL to LARGE.

4.9.1.2.2 Operations Impacts

As discussed in the GEIS, it is expected that potential impacts to historic and cultural resources from operations will be less than during construction, because less land disturbance occurs during this phase (NRC, 2009a). In addition, there will be minimal impacts from facility operations or maintenance on identified historic and cultural resources because any potential impacts to these sites will be mitigated prior to facility construction. Potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.2.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If there is a discovery of historic and cultural resources during routine maintenance activities, the applicant is required by license condition to stop work (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. For these reasons, the potential impacts to historic and cultural resources during the operations phase for the land application disposal option will be SMALL to MODERATE.

4.9.1.2.3 Aquifer Restoration Impacts

As discussed in the GEIS, it is expected that aquifer restoration impacts to historic and cultural resources will be similar to, or less than, potential impacts from operations (NRC, 2009a). Aquifer restoration activities are generally limited to the existing infrastructure and previously disturbed areas (e.g., access roads, satellite facility, and central processing plant). Potential impacts to identified historic and cultural resources will have been mitigated prior to facility construction. Potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.2.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). If there is a discovery of historic and cultural resources during routine maintenance activities, the applicant is required by license condition to stop work and notify NRC, SD SHPO, and BLM (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and BLM to proceed. Therefore, the potential impacts to historic and cultural resources during the aquifer restoration phase for the land application disposal option will be SMALL to MODERATE.

4.9.1.2.4 Decommissioning Impacts

As discussed in the GEIS, decommissioning and reclamation activities will focus on previously disturbed areas, and historic and cultural resources within the APE will already be known (NRC, 2009a). There will be minimal impacts on historic and cultural resources because potential impacts to identified historic properties will have been mitigated. Identified historic sites will have been avoided from the construction phase through the decommissioning phase. Until processing facilities and infrastructure is dismantled and removed, potential visual and auditory impacts on historic properties at the proposed project site will be the same as described in Section 4.9.1.2.1 (potential visual impacts will range from SMALL to MODERATE and potential auditory impacts will be SMALL). Potential visual impacts will be reduced to SMALL after processing facilities are dismantled and removed. If historic and cultural resources are encountered during decommissioning and reclamation activities, the applicant is required by license condition to stop work and notify NRC, SD SHPO, and BLM (NRC, 2013; License Condition 9.8). The discovered artifacts will be inventoried and evaluated in accordance with 36 CFR Part 800. Work will not restart without authorization from the NRC, SD SHPO, and

BLM to proceed. Therefore, the overall potential impacts to historic and cultural resources during decommissioning for the land application disposal option will be SMALL.

4.9.1.3 Disposal Via Combination of Class V Injection and Land Application

If a permit for Class V injection wells is obtained from EPA but the capacity of the wells is insufficient to dispose of all liquid wastes generated at the proposed Dewey-Burdock ISR Project, the applicant has proposed to dispose of liquid waste by a combination of deep well disposal using Class V injection wells and land application (see SEIS Section 2.1.1.1.2.4.3). In order to implement the combined option, land application facilities and infrastructure will be constructed, operated, restored, and decommissioned on an as-needed basis, depending on the disposal capacity Class V injection wells (Powertech, 2011). Increased land disturbance and added access restrictions associated with the addition of irrigation areas and increased pond capacity for storage during nonirrigation periods will result in different environmental impacts for the combined option. Specifically, the potential environmental impacts of liquid waste disposal by land application for all phases of the ISR process will be greater than for liquid waste disposal by Class V injection wells (see SEIS Table 4.2.1). However, because only a portion of land application facilities and infrastructure (e.g., irrigation areas and storage ponds) will be constructed, operated, and decommissioned, the impacts to historic and cultural resources for the combined disposal option will be less than for the land application option, but greater than for the Class V injection well disposal option. Therefore, NRC staff conclude that the potential impacts on historic and cultural resources of the combined Class V injection well and land application disposal option for each phase of the proposed Dewey-Burdock ISR Project will be no greater than the impacts of the Class V injection well option and the land application option as summarized in Table 4.9-7.

4.9.2 No-Action (Alternative 2)

Under the No-Action alternative, no ISR facility will be constructed or operated at the proposed Dewey-Burdock ISR Project. Therefore, no historic properties will be affected by the No-Action alternative. The potential impacts associated with current land activities, such as, cattle ranching and recreation will continue.

Table 4.9-7. Significance of Historic and Cultural Resources Impacts for the Proposed Liquid Waste Disposal Options for Each Phase of the Proposed Dewey-Burdock *In-Situ* Recovery Project

	Class V Injection Wells	Land Application	Combined Class V Injection Wells and Land Application*
Construction	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE
Operations	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Aquifer Restoration	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Decommissioning	SMALL	SMALL	SMALL

*Significance of impacts on historic and cultural resources for the combined disposal option is bounded by the significance of impacts on historic and cultural resources for the Class V injection well and land application disposal options.

restoration (see SEIS Section 2.1.1.1.4.1). The applicant will combine the contaminants removed from water with operational wastewater and transfer the combined wastewater to the radium settling ponds for further treatment prior to disposal in the deep Class V wells. As stated in SEIS Section 2.1.1.1.6.2, the applicant will have to meet applicable EPA and NRC requirements before injection in a deep Class V disposal well begins. When evaluating permit applications for Class V wells, EPA considers the characteristics of the operation, the material to be injected, and the surrounding environment and determines whether the proposed injection will endanger public health or the environment (EPA, 2012). NRC will require liquid byproduct material to be treated prior to injection and treatment systems be approved, constructed, operated, and monitored to ensure release standards in 10 CFR Part 20, Subparts D and K and Appendix B are met. The applicant proposes to have 4 to 8 Class V injection wells with a capacity of 1,136 L/min [300 gal/min], sufficient to accommodate the estimated 746 L/min [197 gal/min] of liquid byproduct material generated from the proposed operation. Based on the applicant's proposal to obtain adequate disposal capacity as well requirements to comply with EPA Class V disposal permit conditions, NRC effluent limits, and other NRC safety regulations, the NRC staff conclude that the waste management impacts from the disposal of liquid byproduct material via deep Class V injection wells during the ISR aquifer restoration phase will be SMALL.

Solid byproduct material generated during aquifer restoration could include maintenance and housekeeping rags and trash; packing materials; replaced components; filters; protective clothing; and solids removed from process pumps, vessels, and ponds. As discussed in SEIS Section 2.1.1.1.6.3, the applicant estimates, during the operational period and assuming combined operations and aquifer restoration, the proposed Dewey-Burdock facility will produce 22 m^3 [29 yd^3]of solid byproduct material from radium settling ponds annually from the deep Class V disposal well option (Powertech, 2011). Solid byproduct material will be stored onsite within a restricted area until sufficient volume is generated for disposal. Based on the disposal options currently available and the disposal agreement that NRC requires prior to operations (SEIS Section 2.1.1.1.6.3), the NRC staff conclude that the waste management impacts from the generation of byproduct material during the ISR operations phase will be SMALL.

Nonhazardous solid wastes generated during aquifer restoration could include facility trash, septic solids, and other uncontaminated solid wastes (e.g., piping, valves, instrumentation, and equipment). Because the proposed generation rate of nonhazardous solid waste (SEIS Section 2.1.1.1.6.3) will be a small percentage of the landfill capacity (SEIS Section 3.13.2), the NRC staff conclude the impact on waste management will be SMALL.

As discussed in SEIS Section 2.1.1.1.6.3, the applicant has stated it will likely be classified as a CESQG. The applicant will transport its hazardous waste to a permitted hazardous waste facility for disposal (Powertech, 2009a).

Based on the type and quantity of waste expected to be generated and the available capacity for disposal, the NRC staff conclude the waste management actions during the ISR aquifer restoration phase of the proposed project will have a SMALL impact on waste management resources.

4.14.1.1.4 Decommissioning Impacts

The anticipated decommissioning activities occurring at the proposed Dewey-Burdock ISR Project site will be comparable to those described in GEIS Section 2.6. The applicant proposed

to conduct radiological surveys of decommissioned facilities and equipment and classify materials in accordance with the applicable disposition of the materials (Powertech, 2009b, 2011), including decontamination, recycling and reuse, disposal as byproduct material at a licensed facility, or disposal as nonhazardous solid waste at a municipal solid waste landfill (Powertech, 2009b, 2011).

As discussed in SEIS Section 2.1.1.1.6.3, the applicant's estimate for byproduct material generated from decommissioning the plant facilities and all wellfields (over a planned 2-year period) is 1,419 m^3 [1,856 yd^3] for the deep Class V injection well disposal option (Powertech, 2011). As discussed in SEIS Section 2.1.1.1.6.3, the applicant does not have a disposal agreement in place with a licensed site to accept solid byproduct material, and as discussed in SEIS Section 4.14.1.1.2, NRC will require that the applicant enter into a written agreement with a disposal site to ensure adequate capacity for byproduct material disposal. The applicant has proposed to pursue an agreement with the White Mesa site in Blanding, Utah, for disposal of solid byproduct material (SEIS Section 3.13.2). Based on the disposal options currently available for byproduct material and the disposal agreement which NRC will require by license condition prior to operations, the NRC staff conclude that the impact on waste management from the generation of byproduct material during decommissioning will be SMALL.

The applicant's estimate of the total volume of nonhazardous solid waste that will be generated from decommissioning is 10,427 m^3 [13,638 yd^3] for the deep Class V injection well disposal option (Powertech, 2011). From this estimate, the NRC staff derived an annual nonhazardous solid waste generation of 5,213 m^3 [6,819 yd^3] from decommissioning by dividing the applicant's total estimate by 2 (the applicant's proposed decommissioning period in years). This estimated solid waste volume is greater than what was analyzed in the GEIS {715 m^3 [935 yd^3]} and thus not bounded by the impact assessment described in the GEIS; therefore, the NRC staff considered additional site-specific information to evaluate impacts.

Although permitted landfill disposal capacities of the Custer-Fall River Waste Management District landfill and the Newcastle landfill are currently available (SEIS Section 3.13.2), considering the proposed project duration and limited future disposal capacity, the NRC staff evaluated the estimated landfill capacities and demand at the time of decommissioning. Based on the current operational life of 12 years (SEIS Section 3.13.2), the Newcastle landfill will not be open to accept waste at the planned time of decommissioning (15 and 16 years after the start of construction; Figure 2.1-1) unless the landfill capacity is expanded. The Custer-Fall River landfill, with an estimated operational life of 17 years after midyear 2012, will still be in operation at the time of decommissioning if project construction started in 2013; therefore, this landfill was evaluated in more detail. NRC staff projections suggest the remaining capacity of the Custer-Fall River landfill at the time of proposed decommissioning will be insufficient to accommodate all decommissioning nonhazardous solid waste and serve the regional annual demand for disposal capacity unless existing landfill capacity and operations are expanded. Furthermore, the NRC staff estimate the additional demand for capacity will consume the remaining landfill capacity at a faster rate with the landfill reaching full capacity approximately 1 year earlier than current projections. The NRC staff's projections supporting these conclusions are detailed in the following paragraphs.

The NRC staff's landfill capacity analysis calculated the total disposal demand from mid-year 2012 through the end of the proposed decommissioning period and compared it with the reported remaining landfill capacity as of mid-year 2012. NRC staff used this comparison of projected demand and capacity to evaluate whether sufficient capacity will be available to

dispose of the additional waste from the proposed project. The total disposal demand of 148,079 t [163,229 T] was based on the sum of the regional disposal demand[1] and the project disposal demand[2] from mid-2012 through the end of the proposed decommissioning period in 2028. The projected demand exceeds the available capacity of 139,619 t [154,000 T][3] by 8,372 t [9,229 T].[4]

The staff also evaluated the difference in the projected time the landfill will reach full capacity with and without disposal of waste from the proposed Dewey-Burdock ISR Project. The purpose of this analysis was to evaluate the impact of the additional disposal demand on the projected operational life of the landfill. The NRC staff calculated when the landfill will reach full capacity with the additional disposal of proposed project waste by first calculating the available landfill capacity at the end of 2027 after 1 year of decommissioning waste disposal and 15.5 years of post mid-2012 regional waste disposal.[5] Next, the NRC staff derived a combined monthly disposal demand[6] for year 2028 from the projected disposal rates for decommissioning waste and regional waste. At the combined monthly disposal demand, the projected year 2028 remaining capacity of 6,473 t [7,136 T] will be depleted within the first half of 2028.[7] For comparison, the projected operational life of the landfill without disposal of waste from the proposed action (SEIS Section 3.13.2) is 17 years beyond mid-2012 or mid-year 2029. Therefore, the analysis suggests disposal of waste from the proposed Dewey Burdock ISR Project will cause the landfill to reach full capacity 1 year earlier than expected if the proposed decommissioning was executed on schedule and regional disposal demand continued at the current rate.

The potential for future expansion of capacity is being considered at both landfills (AET, Inc., 2011; SDDENR, 2010); however, specific long-term actions remain uncertain. If one of these landfills does not expand capacity in the future, the applicant will have to dispose of waste elsewhere. Anothermore distant and higher capacity landfill serving Rapid City is projected to be operational until 2050 (HDR Engineering Inc., 2010). Therefore, the staff consider regional

[1]The regional demand of 134,717 t [148,500T] was calculated based on the product of the annual average disposal volume received by the Custer-Fall River landfill of 8,160 t/yr [9,000 T/yr] (SEIS Section 3.13.2) and 16.5 (the number of years from mid-2012 to the end of proposed decommissioning in 2028).
[2]The project demand (i.e., total nonhazardous solid waste volume from decommissioning) of 13,354 t [14,729 T] is the volume of this waste from SEIS Section 2.1.1.1.6.3 converted to mass using 1.08T/yd^3 multiplier.
[3]The available landfill capacity reported in SEIS Section 3.13.2 as of the end of June 2012 is 139,619 t [154,000 T].
[4] The available capacity of 139,619 t [154,000 T] was subtracted from the total disposal demand of 148,079 t [163,229 T] (the sum of footnotes 1 and 2) to obtain the result of 8,372 t [9,229 T].
[5]The calculated available capacity at the beginning of year 2028 is 6,473 t [7,136 T]. This is the result of subtracting 133,150 [146,865 T] of the combined disposal demand (from regional and decommissioning wastes) for mid-2012 to year 2027 from the available landfill capacity as of mid-2012 of 139,619 t [154,000 T] (SEIS Section 3.13.2). The combined disposal demand was calculated as the product of the annual average disposal volume received by the Custer-Fall River landfill of 8,160 t/yr [9,000 T/yr] (SEIS Section 3.13.2) and 15.5 (the number of years from mid 2012 to the end of the first year of proposed decommissioning in 2027) added to the volume of nonhazardous decommissioning solid waste for year 2027 of 6,680 t [7,364 T] {half of the 2 year decommissioning total waste volume of 13,354 t [14,729 T]}.
[6]The combined monthly disposal demand for year 2028 of 1,237 t/month [1,364 T/month] is the sum of derived monthly disposal demands (i.e., waste generation rates) for proposed decommissioning and regional waste. Specifically, the derived monthly proposed decommissioning disposal demand is the total amount of proposed decommissioning waste of 13,354 t [14,729 T] for 2 years converted to a monthly rate of 557 t/month [614 T/month]. Similarly, the derived monthly regional disposal demand is the Custer-Fall River landfill annual average disposal amount of 8,160 t/yr [9000 T/yr] converted to a monthly rate of 680 t [750 T/month].
[7]The time to reach full capacity of 5.2 months was calculated as the ratio of the available year 2028 capacity of 6,473 t [7,136 T] from footnote 4 and the combined monthly disposal demand of 1,237 t/month [1,364 T/month] from footnote 5.

capacity will be available during the period of decommissioning if local capacity is limited or otherwise unavailable.

Based on the preceding capacity analysis, the NRC staff conclude that the potential impacts on waste management resources will vary depending on the long-term status of the existing local landfill resources. If local landfill capacity is not expanded prior to the proposed decommissioning period, the staff conclude that there will be no impacts to the Newcastle landfill because it will not be open to accept waste at the planned time of decommissioning and the proposed Dewey-Burdock ISR Project will not be able to dispose waste at that location. In turn, impacts to the Custer-Fall River landfill will be MODERATE because the increased demand for capacity will more rapidly consume the waste management resources during the last years of its projected operational life. Any waste disposed at the Rapid City landfill will have SMALL impacts based on the projected operational life and available capacity. Alternatively, if the local landfill capacity is expanded prior to the proposed project decommissioning phase, the impacts on the available capacity of the expanded landfill (Newcastle or Custer-Fall River) will be SMALL.

The applicant estimates the volume of hazardous waste generated from decommissioning activities will be less than 91 kg [200 lb] (Powertech, 2009b). The hazardous waste streams from decommissioning will be similar to the waste streams generated during the ISR construction phase and could include used oil, batteries, and cleaning solvents. The applicant will have in place a hazardous material program that complies with applicable EPA and SDDENR requirements for its handling, storage, and disposal at approved facilities. Because the volume of hazardous wastes generated by the proposed action will be small and the waste will be handled, stored, and disposed of in accordance with applicable regulations, the NRC staff conclude the impacts on waste management will be SMALL.

In summary, NRC staff conclude the impacts to waste management resources during the decommissioning phase of the proposed project for the deep Class V injection well disposal option will be SMALL for all materials except nonhazardous solid waste, which will be SMALL to MODERATE depending on the long-term status of the existing local landfill resources. Based on the type and quantity of waste expected to be generated and the available capacity for disposal, waste management actions during the decommissioning phase will have a SMALL impact on waste management resources for byproduct material and hazardous waste and a SMALL to MODERATE impact for nonhazardous solid waste.

4.14.1.2 Disposal Via Land Application

If a permit for Class V injection wells is not be obtained from EPA or the capacity of the Class V wells is insufficient, the applicant proposes to dispose of liquid byproduct material generated at the proposed Dewey-Burdock ISR Project by land application (see SEIS Section 2.1.1.1.2.4.2). The locations of land application areas for this disposal option are shown in Figure 2.1-12. Potential environmental impacts on waste management resources from construction, operations, aquifer restoration, and decommissioning associated with the land application disposal option are discussed in the following sections.

4.14.1.2.1 Construction Impacts

The primary wastes to be disposed of during this phase of the ISR facility lifecycle will be nonhazardous solid waste, such as building materials and piping. As discussed in SEIS

conclude that the waste management impacts from the disposal of liquid byproduct material via land application during the ISR aquifer restoration phase will be SMALL.

Solid byproduct material generated during aquifer restoration could include maintenance and housekeeping rags and trash; packing materials; replaced components; filters; protective clothing; and solids removed from process pumps, vessels, and ponds. As discussed in SEIS Section 2.1.1.1.6.3, the applicant estimates, during the operational period and assuming combined operations and aquifer restoration, the proposed Dewey-Burdock facility will produce 50 m^3 [66 yd^3] of solid byproduct material from the land application option (Powertech, 2011). Solid byproduct material will be stored onsite within a restricted area until sufficient volume is generated for disposal. Based on the disposal options currently available and the disposal agreement that NRC requires prior to operations (SEIS Section 2.1.1.1.6.3), the NRC staff conclude that the waste management impacts from the generation of byproduct material during the ISR operations phase will be SMALL.

Nonhazardous solid wastes generated during aquifer restoration could include facility trash, septic solids, and other uncontaminated solid wastes (e.g., piping, valves, instrumentation, and equipment). Because the proposed generation rate of nonhazardous solid waste (SEIS Section 2.1.1.1.6.3) will be a small percentage of the landfill capacity (SEIS Section 3.13.2), the NRC staff conclude the impact on waste management will be SMALL.

As discussed in SEIS Section 2.1.1.1.6.3, the applicant has stated it will likely be classified as a CESQG. The applicant will transport its hazardous waste to a permitted hazardous waste facility for disposal (Powertech, 2009a).

Based on the type and quantity of waste expected to be generated and the available capacity for disposal, the NRC staff conclude the waste management actions during the ISR aquifer restoration phase of the proposed project will have a SMALL impact on waste management resources.

4.14.1.2.4 Decommissioning Impacts

The anticipated decommissioning activities occurring at the proposed Dewey-Burdock ISR Project site will be comparable to those described in GEIS Section 2.6. The applicant proposed to conduct radiological surveys of decommissioned facilities and equipment and classify materials in accordance with the applicable disposition of the materials (Powertech, 2009b, 2011), including decontamination, recycling and reuse, disposal as byproduct material at a licensed facility, or disposal as nonhazardous solid waste at a municipal solid waste landfill (Powertech, 2009b, 2011).

As discussed in SEIS Section 2.1.1.1.6.3, the applicant's estimate for byproduct material generated from decommissioning the plant facilities and all wellfields (over a planned 2-year period) is 1,580 m^3 [2,067 yd^3] for the land application option (Powertech, 2011). As discussed in SEIS Section 2.1.1.1.6.3, the applicant does not have a disposal agreement in place with a licensed site to accept solid byproduct material, and as discussed in SEIS Section 4.14.1.1.2, NRC will require that the applicant enter into a written agreement with a disposal site to ensure adequate capacity for byproduct material disposal. The applicant has proposed to pursue an agreement with the White Mesa site in Blanding, Utah, for disposal of solid byproduct material (SEIS Section 3.13.2). Based on the disposal options currently available for byproduct material and the disposal agreement, which NRC will require by license condition prior to operations, the

NRC staff conclude that the impact on waste management from the generation of byproduct material under the land application option during decommissioning will be SMALL.

The applicant's estimate of the total volume of nonhazardous solid waste that will be generated from decommissioning is 12,496 m^3 [16,344 yd^3] for the land application option (Powertech, 2011). From this estimate, the NRC staff derived an annual nonhazardous solid waste generation of 6,248 m^3 [8,172 yd^3] from decommissioning by dividing the applicant's total estimate by 2 (the applicant's proposed decommissioning period in years). This estimated solid waste volume is greater than what was analyzed in the GEIS {715 m^3 [935 yd^3]} and thus not bounded by the GEIS impact assessment; therefore, the NRC staff considered additional site-specific information to evaluate impacts.

Although permitted landfill disposal capacities at the Custer-Fall River Waste Management District landfill and the Newcastle landfill are currently available (SEIS Section 3.13.2), considering the proposed project duration and limited future disposal capacity, the NRC staff evaluated the estimated landfill capacities and demand at the time of decommissioning. Based on the current operational life of 12 years (SEIS Section 3.13.2), the Newcastle landfill will not be open to accept waste at the planned time of decommissioning (15 and 16 years after the start of construction; SEIS Figure 2.1-1) unless the landfill capacity was expanded. The Custer-Fall River landfill, with an estimated operational life of 17 years after mid-year 2012, will still be in operation at the time of decommissioning if project construction started in 2013; Section 106 consultation between NRC, SD SHPO, BLM, tribal representatives, and the applicant therefore, this landfill was evaluated in more detail. NRC staff projections suggest the remaining capacity of the Custer-Fall River landfill at the time of proposed decommissioning will be insufficient to accommodate all decommissioning nonhazardous solid waste and serve the regional annual demand for disposal capacity unless existing landfill capacity and operations were expanded. Furthermore, the NRC staff estimate the additional demand for capacity will consume the remaining landfill capacity at a faster rate with the landfill reaching full capacity approximately 1 year earlier than current projections. The NRC staff's projections supporting these conclusions are detailed in the following paragraphs.

The NRC staff's landfill capacity analysis calculated the total disposal demand from mid-year 2012 through the end of the proposed decommissioning period and compared it with the reported remaining landfill capacity as of mid-year 2012. NRC staff used this comparison of projected demand and capacity to evaluate whether sufficient capacity will be available to dispose of the additional waste from the proposed Dewey-Burdock ISR Project. The total disposal demand of 150,730 t [166,152 T] was based on the sum of the regional disposal demand[8] and the project disposal demand[9] from mid-2012 through the end of the proposed decommissioning period in 2028. The projected demand exceeds the available capacity of 139,619 t [154,000 T][10] by 11,024 t [12,152 T].[11]

[8]The regional demand of 134,717 t [148,500 T] was calculated based on the product of the annual average disposal volume received by the Custer-Fall River landfill of 8,160 t/yr [9,000 T/yr] (SEIS Section 3.13.2) and 16.5 (the number of years from mid-2012 to the end of proposed decommissioning in 2028).
[9]The project demand (i.e., total nonhazardous solid waste volume from decommissioning) of 16,003 t [17,652 T] is the volume of this waste from SEIS Section 2.1.1.1.6.3 converted to mass using 1.08T/yd^3 as a multiplier.
[10]The available landfill capacity reported in SEIS Section 3.13.2 as of the end of June 2012 is 139,619 t [154,000 T].
[11]The available capacity of 139,619 t [154,000 T] was subtracted from the total disposal demand of 150,730 t [166,152 T] (the sum of footnotes 8 and 9) to obtain the result of 11,024 t [12,152 T].

The staff also evaluated the difference in the projected time the landfill will reach full capacity with and without disposal of waste from the proposed Dewey-Burdock ISR Project. The purpose of this analysis was to evaluate the impact of the additional disposal demand on the projected operational life of the landfill. The NRC staff calculated when the landfill will reach full capacity with the additional disposal of proposed project waste by first calculating the available landfill capacity at the end of 2027 after 1 year of decommissioning waste disposal and 15.5 years of post mid-2012 regional waste disposal.[12] Next, the NRC staff derived a combined monthly disposal demand[13] for year 2028 from the projected disposal rates for decommissioning waste and regional waste. At the combined monthly disposal demand the projected year 2028 remaining capacity of 5,147 t [5,674 T] will be depleted within the first half of 2028.[14] For comparison, the projected operational life of the landfill without disposal of waste from the proposed action (SEIS Section 3.13.2) is 17 years beyond mid-2012 or mid-year 2029. Therefore, the analysis suggests disposal of waste from the proposed Dewey-Burdock ISR Project will cause the Custer-Fall River landfill to reach full capacity 1 year earlier than expected if the proposed decommissioning was executed on schedule and regional disposal demand continued at the current rate.

The potential for future expansion of capacity is being considered at both landfills (AET, Inc., 2011; SDDENR, 2010); however, specific long term actions remain uncertain. If one of these landfills does not expand capacity in the future, the applicant will have to dispose of waste elsewhere. Another more distant and higher capacity landfill serving Rapid City is projected to be operational until 2050 (HDR Engineering Inc., 2010). Therefore, the staff consider regional capacity will be available during the period of decommissioning if local capacity is limited or otherwise unavailable.

Based on the preceding capacity analysis, the NRC staff conclude that the potential impacts on waste management resources will vary depending on the long-term status of the existing local landfill resources. If local landfill capacity is not expanded prior to the proposed decommissioning period, the NRC staff conclude that there will be no impacts to the Newcastle landfill because it will not be open to accept waste at the planned time of decommissioning and the proposed Dewey-Burdock IRS Project will not be able to dispose waste at that location. In turn, impacts to the Custer-Fall River landfill will be MODERATE because the increased demand for capacity will more rapidly consume the waste management resources during the last years of its projected operational life. Any waste disposed at the Rapid City landfill will have SMALL impacts based on the projected operational life and available capacity. Alternatively, if the local landfill capacity is expanded prior to the proposed project decommissioning phase, the

[12]The calculated available capacity at the beginning of year 2028 is 5,147 t [5,674 T]. This is the result of subtracting the combined disposal demand (from regional and decommissioning wastes) from mid-2012 to year 2027 from the available landfill capacity as of mid-2012 of 139,619 t [154,000 T] (SEIS Section 3.13.2). The combined disposal demand was calculated as the product of the annual average disposal volume received by the Custer-Fall River landfill of 8,160 t/yr [9,000 T/yr] (SEIS Section 3.13.2) and 15.5 (the number of years from mid-2012 to the end of the first year of proposed decommissioning in 2027) added to the volume of nonhazardous decommissioning solid waste for year 2027 of 8,007 t [8,826 T] {half of the 2 year decommissioning total waste volume of 16,003 t [17,652 T]}.

[13]The combined monthly disposal demand for year 2028 of 1,348 t/month [1,486 T/month] is the sum of derived monthly disposal demands (i.e., waste generation rates) for proposed decommissioning and regional waste. Specifically, the derived monthly proposed decommissioning disposal demand is the total amount of proposed decommissioning waste of 16,003 t [17,652 T] for 2 years converted to a monthly rate of 667 t/month [736 T/month]. Similarly, the derived monthly regional disposal demand is the Custer-Fall River landfill annual average disposal amount of 8,160 t/yr [9,000 T/yr] converted to a monthly rate of 680t/month [750 T/month].

[14]The time to reach full capacity of 3.8 months was calculated as the ratio of the available year 2028 capacity of 5,147 t [5,674 T] from footnote 10 and the combined monthly disposal demand of 1,348 t/month [1,486 T/month] from footnote 11.

impacts on the available capacity of the expanded landfill (Newcastle or Custer-Fall River) will be SMALL.

The applicant estimates the volume of hazardous waste generated from decommissioning activities will be less than 91 kg [200 lb] (Powertech, 2009b). The hazardous waste streams from decommissioning will be similar to the waste streams generated during the ISR construction phase and could include used oil, batteries, and cleaning solvents. The applicant will have in place a hazardous material program that complies with applicable EPA and SDDENR requirements for its handling, storage, and disposal at approved facilities. Because the volume of hazardous wastes generated by the proposed action will be small and the waste will be handled, stored, and disposed of in accordance with applicable regulations; the NRC staff conclude the impacts on waste management will be SMALL.

In summary, NRC staff conclude the impacts to waste management resources during the decommissioning phase of the proposed project for the land application liquid waste disposal option will be SMALL for all materials except nonhazardous solid waste, which will be SMALL to MODERATE depending on the long-term status of the existing local landfill resources. Based on the type and quantity of waste expected to be generated and the available capacity for disposal, waste management actions during the decommissioning phase will have a SMALL impact on waste management resources for byproduct material and hazardous waste and a SMALL to MODERATE impact for nonhazardous solid waste.

4.14.1.3 Disposal Via Combination of Class V Injection and Land Application

If a permit for Class V injection wells is obtained from EPA but the capacity of the wells is insufficient to dispose of all liquid wastes generated at the proposed Dewey-Burdock ISR Project, the applicant has proposed to dispose of liquid waste by a combination of deep well disposal using Class V injection wells and land application (see SEIS Section 2.1.1.1.2.4.3). For the combined deep Class V injection well and land application disposal option, land application facilities and infrastructure will be constructed, operated, restored, and decommissioned on an as-needed basis depending on the deep Class V injection well disposal capacity (Powertech, 2011). The land application option will require the construction and operation of irrigation areas and increased pond capacity for storage of liquid wastes during nonirrigation periods (see SEIS Section 2.1.1.1.2.4.2), whereas the deep Class V injection well disposal option will require the construction and operation of four to eight deep disposal wells (see SEIS Section 2.1.1.1.2.4.1).

The relative volumes of byproduct material generated by the two disposal options differ during operations, aquifer restoration, and decommissioning phases with the land application option generating the larger amount of material for offsite disposal in each phase. The relative volumes of nonhazardous solid waste generated by the two disposal options differ during the decommissioning phase. The significance of these differences with regard to environmental impacts is low and does not change the impact conclusions for each disposal option. Therefore, the environmental impacts on waste management resources associated with the land application option will be the same for the deep Class V injection well disposal option for all phases of the ISR process. Furthermore, only a portion of land application facilities and infrastructure (e.g., irrigation areas and storage ponds) will be constructed, operated, and decommissioned for the combined disposal option. Therefore, the significance of environmental impacts on waste management resources for the combined disposal option will be less than for the land application option alone. Based on this reasoning, NRC staff conclude that the

Past, present, and reasonably foreseeable future actions that have the potential for cumulative effects on historic and cultural resources identified in the cumulative impacts study area include uranium exploration and extraction, oil and gas exploration, wind energy projects (e.g., the Dewey-Burdock Wind Project), and transportation projects (e.g., the proposed Dewey Conveyor Project and the proposed DM&E PRB Expansion Project) (see SEIS Sections 5.1.1.1 through 5.1.1.5).

Uranium extraction, and oil and gas exploration and drilling have occurred in the cumulative impacts study area, and additional drilling is likely to occur in the future. In the case of oil and gas exploration, areas have been proposed for lease sales, but neither applications nor permits to drill have been filed to date (see SEIS Section 5.1.1.3). Activities associated with exploration drilling will include access road and drill pad construction. All access roads and drill sites proposed for any type of exploration drilling will need to be surveyed for historic and cultural resources. Surveys by professional archaeologists and cultural specialists to identify and evaluate NRHP eligibility prior to project construction activities will need to be conducted. In addition, identification of properties of importance to Native American tribes will also need to be undertaken as part of consultation. If NRHP-eligible sites are found, appropriate levels of evaluation and mitigation will be required prior to construction.

One project that may have a cumulative impact on historic and cultural resources in the vicinity of the proposed Dewey-Burdock ISR Project is the potential Dewey Terrace ISR project. As with the current proposed project, the potential Dewey Terrace ISR project will be surveyed for historic and cultural resources prior to licensing and, if NRHP-eligible sites are indentified, appropriate levels of evaluation and mitigation will be required.

Surface-disturbing activities from wind energy developments, such as the potential Dewey-Burdock Wind Project, could uncover and destroy cultural resources. However, the development and implementation of programmatic agreements and BMPs will limit the potential impacts at a wind energy project site. For example, a cultural resources management plan will be developed to determine the mitigation activities needed for cultural resources found at a site. Avoidance of the historic and cultural resources will be the preferred mitigation option. Other mitigation options will include archaeological surveys and excavation (as warranted), monitoring, and inadvertent discovery procedures. The programmatic agreements and BMPs will also require consultation under NHPA Section 106, including consultation with SD SHPO and Native American tribes. The implementation of agreements and BMPs would greatly limit impacts from wind energy projects on cultural resources, which are expected to be mainly archaeological sites. However, impacts to cultural resources with a visual component (i.e., sacred landscapes) may occur. (BLM, 2005)

As described in SEIS Section 5.1.1.5, the proposed GCC Dacotah Inc. Dewey Conveyor Project would use an elevated, enclosed conveyor to transport limestone quarried from the Minnekahta Limestone to a rail load out facility near Dewey, South Dakota (see Figure 5.3-1). GCC Dacotah Inc. controls minerals rights to areas of potential limestone exploitation north of the proposed conveyor, where the Minnekahta Limestone lies at or near the ground surface (BLM, 2009a). These mineral rights are controlled either by ownership or leasing of private lands, or have been acquired by the staking of claims on lands underlain by federally held mineral rights. To date, the location of quarrying operations has not been finalized. However, federal mineral lands acquired by GCC Dacotah Inc. for potential limestone mining have been previously surveyed for cultural resources and over 60 sites were identified (Buechler, 1999; Sundstrom, 1999; Winham, et al., 2001). It is expected that many sites would be impacted during quarrying

activities. Therefore, appropriate measures would be required to ensure that identified cultural resource sites are avoided and protected during quarrying operations (BLM, 2009a).

NRHP-eligible historic or cultural resource sites have not been identified along the proposed Dewey Conveyor Project route or within a 30-m [100-ft]-wide buffer zone on either side of the proposed construction zone (see Figure 5.3-1). However, the implementation of alternatives for the proposed Dewey Conveyor Project will result in direct impacts to NRHP-eligible properties. To address these impacts, the following mitigation measures have been proposed: (i) GCC Dacotah Inc. will make a reasonable effort to design the project in a manner to avoid NRHP-eligible properties; (ii) unless authorized by BLM, USFS, and SD SHPO, no surface disturbance will occur within 30 m [100 ft] of the boundary of identified NRHP-eligible properties; and (iii) unless authorized by BLM, USFS, and SD SHPO, no surface disturbance will occur within 30 m [100 ft] of the boundary of 14 unevaluated sites and until their NRHP eligibility has been determined. GCC Dacotah Inc. has also indicated that measures will be taken to ensure that even those sites that are not NRHP-eligible will be avoided and protected, wherever possible. (BLM, 2009a)

The proposed DM&E PRB Expansion Project will have a significant impact on cultural and historical resources. The project area has a long history of human occupation. Known sites of archaeological and historical significance occur throughout the area. The Department of Transportation Section of Environmental Analysis (SEA) identified 408 cultural resources sites within 0.6 km [1.0 mi] of Alternative C for the proposed DM&E project (see Figure 5.1-5). Of these, 96 sites were in South Dakota and 312 were in Wyoming. Within 0.6 km [1.0 mi] of an alternate route (Alternative B) for the proposed project, SEA identified 298 cultural resources sites, 70 in South Dakota and 228 in Wyoming. SEA determined that the project will have significant impacts to these resources because of the likelihood that construction of the proposed project will encounter significant cultural resources. To address potential adverse impacts on cultural resources, DM&E has proposed mitigation measures, including (i) informing workers of applicable federal, state, and local requirements for the protection of archaeological resources, graves, and other cultural resources and training them on how to recognize and treat resources; (ii) complying with a programmatic agreement and identification plan developed through the NHPA Section 106 consultation process; and (iii) implementing mitigation measures documented in a memorandum of agreement (MOA) developed to ensure that the concerns of Native Americans are considered and addressed. (STB, 2001)

Because the cumulative impacts study area has a long history of human occupation, it is expected that historic properties of religious and cultural importance to Native American tribes occur throughout the area and that many will be affected by the ongoing and reasonably foreseeable future actions discussed previously. Certain historic properties may be eligible for inclusion in the NRHP because of their association with cultural practices or beliefs of a living community that are rooted in its history and are important in maintaining its continuing cultural identity (National Register Bulletin 38). Historic properties that might be present within the cumulative impacts study area include camp and burial sites, plant collection areas, and sacred and worship sites.

The NRC staff have determined that the cumulative impact on cultural and historic resources within the cultural and historic resources study area resulting from all past, present, and reasonably foreseeable future actions is MODERATE to LARGE. Archaeological and historic sites and artifacts are present in the area of the proposed site, and any present and future projects could potentially cause adverse impacts to these sites and artifacts.

6 MITIGATION

6.1 Introduction

The Generic Environmental Impact Statement (GEIS) for *In-Situ* Leach Uranium Milling Facilities (NRC, 2009) described potential mitigation measures that a licensee or facility operator might use to reduce potential adverse impacts associated with construction, operation, aquifer restoration, and decommissioning of an *in-situ* recovery (ISR) milling facility. Under 40 CFR 1508.20, the Council on Environmental Quality defines mitigation to include activities that (i) avoid the impact altogether by not taking a certain action or parts of a certain action; (ii) minimize impacts by limiting the degree or magnitude of the action and its implementation; (iii) rectify the impact by repairing, rehabilitating, or restoring the affected environment; (iv) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and (v) compensate for the impact by replacing or providing substitute resources or environments.

Mitigation measures are those actions or processes that will be implemented to control and minimize potential adverse impacts from construction, operation, aquifer restoration, and decommissioning of the proposed Dewey-Burdock ISR Project. Potential mitigation measures can include general best management practices (BMPs) and more site-specific management actions.

BMPs are processes, techniques, procedures, or considerations that can be used to effectively avoid or reduce potential environmental impacts. While best management practices are not regulatory requirements, they can overlap and support such requirements. BMPs will not replace any U.S. Nuclear Regulatory Commission (NRC) requirements or other federal, state, or local regulations.

Management actions are active measures that a licensee or facility operator specifically implements to reduce potential adverse impacts to a specific resource area. These actions include compliance with applicable government agency stipulations or specific guidance, coordination with governmental agencies or interested parties, and monitoring of relevant ongoing and future activities. If appropriate, corrective actions could be implemented to limit the degree or magnitude of a specific action leading to an adverse impact (reducing or eliminating the impact over time by preservation and maintenance operations) and repairing, rehabilitating, or restoring the affected environment. The licensee may also minimize potential adverse impacts by implementing specific management actions such as programs, procedures, and controls for monitoring, measuring, and documenting specific goals or targets (for example, pollution prevention goals of reducing waste) and, if appropriate, instituting corrective actions. The management actions may be established through standard operating procedures that appropriate local, state, and federal agencies (including NRC) review and approve. NRC may also establish requirements for management actions by identifying license conditions. Standard license conditions for the proposed Dewey-Burdock ISR Project are listed in Appendix A of the safety evaluation report (SER) (NRC, 2013). These conditions are written specifically into the NRC source material license and then become commitments that are enforced through periodic NRC inspections.

The mitigation measures Powertech (USA) Inc. (Powertech) proposed to reduce and minimize adverse environmental impacts at the proposed Dewey-Burdock ISR Project are summarized in Section 6.2. Based on the potential impacts identified in Chapter 4 of this draft Supplemental

Environmental Impact Statement (SEIS), the NRC staff have identified additional potential mitigation measures for the proposed Dewey-Burdock ISR Project. These mitigation measures are summarized in Section 6.3. The proposed mitigation measures provided in this chapter do not include environmental monitoring activities. Environmental monitoring activities are described in Chapter 7 of this draft SEIS.

6.2 Mitigation Measures Proposed by Powertech

The applicant identified mitigation measures in its license application (Powertech, 2009a–c) as well as in response to NRC staff requests for additional information (Powertech, 2010a–c, 2011, 2012). Table 6.2-1 lists the mitigation measures proposed for each resource area. Because many of the applicant's proposed mitigation measures apply to all four phases of the ISR process, they are listed together in the table.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech

Resource Area	Activity	Proposed Mitigation Measures
Land Use	Land disturbance	Reclaim the surface and reestablish vegetation in areas disturbed by drilling, pipeline installation, and facility construction as soon as construction activities are completed. Minimize construction of new and secondary access roads. Restrict normal vehicular traffic to designated roads, and keep traffic in wellfields to a minimum. Develop wellfields sequentially, and restore and reclaim wellfields in interim steps to minimize land area impacted at any one time.
	Access restrictions	Construct fences and signage around processing facilities and radium settling and storage ponds, and, potentially, around land application areas. Construct temporary fencing around injection and production wellfield patterns (remove fencing after operations and reclamation of each wellfield is completed). Limit access to monitoring wells, Class V deep injection wells, and header houses by (i) covering each monitoring well with a locking device, (ii) securing the well head and pumping equipment for Class V injection wells within locked buildings, and (iii) securing header houses within the fenced area of the wellfield. Implement fencing construction techniques to minimize habitat alteration and impediments to large game migration.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		Work with the U.S. Bureau of Land Management (BLM), South Dakota Game, Fish, and Parks, and private landowners to limit recreational activities (primarily hunting) within the project area to the extent practicable.
Transportation	Transportation safety	Maintain access roads, and impose speed limits on unpaved roads to minimize or eliminate accidents. Comply with all applicable the U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Transportation packaging and transportation requirements for all shipments of yellowcake, process chemicals, ion-exchange resins, fuel, and radioactive materials to mitigate the potential impacts of a transportation accident. Use dedicated tanker trucks for transporting uranium-loaded or uranium-stripped resins between the central processing plant and satellite facilities. Survey the exterior and cab of the shipping truck for radiological contamination prior to each shipment of uranium-loaded or uranium-stripped resin or yellowcake. Equip both the transport vehicle and shipping facilities with communication devices that allow direct communication with Powertech (USA) Inc. personnel.
	Emergency response	Communicate with local and state authorities on transportation and emergency response procedures. Use standard operating procedures for transportation and emergency response. Require proper training for transport contractor personnel on transportation accident response based on the specific material(s) shipped. Written standard operating procedures would accompany all drivers to ensure proper response to accidents and spill containment. Supply both shipping and receiving facilities with emergency response kits. Ensure each resin or yellowcake transport vehicle carries an emergency spill kit that would help contain material in the event of a spill. Maintain shipping records (bill of lading) to identify the characteristics and quantity of material shipped.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		Notify NRC if a radiological accident occurs pursuant to requirements of 10 CFR Part 20 §2202 and §2203.
Geology and Soils	Soil disturbance and contamination	Salvage and stockpile soil from disturbed areas. Reestablish temporary or permanent native vegetation as soon as possible after disturbance utilizing the most effective available technologies in reseeding and sprigging, such as hydroseeding. Decrease runoff from disturbed areas by using structures to temporarily divert and/or dissipate surface runoff from undisturbed areas. Retain sediment within the disturbed areas by using silt fencing, retention ponds, and hay bales. Fill pipeline and cable trenches with appropriate material, and regrade surface soon after completion. Design drainages to minimize potential for erosion by keeping slopes less than 4 to 1, and/or provide rip-rap or other soil stabilization controls. Construct roads using techniques that will minimize erosion, such as surfacing with a gravel road base, building stream crossings at right angles with adequate embankment protection and culvert installation. Use a spill prevention and cleanup plan to minimize soil contamination from vehicle accidents and/or wellfield spills or leaks. Collect and monitor soils and sediments for potential contamination including areas used for land application of treated wastewater, transport routes for yellowcake and ion exchange resins, and wellfield areas where spills or leaks are possible. Treat liquid wastes applied to land application areas to comply with release standards for radiological constituents in 10 CFR Part 20, Appendix B. Obtain an approved South Dakota Department of Environment and Natural Resources (SDDENR) groundwater discharge plan (GDP), and comply with

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		applicable state discharge requirements for land application of treated liquid wastes.
Surface Water Resources	Erosion, runoff, and sedimentation	Refrain from consuming or discharging to surface waters. Obtain U.S. Army Corps of Engineers permits and authorization from SDDENR when filling and crossing jurisdictional waters. Obtain construction and industrial National Polllutant Discharge Eliminaiton System (NPDES) permits in accordance with SDDENR regulations, and implement mitigation measures to control erosion, runoff, and sedimentation. Construct the Burdock central plant and Dewey satellite facility and their supporting buildings outside the 100-year floodplain of Pass and Beaver Creeks and away from their tributaries. Construct a system of structures such as straw bales, collector ditches, and engineered diversion structures or berms to protect facilities and infrastructures (e.g., storage ponds, access roads, plant-to-plant pipelines, wellfields) that will be located within the 100-year inundation boundary to protect them from flood damage. Implement a stormwater management plan in accordance with SDDENR requirements to ensure that surface water runoff from disturbed areas meets NPDES permit limits. Minimize earthmoving activities at the proposed land-application sites. Divert potential runoff produced by snowmelt or precipitation in land application areas to adjacent catchment areas. Recontour land surface to restore surface drainage to blend with the natural terrain after completion of the proposed ISR project. Develop and implement emergency response procedures to correct and remediate accidental spills.
	Spills and leaks	Provide containment curbs around the processing facilities designed to contain the contents of the largest liquid-containing vessel. Place liners, underdrains, and leak detection systems underneath ponds associated with water treatment or

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		storage of untreated or partially treated water (i.e., radium settling ponds, spare ponds, and central plant pond), and place liners underneath ponds that contain treated water (i.e., storage ponds and spare storage ponds). Bury pipelines to avoid freezing, and monitor pipeline pressures for leak detection. In accordance with Administrative Rules of South Dakota (ARSD) 74:34:01:04, all regulated substance spills that occur at the site must be reported to SDDENR and remediated in accordance with state requirements.
Groundwater Resources	Water use	Obtain Class III UIC permit and aquifer exemption. Obtain Class V UIC permit for deep well disposal of treated liquid wastes, and monitor process effluents injected into Class V deep injections wells to comply with (i) release standards in 10 CFR Part 20, Subparts D and K and Appendix B and (ii) the drinking water standards, or contaminant-specific background concentrations for constituents regulated under the Safe Drinking Water Act, whichever is greater, if proposed injection zones are underground sources of drinking water (have total dissolved solids concentrations below 10,000 mg/L), unless the applicant applies for and is granted an aquifer exemption. Treat liquid wastes applied to land application areas to comply with release standards for radiological constituents in 10 CFR Part 20, Appendix B. Obtain an approved SDDENR GDP, and comply with applicable state discharge requirements for land application of treated liquid wastes. Obtain water appropriation permits to utilize groundwater from the Madison and Inyan Kara aquifers. Monitor private domestic, livestock, and agricultural wells as appropriate during operations, and provide alternative sources of water to landowners in the event of significant drawdown to wells within and adjacent to the proposed project area. Obtain construction and industrial NPDES permits from SDDENR, which require reporting of spills of petroleum products or hazardous chemicals.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
	Spills and leaks	Implement a spill prevention and cleanup plan to minimize impacts to soils and groundwater, including rapid response cleanup and remediation. Construct pond lining systems appropriate to the pond usage and contents to prevent potential infiltration of liquid waste into soil and shallow aquifers. Bury pipelines to avoid freezing, and monitor pipeline pressures to detect leaks. In accordance with ARSD 74:34:01:04, all regulated substance spills that occur at the site must be reported to SDDENR and remediated in accordance with state requirements.
	Excursions	Conduct precise and periodic mechanical integrity testing of all injection, production, and monitoring wells prior to and during their use to limit the likelihood of well integrity failure during operations. Collect detailed lithologic and hydrogeological data for each proposed wellfield prior to i*n-situ* recovery (ISR) operations to ensure hydraulic control of the production zone. Plug and abandon or mitigate any of the following should they pose a potential to impact the control and containment of wellfield solutions within the proposed project area: (i) historical wells and exploration holes; (ii) holes drilled by the applicant for delineation and exploration; and (iii) any well failing mechanical integrity testing. Maintain production bleed rate at 0.5 to 3 percent to prevent lixiviant excursions. Conduct ISR operations only in confined portions of production aquifers. Install monitoring wells within and encircling the production zone for early detection of potential horizontal excursions. Install monitoring wells in aquifers above and below the production aquifer for early detection of potential vertical excursions. Implement corrective actions, and provide required

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		notifications and reports to NRC in the event of an excursion. Submit wellfield operational plans including well layouts for NRC and EPA approval before conducting operations in wellfields.
	Restoration/ reclamation	Return groundwater quality in the production zone to NRC-approved groundwater protection standards upon completion of ISR operations as required by 10 CFR Part 40, Appendix A, Criterion 5B(5). Plug and abandon all monitoring, injection, and production wells in accordance with applicable federal and state regulations, as part of decommissioning activities.
Ecology	Reduce land disturbance and contamination	Follow the Land Use mitigation measures for land disturbance activities and access restrictions, which will also minimize impacts to vegetation and wildlife. Minimize disturbance of surface areas and vegetation, where possible (also benefits wildlife). Construct new roads, power lines, and pipelines in the same above ground and below ground corridors to the extent possible to reduce overall disturbance and minimize new surface disturbance (also benefits wildlife). Impose dust control measures as described under Air Quality to limit dust deposition on vegetation, both on- and offsite, affecting the forageability for obligate species. Implement weed control as needed to limit the spread of noxious, invasive, and nonnative species on disturbed areas.
	Restoration/ reclamation	Reestablish temporary or permanent native vegetation as soon as possible after disturbance. Minimize the spread of undesirable, invasive, and nonnative species (weeds) in disturbed areas. Construct new overhead power lines using BMPs to reduce bird injuries and mortalities. Enforce speed limits to minimize collisions with wildlife.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
	Transmission lines	Use existing roads when possible, and limit construction of new primary and secondary roads to provide access to more than one drill site to minimize wildlife and habitat disturbance.
	Reduce human disturbances	Restore diverse landforms; direct topsoil replacement; and construct brush piles, snags, and/or rock piles to enhance habitat for wildlife. Prepare U.S. Fish and Wildlife Service (FWS)-approved raptor monitoring and mitigation plan to minimize conflicts between active nest sites and project-related activities if direct impacts to raptors occur.
Air Quality	Fugitive dust and combustion emissions from construction equipment and vehicles	Use drill rigs with engines no larger than 300 horsepower (except for deep well drill rig) to limit combustion emissions. Use Tier 1 or higher drill rig engines and Tier 3 or higher construction equipment engines (see Supplemental Environmental Impact Statement Section 4.7.1.1.1 for an explanation of "Tiers") to limit combustion emissions. Spray water to mitigate fugitive dust accounting for a 60 percent reduction in emissions generated from onsite unpaved roads. Impose speed limits for travel on unpaved roads and areas. Implement an employee carpooling policy. Restore or reseed disturbed areas promptly to limit the exposed/disturbed area at any given time. Coordinate construction and transportation activities to reduce maximum dust levels. Maintain vehicles to meet applicable U.S. Environmental Protection Agency (EPA) emission standards.
Noise	Exposure of workers and public to noise	Avoid construction activities during the night. Use sound abatement controls on operating equipment and facilities. Use personal hearing protection for workers in high noise areas.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		Adhere to regulatory timing and spatial restrictions with regard to construction activities near raptor nests. Locate all planned facilities outside of BLM-recommended buffer zones of raptor nests identified within the project area. Follow an FWS-approved raptor monitoring and mitigation plan to reduce conflicts between active raptor nests and project-related activities.
Cultural and Historic Resources	Disturbance of prehistoric archaeological sites and sites eligible for listing on the National Register of Historic Places	Conduct appropriate historic and cultural resource surveys as part of prelicensing application activities and eligibility evaluation of cultural resources for listing on the NRHP under criteria in 36 CFR 60.4(a)–(d). Conduct consultation under Section 106 of the National Historic Preservation Act (NHPA) with NRC, South Dakota State Historic Preservation Office, other government agencies (e.g., FWS, EPA, and BLM), and Native American tribes. Address any disturbances in compliance with any future agreements developed under the NHPA, including temporarily halting surface disturbance activities if historic or archaeological sites are discovered or unanticipated effects are found.
Visual and Scenic	Potential visual intrusions in the existing landscape character	Cover wellheads with low structures that present low contrast with existing landscape. Reclaim disturbed areas, and remove debris after construction is complete. Remove and reclaim roads and structures after operations are complete. Select building materials and paint that complement the natural environment. Consider landscape topography to conceal wellheads, plant facilities, access roads, potential land application areas, and other areas of disturbance from public vantage points. Use standard dust control measures including water application, speed limits, and coordinating dust-producing

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		activities to reduce fugitive dust impacts. Consider using exterior lighting only where needed, limiting the height of exterior lighting units, and using shielded or directional lighting to limit lighting to where it is needed and without jeopardizing site security and/or worker safety.
Socioeconomics	Effects on surrounding communities	Preferentially source the labor force from the surrounding region to reduce any burden on public services and community infrastructure (e.g., housing, schools) in nearby towns.
Occupational and Public Health and Safety	Effects from facility construction	Implement standard dust control measures, such as water application and speed limits, to reduce and control fugitive dust emissions. Comply with federal and state occupational safety regulations to limit nonradiological impacts of fugitive dust and diesel emissions to acceptable levels.
	Effects from facility operation	Reduce radiological exposure to workers by (i) installing ventilation designed to limit worker exposure to radon; (ii) installing gamma exposure rate monitors, air particulate monitors, radon daughter product monitors to verify that expected radiation levels are not exceeded; and (iii) conducting work area radiation and contamination surveys. Use vacuum dryer technology during normal operations to limit radiological emissions other than radon gas. Comply with an NRC-approved Radiation Protection Program that would include routine radiation surveys, respiratory protection, standard operating procedures for spill response and cleanup, and worker training in radiological health and emergency response. Monitor radiation workers via use of dosimeters and area air sampling to ensure that radiological doses remain within regulatory limits and as low as is reasonably achievable. Implement engineering controls, such as concrete curbs and sumps, to contain process spills resulting from accidents. Comply with applicable EPA, OSHA, and SDDENR regulations concerning the use, inspection, and storage of hazardous and nonhazardous chemicals.

Table 6.2-1. Summary of Mitigation Measures Proposed by Powertech (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		Develop and implement standard operating procedures regarding receiving, storing, handling, and disposing of chemicals.
Waste Management	Disposal capacity	Establish a solid byproduct material disposal agreement with a licensed facility prior to the start of operations.
	Waste reduction	Recycle wastewater to reduce the amount of water needed for facilities and the amount of wastewater that could require disposal. Use decontamination techniques that reduce waste generation. Institute preventative maintenance and inventory management programs to minimize waste from breakdowns and overstocking. Recycle nonradioactive materials where appropriate. Salvage extra materials, and use them for other construction activities. Encourage the reuse of materials and use of recycled materials. Avoid using hazardous materials when possible.
	Waste storage and containment	Store and properly label solid byproduct material onsite to prevent any potential release. Isolate byproduct material inside a restricted area until a full shipment can be transferred to an NRC-approved disposal site. Install curbs or berms on all waste storage areas. Install leak detection and warning systems in all liquid waste facilities. Develop a spill prevention plan for petroleum products and other hazardous materials. Ensure that equipment is available to respond to spills, and identify the location of such equipment. Inspect and replace worn or damaged components.

6.3 Potential Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission

The NRC staff has reviewed the mitigation measures the applicant proposed and has identified additional mitigation measures that could potentially reduce impacts (Table 6.3-1). NRC has the authority to address unique site-specific characteristics by identifying license conditions based on conclusions reached in the safety and environmental reviews. These license conditions could include additional mitigation measures, such as modifications to required monitoring programs. License conditions resulting from the safety review are documented in the NRC SER (NRC, 2013). While NRC cannot impose mitigation outside its regulatory authority under the Atomic Energy Act, the NRC staff has identified mitigation measures in Table 6.3-1 that could potentially reduce the impacts of the proposed Dewey-Burdock ISR Project. These additional mitigation measures are not requirements being imposed upon the applicant. For the purposes of the National environmental Policy Act, and consistent with 10 CFR 51.71(d) and 51.80(a), NRC is disclosing measures that could potentially reduce or avoid environmental impacts of the proposed project.

Table 6.3-1. Summary of Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission

Resource Area	Activity	Proposed Mitigation Measures
Land Use	Land disturbance	Monitor and control potential irrigation areas, if used, to maintain levels of radioactive constituents in treated liquid wastes applied to land application areas to within allowable release limits to protect the agricultural and recreational integrity of the land. Use best management practices (BMPs) to control waste disposal, erosion, and runoff to limit the effect of facility operation on surrounding land use.
Transportation	Transportation safety	Use accepted industry codes and standards for handling and transporting hazardous chemicals. Implement safe driving training for personnel and truck drivers. Use check-in/check-out or global positioning satellite technology to track shipments. Construct turn lanes in both directions on Dewey Road for vehicles turning onto the main access roads to the central and satellite processing plants. Provide means of advance warning to oncoming traffic that large trucks are entering Dewey Road from site access roads (e.g., signage, flashing light, flagman).

Table 6.3-1. Summary of Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
Geology and Soils	Soils	Maintain a log of all spills occurring at the site whether or not these spills are reportable to NRC per 10 CFR 40.60. Implement alternatives or mitigation measures to manage drilling fluid during well drilling operations including (i) lining mud pits with an impermeable membrane, (ii) disposing of potentially contaminated drilling mud and other fluids offsite, and (iii) using portable tanks or tubs to contain drilling mud and other fluids.
Surface Water Resources	Water quality	Collect monthly preoperational water quality samples from streams and quarterly preoperational water quality samples from impoundments.
Groundwater Resources	Contamination and excursions	Submit results of the hydrogeological characterization and aquifer pump tests (hydrologic test data packages) for NRC review and written verification or approval prior to development of any proposed wellfields. Prior to ISR operations in partially saturated portions of the Chilson aquifer, demonstrate the ability to detect and remediate excursions in partially saturated production zones. Monitor potential mobilization and migration of contaminants from abandoned open pit mines into production zones during aquifer restoration.
Ecology	Restoration/reclamation	Use weed control techniques that incorporate BMPs approved by the U.S. Bureau of Land Management (BLM) and South Dakota Department of Environment and Natural Resources (SDDENR).
	Fencing and screening	Cover vent pipes with either netting or other devices to prevent bats, birds, or small mammals from being trapped.
	Transmission lines	Follow the Avian Power Line Interaction Committee guidance to avoid impacts (electrocution and perching) to birds, especially prior to the fledging of young (Avian Power Line Interaction Committee, 2006). Bury transmission lines after (step-down) transforming to minimize risks to raptors and large birds.

Table 6.3-1. Summary of Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
	Reduce human disturbances	Adhere to timing and spatial restrictions within specified distances of active raptor nests as determined by appropriate regulatory agencies [e.g., U.S. Fish and Wildlife Service, South Dakota Game, Fish, and Parks, and BLM). Allow snakes and lizards that are encountered to retreat. Inform employees of applicable wildlife laws and penalties associated with unlawful taking and harassment of wildlife. Train employees on (i) the types of wildlife in the area susceptible to collisions with motor vehicles, (ii) the circumstances when collisions are most likely to occur, and (iii) measures that should be taken to avoid wildlife–vehicle collisions. Sign and gate as needed all new and improved roads related to the proposed project to minimize public traffic. Comply with applicable state and local requirements to design or treat mud pits and ponds to prevent the development of favorable mosquito habitat (to reduce possible transmission of West Nile virus).
Air Quality	Fugitive dust and combustion emissions from construction equipment and vehicles	Implement fuel saving practices such as minimizing vehicle and equipment idle time. Utilize fossil-fuel vehicles that meet the latest emission standards. Utilize newer, cleaner running equipment. Minimize unnecessary travel. Ensure that diesel-powered construction equipment and drill rigs are properly tuned and maintained. Limit access to construction sites, staging areas, and wellfields to authorized vehicles only, through designated treated roads. Pave or put gravel on dirt roads and parking lots if appropriate.

Table 6.3-1. Summary of Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
		Cover trucks carrying soil and debris to reduce dust emissions from the back of trucks. Burn low-sulfur fuels in all diesel engines and generators. Train workers to comply with speed limits, use good engineering practices, minimize disturbed areas, and employ other BMPs as appropriate. To the extent practicable, avoid conducting soil-disturbing activities and travel on unpaved roads during periods of unfavorable meteorological conditions (e.g., high winds). Implement any permit conditions identified in the SDDENR air permit, if applicable. Limit the numbers of hours in a day that effluent-generating activities can be conducted. Perform road maintenance (i.e., promptly remove earthen material on paved roads). Apply erosion mitigation methods on disturbed lands.
Noise	Exposure of workers and the public to noise	Maintain noise levels in work areas to below Occupational Safety and Health Administration regulatory limits. Reduce noise levels generated by irrigation equipment in potential land application areas by (i) installing exhaust and inlet silencers on engines, (ii) using electric motor drives instead of internal combustion engines, and (iii) erecting acoustic barriers to block the line of hearing from the exhaust engine and inlet toward human and wildlife receptors.
Cultural and Historic Resources	Disturbance of prehistoric archaeological sites and sites eligible for listing on the National Register of Historic	Stop work upon discovery of previously undocumented historic and cultural resources, and notify appropriate federal, tribal, and state agencies with regard to mitigation measures. Avoid historic properties within the project area that

Table 6.3-1. Summary of Mitigation Measures Identified by the U.S. Nuclear Regulatory Commission (Cont'd)

Resource Area	Activity	Proposed Mitigation Measures
	Places (NRHP)	are currently listed or eligible for listing on the National Register of Historic Places.
		Avoid identified sites within the project area with burial or cairn features. Develop an agreement outlining the mitigation process for each affected resource and why sites cannot be avoided, if required. Prior to construction, develop an Unexpected Discovery Plan that will outline the steps required in the event that unexpected historical and cultural resources are encountered at the site. Submit a decommissioning plan for NRC review to ensure compliance with Section 106 of the National Historic Preservation Act of 1966, as amended during the decommissioning phase.
Visual and Scenic	Potential visual intrusions in the existing landscape character	Limit the number of drill rigs operating during wellfield construction. To the extent possible, use existing secondary roads within the project area to access wellfields, potential irrigation areas, and other facility infrastructure.
Socioeconomics	Effects on surrounding communities	Coordinate emergency response activities with local authorities, fire departments, medical facilities, and other emergency services before operations begin.
Occupational and Public Health and Safety	Effects from facility operation	Use high-efficiency particulate air filters or similar controls for particulates. Design task procedures to reduce potential accidents. Develop contingency plans with county and municipal governments to ensure adequate medical, fire, and emergency services are available in case of a major accident.
Waste Management	Disposal capacity	Dispose of decommissioning nonhazardous solid waste at the Rapid City landfill in the event that the disposal capacities of local landfills are limited or otherwise unavailable at the time of decommissioning.

6.4 References

10 CFR Part 20. Code of Federal Regulations, Title 10, *Energy*, Part 20. "*Standards for Protection Against Radiation*." Washington, DC: U.S. Government Printing Office.

10 CFR Part 40. Code of Federal Regulations, Title 10, *Energy*, Part 40. "*Domestic Licensing of Source Material*." Washington, DC: U.S. Government Printing Office.

10 CFR Part 40. Appendix A. Code of Federal Regulations, Title 10, *Energy*, Part 40. Appendix A. "*Criteria Relating to the Operation of Uranium Mills and to the Disposition of Tailings or Wastes Produced by the Extraction and Concentration of Source Material from Ores Processed Primarily from their Source Material Content*." Washington, DC: U.S. Government Printing Office.

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51. "*Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions*." Washington, DC: U.S. Government Printing Office.

36 CFR Part 60. Code of Federal Regulations, Title 36, *Parks, Forests, and Public Property*, Part 60. "*National Register of Historic Places*." Washington, DC: U.S. Government Printing Office.

40 CFR Part 1508. Code of Federal Regulations, Title 40, *Protection of the Environment*, Part 1508. "*Terminology and Index*." Washington, DC: U.S. Government Printing Office.

ARSD (Administrative Rules of South Dakota). Section 74:34:01:04. "Reporting of Known Discharges -- Reportable Quantities." South Dakota Legislature Administrative Rules.

Avian Power Line Interaction Committee. "Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006." ML12243A391. Washington, DC: Edison Electric Institute and Sacramento, California: Avian Power Line Interaction Committee and the California Energy Commission. 2006.

NRC (U.S. Nuclear Regulatory Commission). "Safety Evaluation Report for the Dewey-Burdock Project Fall River and Custer Counties, South Dakota, Materials License No. SUA–1600." ML13052A182. Washington, DC: NRC. March 2013.

NRC. NUREG–1910, "Generic Environmental Impact Statement for *In-Situ* Leach Uranium Milling Facilities." ML091480244, ML091480188. Washington, DC: NRC. May 2009.

Powertech (Powertech (USA) Inc.). "Dewey-Burdock Project Emissions Inventory Revisions." Email (July 31) from R. Blubaugh to Bradley Werling, Southwest Research Institute®. ML12216A220. South Dakota: Powertech. 2012.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota, Technical Report RAI Responses, June, 2011." ML112071064. Greenwood Village, Colorado: Powertech. 2011.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota ER_RAI Response August 11, 2010." ML102380516. Greenwood Village, Colorado: Powertech. 2010a.

Powertech. "Subject: Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal and Email Requests for Clarification of Selected Issues Related to the Dewey-Burdock Uranium Project Environmental Review Docket No. 40-9075; TAC No. J 00533." Letter (November 4) from R. Blubaugh, Vice President-Environmental Health and Safety Resources to R. Burrows, Project Manager, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission. ML110820582. Greenwood Village, Colorado: Powertech. 2010b.

Powertech. "Subject: Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal Request for Clarification of Response Regarding Inclusion of Emissions from Drilling Disposal Wells; Dewey-Burdock Uranium Project Environmental Review Docket No. 40-9075; TAC No. J 00533." Letter (November 17) from R. Blubaugh, Vice President-Environmental Health and Safety Resources to R. Burrows, Project Manager, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission. ML103220208. Greenwood Village, Colorado: Powertech. 2010c.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota—Environmental Report." Docket No. 040-09075. ML092870160. Greenwood Village, Colorado: Powertech. August 2009a.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota—Technical Report." Docket No. 040-09075. ML092870160. Greenwood Village, Colorado: Powertech. August 2009b.

Powertech. "Dewey-Burdock Project, Supplement to Application for NRC Uranium Recovery License Dated February 2009." Docket No. 040-09075. ML092870160. Greenwood Village, Colorado: Powertech. August 2009c.

established as a function of the average background water quality and the variability in each parameter based on statistical methods. Before wellfield background evaluation, the applicant will consult with NRC for approval of the statistical methods used to determine target restoration goals (Powertech, 2011). NRC will consult with EPA before establishing water quality standards at the Dewey-Burdock site.

7.3.1.2 Excursion Monitoring

As discussed in GEIS Section 8.3.1.2, monitoring wells are situated around the wellfields, in the aquifers overlying and underlying the ore-bearing production aquifers, and within the wellfields. Wells are placed in these locations to ensure the early detection of potential horizontal and vertical excursions of lixiviants. Monitoring well placement is based on what is known about the nature and extent of the confining layer and the presence of drill holes, hydraulic gradient and aquifer transmissivity, and well abandonment procedures used in the region. The ability of a monitoring well to detect groundwater excursions is influenced by several factors, such as the thickness of the aquifer, the distance between the monitoring wells and the wellfield, the distance between the adjacent monitoring wells, the frequency of groundwater sampling, and the magnitude of changes in lixiviant migration indicator parameters. As a result, the spacing, distribution, and number of monitoring wells at a given ISR facility are site specific. The factors that control the spacing, distribution, and number of monitoring wells are detailed in GEIS Section 8.3.1.2 (NRC, 2009). The applicant's monitoring well design is described in SEIS Section 2.1.1.1.2.3.2 and summarized next.

The applicant proposes to install production and nonproduction zone monitoring wells to detect any horizontal or vertical lixiviant excursions at the proposed project site (Powertech, 2009a). The production zone monitoring wells will be located in the ore zone, in a ring around the perimeter of the production wellfields. They will be spaced at a maximum of 122 m [400 ft] outside the production wellfield and evenly spaced around the perimeter of the wellfield with (i) a minimum spacing of either 122 m [400 ft] or, (ii) the spacing that will ensure that no greater than a 70 degree angle exists between adjacent production zone monitoring wells and the nearest injection well (Mackin, et al., 2001; NRC, 2009, 2003; Powertech, 2009a, 2011). The applicant conducted numerical simulations using site-specific hydrologic data and proposed production flow rates to support the proposed spacing of monitoring wells (Powertech, 2011). Simulation results indicated that the proposed maximum monitoring well spacing of 122 m [400 ft] would be adequate to detect potential excursions (Powertech, 2011).

Nonproduction monitoring wells within the production area may consist of two types of monitoring wells: overlying and underlying (Mackin, et al., 2001; NRC, 2003, 2009). The screened intervals of overlying wells will be located in the sand unit or aquifer immediately above the ore-bearing stratum. The overlying nonproduction monitoring wells are designed to monitor any upward movement of leach fluids that may occur from the production zone and to guard against potential leakage from production and injection well casings into any overlying aquifer (Mackin, et al., 2001; NRC, 2003, 2009). The overlying wells are used to obtain background water quality data and to develop upper control limits (UCLs) for the overlying zones that will be used to determine whether vertical migration of leach fluids is occurring.

Vertical monitoring is generally set up with a density of wells ranging from one every 1.2 to 2 ha [3 to 5 ac]. However, where confining layers are very thick and permeabilities are negligible, requirements for vertical excursion monitoring can be relaxed or eliminated (Mackin, et al., 2001). The screened zone for the overlying wells is determined from electric logs by qualified geologists or hydrogeologists.

The applicant's nonproduction zone monitoring plan is described in SEIS Section 2.1.1.1.2.3.2. Following the previously outlined guidance, the applicant plans to design and install both overlying and underlying monitoring wells. The first layer of overlying nonproduction zone monitoring wells will be evenly distributed through the production area with a minimum of one well for every 1.6 ha [4.0 ac] of production area (Powertech, 2009a). Where additional aquifers exist above the first sand unit or aquifer above the ore-bearing sandstone, additional monitoring wells will be located in these aquifers, with a minimum placement of one well for every 3.2 ha [8 ac] of production area (Powertech, 2011). The overlying monitoring wells will be placed above the upper confining layer (the Graneros Group), where alluvium is present. As described in SEIS Section 4.5.2.1.1.2.1, the Graneros Group ranges in thickness from 61 to 168 m [200 to 550 ft], except where it has eroded in the eastern part of the proposed project area. Core samples collected from the lowermost unit in the Graneros Group, the Skull Creek Shale, demonstrate that the Skull Creek clays have extremely low vertical permeabilities. The thicknesses of the upper confining Graneros Group {approximately 61 to 168 m [200 to 550 ft]} and the lower confining Morrison Formation {approximately 30 m [100 ft]} minimize concerns about vertical excursions of lixiviant.

The monitoring ring and overlying and underlying monitoring wells will be designed for each wellfield according to site-specific lithology and processes of the production zone(s) of each wellfield. For adminstrative review, the applicant would present each wellfield monitoring well program and the results of hydrologic testing to NRC and the U.S. Environmental Protection Agency (EPA) before operating each wellfield (Powertech, 2009a). After the required hydrologic tests are complete, it may be necessary to revise the location and/or number of wells proposed. Each wellfield will be handled on a case-by-case basis in consultation with NRC and EPA.

UCLs are selected and set for chemical constituents or parameters that will be indicative of lixiviant migration from the wellfield (Mackin, et al., 2001; NRC, 2003, 2009). The constituents and parameters selected as lixiviant migration indicators and for which UCLs will be set at the proposed Dewey-Burdock ISR Project are chloride, conductivity, and total alkalinity (Powertech, 2011). Chloride is measured because the ion exchange process increases chloride concentrations in the lixiviant. In addition, chloride is highly mobile in groundwater and is not influenced by pH changes and oxidation-reduction reactions that occur in the production zone (Powertech, 2011). Conductivity is evaluated because it indicates changes in groundwater quality and is more reliably measured than parameters such as total dissolved solids. Total alkalinity will be examined because its concentration significantly increases during the ISR process and, therefore, provides a conservative indicator (Powertech, 2011).

The applicant followed guidance in NUREG–1569 (NRC, 2003) to establish and set UCLs in wellfields. All monitoring wells in the production zone aquifer and nonproduction zone aquifers (i.e., underlying and overlying aquifers) will be sampled 4 times with a minimum of 14 days between sampling events (Powertech, 2011). All samples will be analyzed for the parameters in Table 7.3-1. The mean concentration and standard deviation of the constituents or parameters selected as UCLs (i.e., chloride, conductivity, and total alkalinity) will be calculated for samples taken from the production zone aquifer and nonproduction zone aquifers. UCLs for each production zone monitoring well in a wellfield will be set at the mean concentration of the production zone aquifer plus five standard deviations for each excursion indicator. UCLs for each nonproduction zone monitoring well will be set at the mean concentration of the nonproduction zones aquifers plus five standard deviations for each excursion indicator. Some aquifers exhibit a low chloride concentration with an insignificant standard deviation (i.e., a narrow concentration range). Consistent with NUREG–1569 (NRC, 2003), when setting the

UCL for chloride the applicant will use either the mean plus five standard deviations or the mean plus 15 mg/L [15 ppm], whichever is greater (Powertech, 2011).

The applicant proposes to sample monitoring wells at the proposed Dewey-Burdock ISR Project at approximately 2-week intervals (at least 10 days apart) (Powertech, 2009a). The samples will be analyzed for and compared against the excursion parameter UCL values. The water level in each monitoring well will also be measured and recorded prior to each sampling event (Powertech, 2009a). Water level and analytical monitoring data for the UCL parameters will be reported to NRC quarterly and retained onsite for NRC review.

After operations are complete, the wellfields will be restored. As described in SEIS Section 2.1.1.1.4.2, as part of aquifer restoration the applicant will sample the same horizontal perimeter and overlying/underlying monitoring wells used during production. During restoration, lixiviant injection ceases, thereby reducing the potential for an excursion. The applicant will implement a reduced groundwater monitoring program during aquifer restoration because lixiviant injection will have ceased. During the aquifer restoration phase, wells located in the perimeter monitoring ring and completed in the overlying and underlying aquifers will be sampled every 60 days for chloride, alkalinity, and conductivity excursion parameters. An excursion will be defined in the same manner as during operations and subject to the same corrective action requirements.

7.3.2 Wellfield and Pipeline Flow and Pressure Monitoring

As indicated in GEIS Section 8.3.2, the operator typically monitors injection and production well flow rates to manage water balance for the entire wellfield. Additionally, the pressure of each production well and the production trunk line in each wellfield header house is monitored. Unexpected losses of pressure may indicate equipment failure, a leak, or a problem with well integrity (NRC, 2009).

The applicant's program will include monitoring of the injection well and production well flow rates and pressures at each header house. Individual well flow readings will be recorded during each shift, and the overall wellfield flow rates will be balanced daily (Powertech, 2009a,b). Flow and total volume data will be transferred to and checked automatically at the Burdock central processing plant and Dewey satellite facility. The recovery and injection trunk lines will have electronic pressure gauges. Information from these gauges will be monitored from each unit's control room. The control system will have both high and low alarms for pressure and flow. If the pressure and/or flow are out of range, the alarms will sound, alerting personnel to make adjustments. Certain high or low readings will signal automatic shutoffs or shutdowns. Activation of the flow alarms will prompt the applicant to take corrective actions, which include inspections for leaks and spills.

7.3.3 Surface Water Monitoring

The applicant will conduct surface water monitoring on all surface impoundments located downgradient from ISR activities. The applicant will also monitor surface waters passing through the site or located downgradient of ISR activities (Powertech, 2011). As described in SEIS Section 7.2.4, the applicant plans to monitor 24 impoundments and 10 stream sampling sites as part of the operational surface water monitoring program. The operational surface water sampling sites are shown in Figure 7.2-2 and listed in Table 7.3-2.

game surveys for the applicant's baseline wildlife surveys. Consequently, no long-term big game monitoring requirements are planned (Powertech, 2009a). A similar approach has been applied to other baseline projects (uranium, coal, bentonite, gold) in South Dakota and Wyoming and is the current policy of both states for annual monitoring at surface mines in the two-state region.

7.5 Land Application Monitoring

This section describes the applicant's proposed land application monitoring program as described in the applicant's Groundwater Discharge Plan (GDP) submitted to SDDENR (Powertech, 2012a). As described in SEIS Section 2.1.1.1.2.4, the applicant is proposing options for liquid waste disposal at the proposed Dewey-Burdock ISR Project that include deep well disposal, land application, or combined deep well disposal and land application. If land application is used for liquid waste disposal at the proposed project, the applicant will implement this program in a manner that ensures beneficial uses will not be impaired and there will be no hazard to human health and the environment (Powertech, 2012a). Records of all sampling activities and analyses will be maintained onsite for NRC review, and periodic reports of all sampling and analyses will be submitted to SDDENR (Powertech, 2012a).

7.5.1 Groundwater

The land application groundwater monitoring program will include alluvial monitoring wells within and hydrologically upgradient and downgradient of proposed land application systems. In addition, the shallowest bedrock aquifer, the Fall River Formation, will be monitored and suction lysimeters will be installed to monitor the vadose groundwater quality beneath the land application systems. The groundwater monitoring program is designed to provide a comprehensive evaluation of potentially affected groundwater quality within and near the proposed perimeter of operational pollution (POP) for proposed land application areas. Each land application area would include a designated POP zone, inside of which groundwater degradation would be permissible under a SDDENR water quality variance permit as long as South Dakota groundwater standards are met at the compliance points at the edges of the POP zones. Proposed POP zones in the Dewey and Burdock land application areas are shown in Figures 7.5-1 and 7.5-2, respectively.

7.5.1.1 Alluvial Monitoring Wells

Three types of alluvial monitoring wells are proposed to assess baseline conditions and impacts to alluvial water quality during operations: compliance wells, interior wells, and other wells. Proposed alluvial monitoring wells in the Dewey area are presented in Table 7.5-1 and depicted in Figure 7.5-1. Proposed alluvial monitoring wells in the Burdock area are presented in Table 7.5-2 and depicted in Figure 7.5-2. Compliance wells will be hydrologically downgradient from land application systems at the POP zone boundaries and will serve as compliance locations for potential impacts to alluvial water quality outside of the POP zone. Interior wells will be within each POP zone and will measure potential changes in alluvial water quality within the POP zones. Other wells are proposed to measure ambient alluvial water quality within the project area (see SEIS Section 7.2.5). These wells are outside of the POP zones both upgradient and downgradient of proposed land application systems.

Prior to operations of land application systems, all compliance, interior, and other wells will be sampled to determine baseline water quality. SDDENR's GDP permit will include a condition

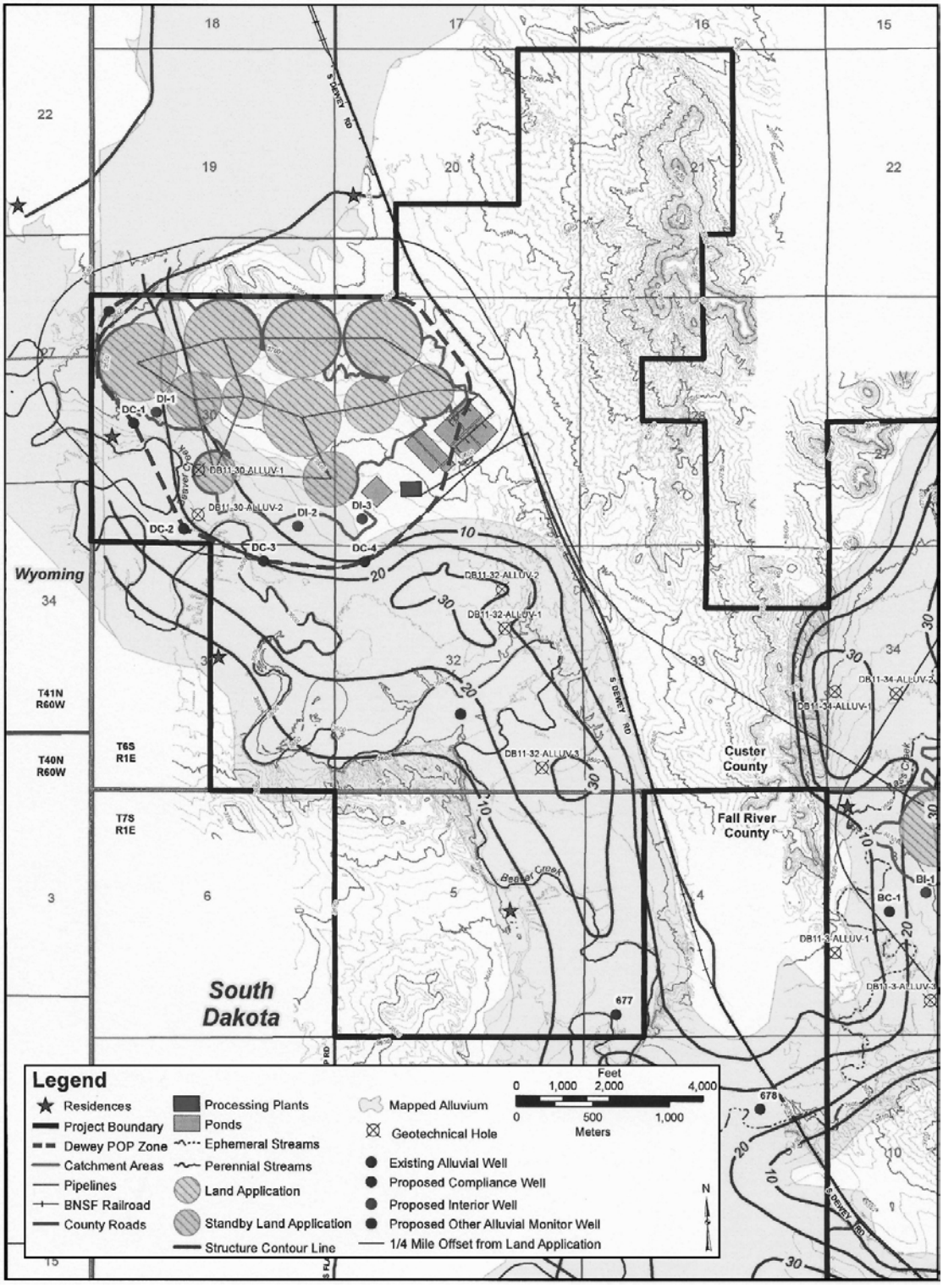

Figure 7.5-1. Map of Dewey Land Application Areas Showing the Perimeter of Operational Pollution and Proposed Alluvial Monitoring Wells Source: Powertech (2012a)

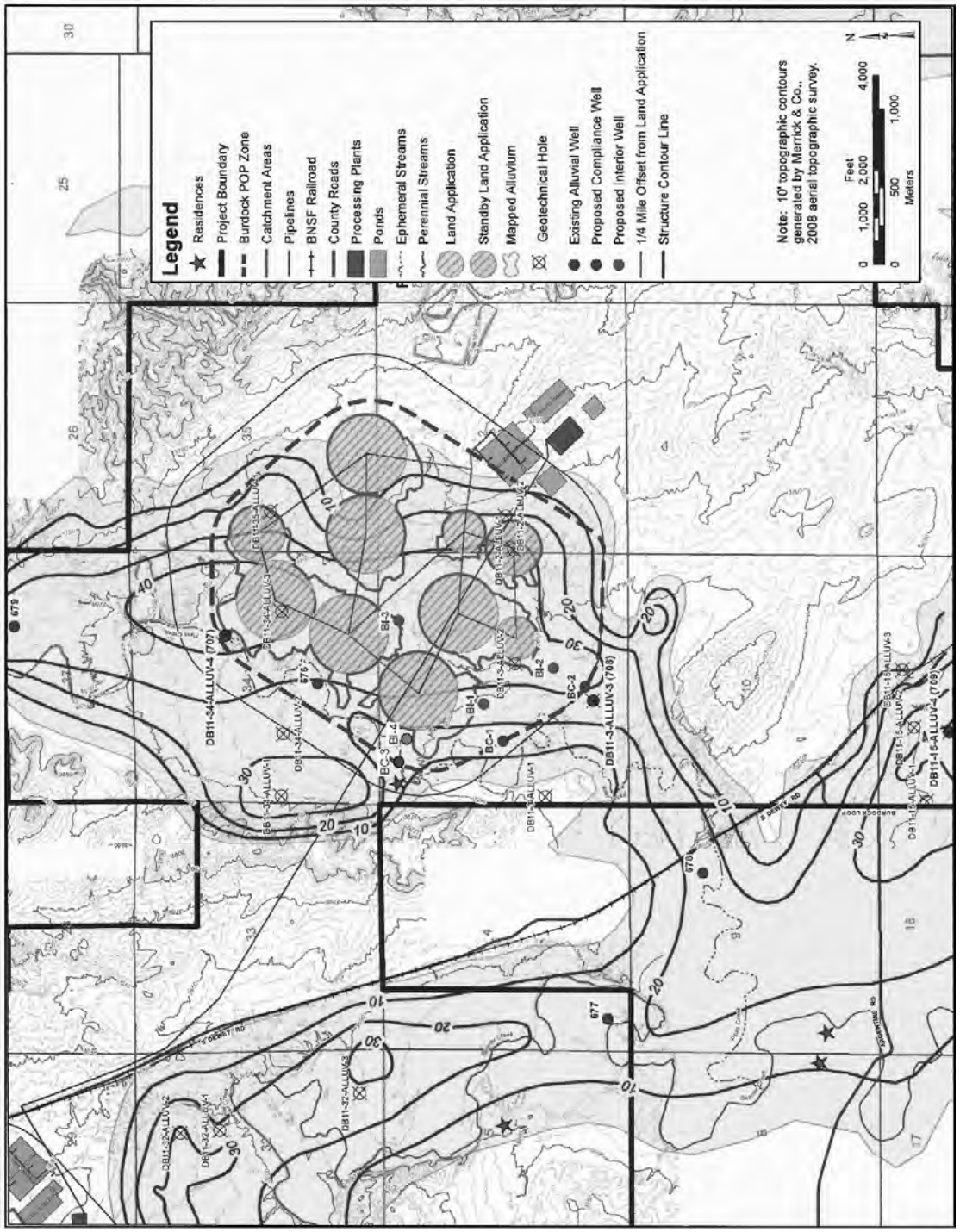

Figure 7.5-2. Map of Burdock Land Application Areas Showing the Perimeter of Operational Pollution and Proposed Alluvial Monitoring Wells
Source: Powertech (2012a, WWC, 2012)

Table 7.5-1. Proposed Alluvial Monitoring Wells in the Dewey Area

Monitoring Well Type	Well ID	Status
Compliance Wells	DC-1	Proposed
	DC-2	Proposed
	DC-3	Proposed
	DC-4	Proposed
Interior Wells	DI-1	Proposed
	DI-2	Proposed
	DI-3	Proposed
Other Wells	TBD	Proposed
	TBD	Proposed
	677	Existing
Source: Powertech, 2012a		

Table 7.5-2. Proposed Alluvial Monitoring Wells in the Burdock Area

Monitoring Well Type	Well ID	Status
Compliance Wells	BC-1	Proposed
	BC-2	Proposed
	BC-3	Proposed
Interior Wells	BI-1	Proposed
	BI-2	Proposed
	BI-3	Proposed
	BI-4	Proposed
Other Wells	676	Existing
	678	Existing
	679	Existing
	707	Existing
	708	Existing
Source: Powertech, 2012a		

requiring a minimum of one year of monthly ambient monitoring for the compliance wells and quarterly sampling of compliance wells until mining operations commence. During operations of land application systems, compliance, interior, and other wells will be sampled quarterly. All baseline and operational water samples will be analyzed for the parameters in Table 7.3-1.

For each compliance and interior well, baseline water quality for each parameter will be established as an arithmetic mean of baseline water samples plus one standard deviation of the sample data. Compliance limits for constituents in compliance wells will be established on a well-by-well basis as the human health standards in Administrative Rules of South Dakota (ARSD) 74:54:01:04 or baseline water quality. Out-of-compliance status will be defined in accordance with ARSD 74:54:02:28 as two consecutive samples that exceed the permitted allowable limit by two standard deviations. Interior wells will not have established compliance limits, but a contingency plan will be implemented if the monitored constituent concentrations increase (Powertech, 2012a).

7.5.1.2 Bedrock Aquifer Monitoring

The applicant proposes to provide monitoring results from operational monitoring wells in the shallowest bedrock aquifer, which occurs in the Fall River Formation. These Fall River

monitoring wells are listed in Table 7.3-3 and depicted in Figure 7.2-4. Prior to ISR operations, each of the Fall River monitoring wells will be sampled quarterly for 1 year. During ISR operations, the Fall River monitoring wells will be sampled quarterly and analyzed for the parameters in Table 7.3-1.

7.5.1.3 Vadose Zone Monitoring

The applicant proposes to install one suction lysimeter in each of the center pivot circles and catchment areas at both the Dewey and Burdock areas to obtain pore water samples from unsaturated soil. The suction lysimeters will be installed at depths of 2.4 to 3.7 m [8 to 12 ft]. Prior to operations of land application systems, pore water samples will be collected a minimum of four times within a 6-month period with no two samples taken in the same month. During operations, pore water samples will be collected once prior to each irrigation season, once during each irrigation season, and once after each irrigation season. Samples will be analyzed for the parameters in Table 7.3-1.

7.5.2 Surface Water

The locations of stream sampling sites on Beaver and Pass Creeks are BVC11, BVC14, PSC11, and PSC12. These sites are listed in Table 7.3-2 and depicted in Figure 7.2-2. The upstream sites on Beaver Creek (BVC14) and Pass Creek (PSC12) are approximately at the boundary of the proposed license area and will represent ambient water quality. The downstream site on Beaver Creek (BVC11) is downstream of the Dewey land application area, and the downstream site on Pass Creek (PSC11) is downstream of the Burdock land application area. Samples for each sampling site will be collected monthly for 12 consecutive months prior to ISR operations. Grab samples will be collected from sites BVC11 and BVC14. Passive samplers will be installed at sites PSC11 and PSC12 to collect samples during ephemeral flow events. Water samples will be analyzed for the constituents listed in Table 7.3-1. During ISR operations, including operation of land application systems, grab samples will be collected quarterly from perennial stream sampling locations on Beaver Creek and passive samplers installed on Pass Creek will automatically collect samples following runoff events from April through October. Grab samples will be analyzed in the field for pH, conductivity, and temperature. All stream samples will be analyzed for pH, total and suspended solids, total hardness, chloride, sulfate, dissolved arsenic, cadmium, chromium, and selenium and the constituents listed in Table 7.3-1 along with dissolved and suspended uranium, Ra-226, Th-230, Pb-210, and Po-210 to monitor for impacts to surface water from uranium ISR operations.

The applicant has proposed operational monitoring of all impoundments within and adjacent to the project area downgradient of proposed ISR facilities (e.g., wellfields, plants, pipelines, and land application areas). Impoundments downstream of land application areas in the Dewey and Burdock areas are listed in Table 7.3-2 and depicted in Figure 7.2-2. Prior to operations, ambient water samples will be collected, when available, from the impoundments four times and analyzed for the constituents listed in Table 7.3-1. All the impoundments will be sampled on a quarterly basis throughout construction and operations and analyzed for the same constituent list described previously for stream sampling sites.

7.5.3 Process-Related Liquid Waste

Grab samples of process-related liquid wastewater will be collected monthly during operation of each land application system and analyzed for the parameters listed in Table 7.3-1. In addition to the parameters in Table 7.3-1, monthly wastewater samples will be analyzed for compliance

with the 10 CFR Part 20, Appendix B radionuclide effluent discharge limits in Table 7.5-3. As discussed in SEIS Sections 2.1.1.1.6.2 and 4.5.1.1.2.2, SDDENR also regulates land application of treated wastewater, which requires the applicant to obtain a GDP permit and to comply with applicable state discharge requirements for land application of treated wastewater.

7.5.4 Soil

Two baseline soil samples will be collected from each quadrant of each center pivot (eight total samples per pivot) prior to operation of land application systems. During operations, a minimum of two soil samples will be collected each year for each land application pivot active during the year. Both the baseline and operational samples will be collected at depths of 0–46 and 46–91 cm [0–18 and 18–36 in] and analyzed for the parameters in Table 7.5-4.

7.5.5 Biomass

Samples of crops grown on three land application areas from each of the Dewey and Burdock sites will be collected at the end of each irrigation season during operations. If crops are not grown, samples of existing vegetation will be collected. Samples will be analyzed for the parameters in Table 7.5-5.

Livestock samples will be collected during operation of land application systems if livestock graze or consume crops grown on land application areas. The applicant will collect one grab sample per year taken at the time of slaughter and have it analyzed for the parameters in Table 7.5-5.

7.6 Class V Deep Injection Well Monitoring

This section describes the Class V deep injection well monitoring program the applicant proposed in its Class V underground injection control (UIC) permit application submitted to EPA (Powertech, 2011, Appendix 2.7-L). The proposed injection zones for the Class V deep injection wells are the Minnelusa Formation and the Deadwood Formation (Figure 3.5-5). The applicant estimates the need for disposal capacity of 1,135 Lpm [300 gpm] {about 1,635,120 L [432,000 gal] per day assuming 24 hour/7 day injection}. Two Class V injection wells are proposed in the Dewey area: one injecting into the Deadwood and one injecting into the Minnelusa. Two deep Class V injection wells are also proposed in the Burdock area: one injecting into the Deadwood and one injecting into the Minnelusa. In all, this totals four deep injection wells. If the disposal capacity for either the Deadwood Formation or the Minnelusa

Table 7.5-3. U.S. Nuclear Regulatory Commission Radionuclide Discharge Limits for Land Application

Radionuclide	µCi/ml	pCi/L
Pb-210	1E-8	10
Ra-226	6E-8	60
Uranium-natural	3E-7	300
Th-230	1E-7	100

Source: 10 CFR Part 20, Appendix B, Table 2, Column 2
Note: Compliance with 10 CFR Part 20, Appendix B, Table 2, Column 2 effluent discharge limits requires derivation of a limiting value based on the concentration each radionuclide in the effluent. The limiting value is derived as follows: determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in Appendix B for the specific radionuclide when not in mixture. The sum of such ratios for all radionuclides in the mixture may not exceed "1" (i.e., "unity").

November 6, 2013

Ms. Janice Prairie Chief-Boswell, Governor
Cheyenne and Arapaho Tribe
100 Red Moon Circle
P.O. Box 38
Concho, OK 73022

SUBJECT: NOTIFICATION OF INTENTION TO SEPARATE THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 PROCESS FROM THE NATIONAL ENVIRONMENTAL POLICY ACT REVIEW FOR THE POWERTECH, INC. PROPOSED DEWEY-BURDOCK IN-SITU RECOVERY (ISR) FACILITY NEAR EDGEMONT, SOUTH DAKOTA (DOCKET 040-09075)

Dear Governor Chief-Boswell:

Since 2010, the U.S. Nuclear Regulatory Commission (NRC) staff has been consulting under the National Historic Preservation Act (NHPA) with your Tribe and other American Indian Tribes regarding historic sites that may be affected by the proposed Powertech Inc. Dewey-Burdock In-Situ Recovery (ISR) Project.[1] The NRC staff has had three face-to-face meetings and three teleconferences with Tribal representatives, and we have exchanged many emails, letters, and telephone calls.

In the spring of 2013, the Dewey-Burdock project site was made available for each consulting Tribe to conduct a field identification survey for any historic properties that may have traditional, religious or cultural significance to the Tribe. Seven Tribes elected to participate in these surveys: the Northern Arapaho, Northern Cheyenne, Turtle Mountain, Crow Creek Sioux, Cheyenne and Arapaho, Crow Nation, and Santee Sioux. Tribal representatives conducted the field surveys between April 2013 and May 2013.

When the NRC staff began consulting with the Tribes, it planned to coordinate its NHPA review with its review under the National Environmental Policy Act (NEPA).[2] The staff's extensive Section 106 consultation activities have, however, caused delays in the issuance of its NEPA documents. Other factors have also caused delays, and this year alone the staff has had to revise its estimate for release of its final NEPA document from May 2013 (estimate as of January 2, 2013) to January 2014 (estimate as of November 1, 2013). If the staff continues to

[1] Letter to Tribal Leaders Requesting Additional Information Regarding Tribal Historic and Cultural Resources Potentially Affected by the Powertech Inc. Proposed Dewey-Burdock In-Situ Recovery Facility (March 19, 2010) (ADAMS Accession No. ML100331999) http://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber='ML100331999'.

[2] Letter to Tribal Leaders and Tribal Historic Preservation Officers re Invitation for Informal Information Gathering Meeting Pertaining to Dewey Burdock, Crow Butte North Trend and Crow Butte License Renewal In Situ Uranium Recovery Projects (May 12, 2011) (ADAMS Accession Nos. ML111320251 and ML111320256) http://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber='ML111320251' and http://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber='ML111320256'.

coordinate its NHPA and NEPA reviews, this will further delay a document the staff had expected to issue months ago.

Because the staff's review under Section 106 is still in progress, while its NEPA review is near completion, the staff is now separating its Section 106 activities from its NEPA review. This will allow the staff to issue its final NEPA document, the vast majority of which concerns environmental impacts unrelated to cultural resources, while continuing to consult with interested Tribes on impacts to historic properties.

Separating the Section 106 review from the NEPA review will afford the NRC and other consulting parties ample time to prepare a Programmatic Agreement (PA) for the Dewey-Burdock Project. The PA will establish a methodology or process to resolve adverse effects on identified historic properties within the Dewey-Burdock ISR Project area. The PA will also address how properties identified in the future will be evaluated.

Although the staff is separating its reviews under Section 106 and NEPA, it will ensure the consulting parties have the opportunity to comment on the full range of impacts to cultural resources. Within the next few weeks, the staff intends to provide all consulting parties a summary of the results of the April–May 2013 field surveys conducted by Tribal representatives under the Section 106 process. The staff will also provide its analysis of impacts to identified sites and its preliminary determinations as to whether sites are eligible for inclusion on the National Register of Historic Places.

By January 2014, the NRC staff intends to issue its final NEPA document for the Dewey-Burdock Project. If consulting parties have comments related to the April–May 2013 field surveys that cannot be incorporated in the final NEPA document, the staff will ensure that they are considered under both Section 106 and NEPA. Depending on the information provided in the comments from the consulting parties, the staff will not only address the comments through the Section 106 process, but it may decide to supplement the final NEPA document. In any event, because the staff will not take any licensing action until it completes its review under Section 106, the staff will consider Tribal comments before making its licensing decision.

To move the Section 106 process forward, the NRC staff has provided all consulting parties, including the Tribes, a draft PA outline to begin development of the PA. The staff plans to host several teleconferences/webinars over the next several weeks to further discuss the PA. During the first teleconference with all consulting parties, a comprehensive schedule of the steps needed to complete the Section 106 process will be discussed.

If you have any questions or comments, or need any additional information, please contact Ms. Haimanot Yilma of my staff by telephone at 301-415-8029 or by email at Haimanot.Yilma@nrc.gov.

Sincerely,

/RA/

Kevin Hsueh, Chief
Environmental Review Branch
Environmental Protection
and Performance Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No.: 040-09075

cc: Marian Atkins, Field Office Manager
South Dakota Field Office - BLM
310 Roundup Street
Belle Fourche, SD 57717-1698

Gregory R. Fesko
P.G. Coal Program Coordinator
Branch of Solid Minerals - BLM
Montana State Office
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Billings, MT 59001

Margaret Anquoe, THPO

Preoperational Sampling Plan" dated October 19, 2012 (Powertech, 2012). The changes to the draft license do not affect the conclusions in the draft SEIS.

Issuing a draft license to Powertech is consistent with the staff's practice in other uranium recovery licensing proceedings. The NRC staff further notes that, as with other uranium recovery proceedings at the NRC, there is no public comment period on the revised draft license. At the same time, members of the public should always feel free to contact the NRC staff regarding documents it issues. NRC staff value this input, and will take it into account to the extent practicable.

No change was made to the SEIS beyond the information provided in this response.

Comment: 116-000008

The commenter pointed out the draft SEIS stated that wellfield pump tests data "would be used to evaluate and confirm hydraulic connection between the production zone and perimeter production zone monitor wells and hydraulic isolation (i.e., confinement) between the production zone and overlying and underlying sand units, and it would be used to demonstrate that solutions can be controlled with typical wellfield bleed rates and to detect and identify leakage due to anomalies such as improperly plugged wells and exploration boreholes." The commenter noted this is important data that would be used to demonstrate the feasibility of the proposed ISL project in the various wellfields and to demonstrate that solutions can be controlled is currently not available and, when available, will not be submitted directly to the NRC, nor (according to the SEIS) will it be made available for public review. The data will be evaluated by the SERP established by the licensee. The commenter noted that according to the SEIS, the licensee will only be required to maintain the data on site and be available for NRC review. The commenter stated the NRC would be handing over regulation of significant aspects of the ISR operation to the licensee and making sure that significant data regarding the hydrogeology of the wellfields is not made publicly available.

Response: *The commenter is correct in stating that wellfield hydrogeologic data packages will not be made available for public review. However, by license condition, all wellfield data packages must be submitted to NRC for review prior to operating each wellfield (NRC, 2013b).*

Historically, NRC reviewed and approved all wellfield data packages. However, current Commission policy allows the applicant to use an in-house SERP to review and evaluate wellfield data packages under performance-based license (PBL) conditions. The SERP is composed of at least three members: one with expertise in management, one with expertise in operations, and the third being the RSO. NRC staff, however, has determined that a new licensee with no record of performance must submit its first wellfield package to NRC for review and approval. After NRC approval of an initial wellfield package, a licensee would have a template on which to model future packages.

As described in SEIS Section 2.1.1.1.2.3.4, the SERP will review the wellfield hydrogeologic test results to determine whether monitoring wells are hydrologically connected to the injection and production wells. In addition, the wellfield test results will be used to demonstrate that ISR solutions can be controlled with typical bleed rates and to identify and detect leakage due to anomalies such as improperly plugged wells and exploration boreholes (Powertech, 2011). By license condition, all wellfield hydrogeologic data packages must be submitted to NRC for review prior to operating each wellfield (NRC, 2013b). The hydrogeologic test packages for the

concentrations are attainable for many parameters (50 to 70 percent of the 35 parameters commonly monitored) but are not attainable for other constituents; in particular, the major and trace cations with solubilities most susceptible to the oxidation state of the aquifer water (i.e., iron, manganese, arsenic, selenium, uranium, vanadium, and radium-226). However, for the approved restorations, the impacts to groundwater in the exempted aquifer met all regulatory standards for the state or EPA UIC program, met the quality designated for its class of use prior to ISR operations, have been shown to decrease in the future due to natural attenuation processes, and have been shown to meet drinking water standards at the perimeter of the exempted aquifer. Therefore, the impacts to the exempted aquifer for each of the approved restorations do not pose a threat to human health or the environment. This information on NRC-approved aquifer restorations at the NRC-licensed ISR facilities was added to SEIS Section 4.5.2.1.1.3.

Comment: 116-000028

The commenter stated that the public has never accepted the concept of direct land disposal of radioactive wastes from uranium recovery or any other industrial process. The commenter stated that the standards in 10 CFR Part 20, Appendix B, should apply to planned deposition of radioactive and chemically contaminated wastes for irrigation purposes. The commenter stated further that the standards are not protective of the public, soils, surface water and groundwater, flora, and fauna.

Response: *NRC recognizes some commenters are not supportive of land application of treated wastewater. Land application is a disposal technique that uses agricultural irrigation equipment to broadcast wastewater on a relatively large area of land for subsequent evaporation. Land application is authorized, but has not been implemented, at several ISR facilities (NRC, 1995, 1998). Disposal of treated wastewater by land application at the proposed Dewey-Burdock ISR Project site will require treatment to meet NRC release requirements for radionuclides in 10 CFR Part 20, Appendix B, and SDDENR requirements imposed by a Groundwater Discharge Plan (GDP) permit (see SEIS Section 2.1.1.1.6.2). As described in SEIS Section 2.1.1.1.6.2, process solutions, wastewater disposal, or surface water runoff from the site will be required to meet GDP permit requirements, South Dakota groundwater quality standards as outlined in Administrative Rules of South Dakota (ARSD) 74:54:01, or surface water quality standards as outlined in ARSD 74:51:01, as appropriate. SEIS Section 7.5 describes the applicant's proposed land application monitoring program. As described in SEIS Section 7.5, water, soils, and vegetation will be monitored on a regular basis to ensure soil loadings and vegetation concentrations remain within GDP permit limits.*

No change was made to the SEIS beyond the information provided in this response.

E5.9.3 U.S. Nuclear Regulatory Commission Licensing Process

Comment: 071-000001

The commenter stated that safety issues should render an NRC no action for this project based on the problems NRC encountered with Powertech Uranium and safety-related issues. The commenter stated that review of the safety portion of the license application was suspended due to "significant deficiencies" following a review of Powertech's request for additional information (RAI) responses.

Comments: 022-000001; 047-000009; 053-000003; 065-000002; 093-000002; 093-000004; 122-000001; 127-000015; 134-000002; 136-000002

Several commenters expressed concerns that once the water is contaminated by ISR operations it cannot be fully restored, as witnessed in other ISR uranium facilities. One commenter stated that, based on research of the water quality impacts of *in-situ* leach uranium mining, no incidence where water quality was ever returned to its premining quality can be found. The commenter further stated that there are many instances where irrevocable degradation of water quality has occurred and that Christensen Ranch near Gillette, Wyoming, now has a radioactive level 70 times greater than it originally started out with. Some commenters stated that history shows that groundwater near ISL mines has not been returned to its original quality. Other commenters pointed out that NRC's own information from an internal 2009 review showed that aquifer restoration has never resulted in a return to premining baseline conditions at an *in-situ* uranium mining operation in the United States. Another commenter stated that levels of arsenic, molybdenum, selenium, vanadium, and uranium are often present at higher levels than baseline even after groundwater restoration. The commenter pointed out that the applicant does not propose any new methods for restoration, so the impact from this issue could be extremely grave. Another commenter stated that groundwater has never been restored to its original condition at any ISL uranium mine in the United States. Another commenter stated that the ISL industry's historic and ongoing inability to control aquifer contamination and restore groundwater impacted by ISR uranium mining must be acknowledged and competently addressed within the NEPA process.

Response: *NRC is aware of the potential groundwater impacts at ISR facilities resulting from residual constituent concentrations exceeding baseline concentrations after the restoration of a production aquifer. Before operating an NRC-licensed ISR facility, the licensee is required to obtain a UIC permit from EPA or an EPA-authorized state. The permit must exempt the portion of the aquifer subject to uranium recovery from classification as a USDW.*

NRC staff examined available groundwater restoration data from three NRC-licensed ISR facilities (COGEMA's Irigary/Christensen Ranch facility, PRI's Smith Ranch/Highland Uranium Project facility, and Crow Butte Resources Crow Butte facility) (NRC, 2009b). NRC staff have approved 11 wellfield restorations at the 3 sites. The restoration data show that preoperational concentrations are attainable for many parameters (50 to 70 percent of the 35 parameters commonly monitored) but are not attainable for other constituents; in particular, the major and trace cations with solubilities most susceptible to the oxidation state of the aquifer water (i.e., iron, manganese, arsenic, selenium, uranium, vanadium, and radium-226). However, for the approved restorations, the groundwater in the exempted aquifer met all regulatory standards for the state or EPA UIC program and met the quality designated for its class of use prior to ISR operation. The impacts to groundwater have been shown to decrease in the future due to natural attenuation processes, and the groundwater has been shown to meet drinking water standards at the perimeter of the exempted aquifer. Therefore, the impacts to the exempted aquifer for each of the approved restorations do not pose a threat to human health and the environment. Information on NRC-approved aquifer restorations at NRC-licensed ISR facilities was added to SEIS Section 4.5.2.1.1.3.

Comment: 091-000017

The commenter stated that a characterization of each affected aquifer following the *in-situ* leaching process should be performed to assess how each aquifer will be affected. The

constructed a three-layer model to evaluate the effects of a large withdrawal from the Madison aquifer (NRC, 2013a). The model included one well at the Dewey-Burdock ISR Project operating at 1,892 Lpm [500 gpm] and two wells in the City of Edgemont operating at 4,621 Lpm [1,221 gpm]. Results of the analysis indicate the Edgemont wells would produce a large cone of depression that encompasses the Dewey-Burdock ISR Project, if these wells operated constantly (conservative assumption) (see SER Figure 3.1-1). When the Dewey-Burdock well is operating full time (conservative assumption), the Dewey-Burdock well superimposes its cone of depression onto the Edgemont wells (SER Figure 3.1-2). However, based on the staff's review of the steady-state potentiometric surface maps and Madison aquifer drawdown, the drawdown induced by constant pumping of the Dewey-Burdock well does not appear to affect the operation of the Edgemont wells. Therefore, the proposed maximum Madison withdrawals at the Dewey-Burdock project do not appear to affect water supplies in the City of Edgemont, South Dakota.

No additional changes were made to the SEIS.

Comment: 128-000161

The commenter pointed out that drawdown estimates of production zone aquifers during operations at the proposed project have been updated (Petrotek, 2012) and suggested revising this information in the SEIS.

***Response:** NRC acknowledges that drawdown estimates for the Fall River and Chilson aquifers have been updated (Petrotek, 2012). The updated drawdown estimates are based on numerical modeling using site-specific parameters and calibrated to historical pumping test data. NRC staff reviewed the applicant's numerical model and calibration, and determined that the model was appropriately developed and sufficiently calibrated. Text in SEIS Section 4.5.2.1.1.2.2 was revised to reflect the updated drawdown estimates for the Fall River and Chilson aquifers presented in Petrotek (2012).*

Comments: 128-000017; 128-000079; 128-000175; 128-000176; 128-000177

The commenter noted that the statement is made in the draft SEIS that "If contaminants are drawn into production zones within the Chilson aquifer from abandoned open pit mines through the hydraulically connected Fall River aquifer during aquifer restoration, the impacts will be MODERATE." The commenter noted that mitigation measures will be in place to ensure that drawdown-induced migration of potential contaminants does not affect aquifer restoration goals. The commenter also noted that any drawdown-induced migration of contaminants that occurs during operations and aquifer restoration would be detected by the groundwater monitoring network. Once detected, the procedures used to address an excursion would be applied to mitigate further migration of the contaminants (such as modifying injection/recovery rates). Therefore, the commenter questioned the conclusion in the draft SEIS that the potential impacts to groundwater quality from aquifer restoration will be MODERATE and suggested that the magnitude be changed to SMALL.

***Response:** NRC acknowledges that mitigation measures will be in place to ensure that drawdown-induced migration of potential contaminants does not affect aquifer restoration goals. These mitigation measures are described in SEIS Section 4.5.2.1.1.3. For example, NRC will require the applicant to conduct hydrogeological characterization and aquifer pumping tests in each wellfield to examine the hydraulic integrity of the Fuson Shale, which separates the*

Chilson and Fall River aquifers. NRC will also require by license condition that the applicant provide the results of the hydrogeological characterization and aquifer pumping tests for review and written verification before any proposed wellfields are developed (NRC, 2013b). The applicant has also committed to locating unknown boreholes or wells identified through aquifer pump testing, and committed to plugging and abandoning historical wells and exploration holes, holes drilled by the applicant, and any wells that fail mechanical integrity tests (Powertech, 2011). These requirements and commitments will ensure that contaminants are hydrologically isolated in the exempted portion of the ore-bearing aquifers during restoration.

As further described in SEIS Section 4.5.2.1.1.3, hydraulic communication (leakage) between the Fall River and Chilson aquifers through the intervening Fuson Shale in the Burdock area has been identified based on aquifer pumping tests (see SER Section 2.4.3.4) and potentiometric surface differences (see SEIS Seciton 3.5.3.2). Because leakage may occur through the Fuson Shale, a potential exists for drawdown-induced migration of radiological contaminants from abandoned open pit mines in the Burdock area (e.g., Triangle Pit mine) from the Fall River aquifer into the hydraulically connected Chilson aquifer. To address uncertainties in the confining properties of the Fuson Shale in the Burdock area, the NRC staff will require by license condition that the applicant propose a monitoring well network for the Fall River aquifer in the Burdock area for those wellfields in which the Chilson aquifer is the production zone (NRC, 2013b). The proposed monitoring well network will be submitted to NRC staff for review and written verification at least 60 days prior to construction. In addition, by license condition, wellfields in the vicinity of the abandoned mine pits in the Burdock area, specifically wellfields B-WF6, B-WF7, and B-WF8 (see Figure 2.1-6), will be prohibited from operating until NRC staff have reviewed and approved the hydrogeologic data packages for those wellfields (NRC,2013b).

Based on the license conditions and applicant commitments discussed in the preceeding paragraphs, the potential for contaminants from abandoned open pit mines in the Burdock area to be drawn through the Fuson Shale into production zones within the Chilson aquifer during aquifer restoration would be expected to be SMALL. Therefore, NRC agrees with the commenter's suggestion that the magnitude of potential impacts to groundwater quality from aquifer restoration should be changed to SMALL. Text was revised in the SEIS to indicate that the potential for contaminants from abandoned open pit mines in the Burdock area to be drawn through the Fuson Shale into production zones within the Chilson aquifer during aquifer restoration will be SMALL.

E5.21.4 Aquifer Exemption and Baseline Water Quality

Comments: 042-000010; 127-000013

One commenter noted that NRC and BLM must address the critique of Dr. Moran, consultant for the Oglala Sioux Tribe, concerning lack of baseline groundwater data collection and characterization. The Northern Cheyenne Tribe also stated that it agrees with the majority of the contentions in the declaration of Dr. Robert E. Moran, consultant for the Oglala Sioux Tribe, before the NRC's ASLBP. Specifically, the Northern Cheyenne Tribe noted assertions by Dr. Moran in the declaration that the SEIS is deficient with respect to baseline groundwater and hydrogeological characterizations.

Response: *NRC is aware of the declaration of Dr. Moran before the ASLBP and the assertions that the SEIS is deficient with respect to baseline groundwater and hydrogeological*

becomes productive enough to support big game. Appendix 6.4-D of the SDDENR large-scale mine permit application provides the reclamation performance criteria to establish the success of revegetation for agricultural and horticultural cropland and rangeland disturbed during the project (Powertech, 2012a). The reclamation performance criteria document explains that SDDENR will evaluate rangeland pursuant to ARSD 74:29:07:20 prior to bond release. ARSD 74:29:07:20 states that reclamation is complete when the reclaimed range is capable of withstanding proper (animal) stocking rates for two consecutive years prior to bond release. NRC staff revised SEIS Section 4.6.1.1.1.1.2 to convey that the SDDENR large-scale mine permit will require that, prior to bond release, reclaimed rangeland be capable of withstanding proper (animal) stocking rates for two consecutive years after the life of the ISR facility.

Comment: 132-000005

The commenter questions what the potential impact on wildlife would be for this project.

Response: *SEIS Section 4.6 and associated subsections provide the NRC staff's analysis of potential impacts on wildlife and vegetation from the proposed project. Because the comment did not provide specific information on potential impacts to wildlife from the proposed project, no changes were made to the SEIS.*

Comment: 136-000015

The commenter stated that the proposed project will cause undue impacts to wildlife and loss of important habitat, and that the SEIS does not provide any mitigation measures to protect wildlife.

Response: *In SEIS Section 4.6 and associated subsections, the NRC staff analyzes the potential impacts on vegetation and wildlife species the commenter identifies, and provides mitigation measures to either reduce or avoid adverse effects. The mitigation measures the applicant proposed to reduce and minimize adverse impacts on ecological resources at the proposed Dewey-Burdock ISR Project are summarized in SEIS Section 6.2. Although NRC has limited authority to impose mitigation measures limiting impacts on ecological resources, the NRC staff identified additional potential mitigation measures to protect wildlife; these measures are summarized in SEIS Section 6.3. In addition, the applicant is required to adhere to ecological mitigative measures in the SDDENR large scale-mine permit and the GDP permit (Powertech, 2012a,b). Because the SEIS sufficiently discusses the potential impacts on ecology from the proposed project and potential mitigation measures, no changes were made to the SEIS.*

E5.22.6 Comments About Ponds

Comment: 128-000187

The commenter pointed out that the applicant (Powertech) has not committed to using netting on ponds.

Response: *NRC identified mitigation measures in SEIS Table 6.3-1 that could be implemented to limit impacts on wildlife, including covering vent pipes with netting. NRC staff recognize that the applicant has not committed to using netting on ponds. As described in SEIS Section 1.7.3.7, during the SEIS consultation and coordination process, SDGFP suggested two*

measures to mitigate effects on bird populations: (i) testing to determine the toxicity of constituents in the evaporation ponds and (ii) using netting and fencing to restrict wildlife access to exposed ponds. The applicant is actively working on an avian monitoring and mitigation plan with FWS, SDDENR, and SDGFP before construction activities begin and incorporated into the SDDENR large-scale mine permit (Powertech, 2012a). The SDDENR regulatory requirements relating to surface water ponds are contained in ARSD 74:29:11:23 (In-Situ Leach Mining: Pond and Surface Impoundment Design and Construction Requirements). SDDENR requires migratory bird and wildlife protection provisions for surface water ponds. The SEIS Executive Summary and Sections 4.6 and 4.6.1.1.1 were revised in response to this comment.

E5.22.7 Impacts on Aquatic Species

Comment: 128-000205

The commenter requested revising SEIS Table 4.6-5 to reflect that there would be SMALL impacts on aquatic species under the combined Class V injection wells and land application column.

Response: *NRC staff acknowledge that it's finding of SMALL impacts to aquatic species for the combined Class V injection wells and land application options was not documented in SEIS Table 4.6-5. NRC revised SEIS Table 4.6-5 to reflect that there would be SMALL impacts on aquatic species under the combined Class V injection wells and land application column.*

E5.22.8 Vegetation Comments

Comments: 128-000189; 003-000003

Two commenters suggested revising SEIS Section 4.6.1.1.1.1.1 (Construction Impacts on Vegetation) to reflect updated and corrected information. Further, the South Dakota Department of Agriculture (SDDA) requested that a weed management plan be developed using the University of South Dakota Weed Control guidance, and that the plan be approved by the SDDA and county weed and pest boards.

Response: *The applicant submitted a revised Noxious Weed Control Plan in April 2013 as Appendix 6.4-C of its SDDENR large-scale mine permit application (Powertech, 2012a). The plan references the 2013 South Dakota State University Weed Control guidance for pasture and range land (Moechnig, et al., 2012) and states that herbicide application will be performed by a South Dakota-certified licensed pesticide applicator. The plan was reviewed and approved by the Custer and Fall River County Weed and Pest Boards.*

SEIS Table 6.2-1 lists applicant-proposed mitigation measures, including implementing weed control as needed to limit the spread of noxious, invasive, and nonnative species on disturbed areas. SEIS Table 6.3-1 lists NRC-identified mitigation measures, including the use of BLM- and SDDENR-approved weed control techniques. NRC staff suggest that SDDA review the plan as part of the approval process.

In response to this comment, SEIS Sections 4.6.1.1.1.1.1 and 4.15 were revised to provide accurate and updated weed control information.

Moechnig, M., D. Deneka, L. Wrage, M. Rosenberg. "2013 Weed Control, Pasture and Range." Publication: 03-3020-2012. Brookings, South Dakota: South Dakota State University Extension. October 2012 <http://igrow.org/up/resources/03-3020-2012.pdf> (07 June 2013).

NRC (U.S. Nuclear Regulatory Commission). NUREG–1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs—Final Report." Washington, DC: NRC. August 2003.

Powertech [Powertech (USA) Inc.]. "Dewey-Burdock Large Scale Mine Permit Application—Response to 10/31/2012 Procedural Completeness and Technical Review Comments." ML130320039—Package. Edgemont, South Dakota: Powertech. 2012a.

Powertech. "Dewey-Burdock Project Groundwater Discharge Plan Custer and Fall River Counties, South Dakota." ML12195A039, ML12195A040. Edgemont, South Dakota: Powertech. March 2012b.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota—Environmental Report." Docket No. 040-09075. ML092870160. Greenwood Village, Colorado: Powertech. August 2009.

SDGFP (South Dakota Game, Fish, and Parks). "Rare, Threatened or Endangered Plants Tracked by the South Dakota Natural Heritage Program." November 2009. <http://gfp.sd.gov/wildlife/threatened-endangered/rare-plant.aspx> (12 June 2013).

USGS (U.S. Geological Survey). "North Dakota's Federally Listed Endangered, Threatened, and Candidate Species—1995, *Piping Plover (Charadrius melodus)*." Last updated February 2, 2013. <http://www.npwrc.usgs.gov/resource/wildlife/nddanger/species/charmelo.htm> (03 June 2013).

E5.23 Meteorology, Climate, and Air Quality

E5.23.1 Air Impact Assessment

Comment: 049-000013

In response to statements in the draft SEIS that additional air modeling using an updated emission inventory would be included in the final SEIS, the commenter stated that it could not fully review the staff's analysis because complete modeling results were not presented in the draft SEIS. The commenter concurred with the NRC approach to provide revised information in the final SEIS and recommended that if the final SEIS analyses predict adverse impacts, NRC identify mitigation, control measures, and design features to address these impacts.

Response: *Air dispersion modeling and the associated impact analysis have been updated for the final SEIS. The staff based its analysis in the draft SEIS on information available at the time the document was issued acknowledging, in draft SEIS Section 4.7.1, that additional information would be included in the final SEIS. Although the more recent information was not available at the time the draft SEIS was developed, when the NRC staff considers this new information in the final SEIS, the impact analysis does not significantly change from what was presented in the draft SEIS. To the contrary, as described in final SEIS Table C-19, the draft analysis bounds*

the final NRC analysis. Peak year, construction phase, and cumulative impact magnitudes in the draft and final SEISs were the same (i.e., SMALL to MODERATE). For the operations, aquifer restoration, and decommissioning phases, the draft SEIS impact magnitude of SMALL to MODERATE was reduced to SMALL in the final SEIS. NRC staff recognize that the commenter concurs with the approach to revise the air dispersion modeling and impact analysis in the final SEIS as described in draft SEIS Section 4.7.1. Regarding mitigation measures, Section 6.2 of this final SEIS discusses applicant-proposed air quality mitigation, and SEIS Section 6.3 discusses potential air quality mitigation measures the NRC identified.

No change was made to the SEIS beyond the information provided in this response.

Comments: 075-000004; 127-000036; 127-000041

One commenter stated that the draft SEIS does not use current air emissions information, does not identify the various types of receptors, and does not analyze the impacts on these receptors. Another commenter stated that the proposed project will greatly affect Wind Cave, one of the largest cave systems in the world, which is located at Wind Cave National Park in Fall River County.

Response: *NRC acknowledges that, when the staff issued the draft SEIS, the applicant had committed to update the air emissions information before the final SEIS was prepared (see SEIS Section 4.7.1). The air impact assessment documented in the draft SEIS was based on available information provided by the applicant, as well as independent reviews of data presented in the license application.*

As described in draft SEIS Section 4.7.1, NRC staff characterized air impacts by comparing project-specific air emissions to regulatory thresholds and standards, including NAAQS and PSD thresholds. Primary NAAQS are established to protect public health, and secondary NAAQS are established to protect public welfare by safeguarding against environmental and property damage. A purpose of PSD standards, as described in draft SEIS Section 3.7.2, is to ensure that air quality in attainment areas remains good. By comparing project emissions to regulatory standards that protect people and the environment, NRC staff consider whether the air quality analyses in the SEIS address the impacts to various receptors. Various project-specific receptors are identified throughout the draft SEIS, including those identified in Figures 2.1-3, 2.1-12, and 3.2-1. Portions of draft SEIS Sections 3.7.2, 4.7.1, and 5.7.1 identify and analyze impacts to one specific receptor: Wind Cave National Park. To clarify the connection between the NAAQS and the types of receptors these standards address, text in SEIS Section 3.7.2 was supplemented to specify the purpose of primary and secondary NAAQS.

Comment: 127-000012

The commenter pointed out that, with regard to air impacts, the draft SEIS states the applicant committed to perform additional air dispersion modeling before the final SEIS is prepared. The commenter stated that deferral of data gathering with respect to air is no more justifiable than for water. The commenter stated that further presentation of new data in a final EIS, without disclosing it in a draft and providing for public review and comment, violates NEPA's public disclosure and participation requirements.

individuals. Instead these mitigation measures contribute to the misrepresentation, exploitation, and degradation of tribal cultural beliefs and practices.

Response: *As discussed in draft SEIS Section 1.7.3.5, consultation involving NRC, the applicant, SD SHPO, BLM, and interested Indian tribes is being conducted to determine (i) whether historic properties of significance to Indian tribes are present, and (ii) whether historic properties will be disturbed by site activities. Consultation continues on what mitigation measures should be implemented to protect historic properties. Consultation on programmatic agreement between NRC, SD SHPO, BLM, ACHP, interested Native American tribes, the applicant, and other interested parties is being developed in accordance with 36 CFR 800.14(b)(2). The agreement will outline the mitigation process for affected resources identified at the site pursuant to 36 CFR 800.8(c)(1)(v). In general, the least intrusive mitigation measures are undertaken to protect cultural and historic resources. Native American tribes typically recommend avoidance of areas of religious and cultural significance to tribes and NRC and the applicant are committed to protecting by avoidance wherever possible.*

As described in draft SEIS Section 3.9.2.1, unevaluated archaeological sites identified during field investigations conducted prior to submission of the license application will undergo archaeological testing and mitigation, where appropriate, prior to ground-disturbing activities. Testing includes data recovery and excavation and will be conducted to determine site eligibility for the NRHP. In general, the least intrusive mitigation measures are undertaken to protect cultural and historic resources. Native American tribes typically recommend avoidance of areas of religious and cultural significance to tribes and NRC and the applicant are committed to protecting by avoidance wherever possible.

No additional changes were made to the SEIS in response to this comment.

E5.24.5 References

36 CFR Part 60. *Code of Federal Regulations*, Title 36, *Parks, Forests, and Public Property*, Part 60, Section 4. "Criteria for Evaluation." Washington, DC: U.S. Government Printing Office.

36 CFR Part 800. *Code of Federal Regulations*, Title 36, *Parks, Forests, and Public Property*, Part 800. "Protection of Historic Properties." Washington, DC: U.S. Government Printing Office.

NRC (U.S. Nuclear Regulatory Commission). "Transmittal of Letter to the THPOs for the Proposed Dewey-Burdock Project." ML13039A336. Email to Tribal Historic Preservation Officers. Washington, DC: NRC. 2013.

NRC. "Letter (March 4) Invitations for Formal Consultation Under the Section 106 of the National Historic Preservation Act to Crow Tribe (ML110550535), Ponca Tribe (ML110550372), and Santee Sioux Tribe (ML110550172)." Washington, DC: NRC. 2011.

NRC. "Request for Additional Information Regarding Tribal Historic and Cultural Resources Potentially Affected by the Powertech (USA) Inc. Proposed Dewey-Burdock *In-Situ* Recovery Facility." ML100331999. Washington, DC: NRC. March 19, 2010a.

Comment: 080-000003

The commenter stated that the Oglala Sioux Tribal Council has not been given sufficient time to make a proper environmental impact assessment. The commenter stated that this is a violation of human rights, personal and tribal property, and EPA regulations against South Dakota, Oglala Lakotans, and Americans by disregarding their respective rights to make decisions over their sovereign, personal, and common lands.

Response: *The Oglala Sioux Tribe submitted comments to NRC on the draft SEIS for the proposed Dewey-Burdock ISR Project on January 15, 2013 (Adams Accession No. ML13032A215; comment document number 127 in Tables E3-1 and E3-2). NRC staff reviewed and addressed fully the comments made by Oglala Sioux Tribal Council. Revisions to the SEIS were made to respond to these comments.*

Since December 2009 when the staff first visited the proposed project area to meet with federal, state, tribal, and local agencies (NRC, 2009b), the staff has extended an invitation to the Oglala Sioux Tribe in order to hear the tribe's concerns regarding the proposed project and its potential impacts to religious and cultural properties important to northern plain tribes. Over the last 3 years, the staff consulted with the Oglala Sioux Tribe as well as other northern plain tribes that are either interested in or could be affected by the proposed project. Throughout the consultation process, the staff has discussed and disseminated information concerning the staff's ongoing environmental reviews. For example, in June 2011, the staff held its first face-to-face meeting with all interested tribes, including the Oglala Sioux (see SEIS Section 1.7.3.5). At this meeting, the staff discussed (i) the NRC regulatory process, (ii) the in-situ uranium recovery process, (iii) the area where the proposed project will take place, and (iv) the results of the applicant's archeological survey. The staff also provided an opportunity for the tribes to visit the site so that they can see firsthand where the proposed facility would be built in relation to the Black Hills National Forest (BHNF). Since its first fact-to-face meeting, the staff has had numerous exchanges via letters, email, phone calls, and additional face-to-face meetings with all interested tribes, including the Oglala Sioux. During these exchanges the staff continuously sought information from the tribes that could help the staff with its environmental impact assessment, including impacts to cultural and historic resources that are important to the tribes.

The identification and evaluation of places of religious and cultural significance to Native American tribes within the proposed Dewey-Burdock ISR Project area is being addressed through the NHPA Section 106 consultation process as described in SEIS Sections 1.7.3.5 and 4.9.1. As discussed in SEIS Section 1.7.3.5, consultation involving NRC, the applicant, SD SHPO, BLM, and interested Indian tribes is being conducted to determine (i) whether cultural and historic resources of properties of religious and cultural significance significant properties are present, (ii) whether the proposed site activities will have a significant impact on these resources, and (iii) what mitigation measures can be implemented to avoid, minimize, or mitigate adverse impacts. Currently the parties are discussing development of a programmatic agreement in accordance with 36 CFR 800.14(b)(2). The agreement will outline the mitigation process for affected resources identified at the site pursuant to 36 CFR 800.8(c)(1)(v)..

Text was added to SEIS Section 1.7.3.5 to document NHPA Section 106 consultation activities since the draft SEIS was issued in November, 2012.

U.S. NUCLEAR REGULATORY COMMISSION
RECORD OF DECISION
FOR THE DEWEY-BURDOCK URANIUM IN-SITU RECOVERY PROJECT
IN CUSTER AND FALL RIVER COUNTIES, SOUTH DAKOTA

Introduction:

The U.S. Nuclear Regulatory Commission (NRC) staff prepared this record of decision (ROD) for the proposed Dewey-Burdock Uranium In-Situ Recovery (ISR) Project in Custer and Fall River Counties, South Dakota. This ROD satisfies Section 51.102(a) of Title 10 of the *Code of Federal Regulations* (10 CFR), which states that "a Commission decision on any action for which a final environmental impact statement has been prepared shall be accompanied by or include a concise public record of decision."

In January 2014, the NRC staff issued a Final Supplemental Environmental Impact Statement (Final SEIS) (NRC, 2014a-b) in support of the NRC's review of the Powertech (USA) Inc. (Powertech or "applicant") license application. Powertech's application, which it submitted in 2009 and later amended, is for a new source materials license for the Dewey-Burdock ISR Project (Powertech, 2009a-c). The Dewey-Burdock Final SEIS is Supplement 4 to the NRC staff's *Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities* (NUREG-1910) (known as the GEIS) (NRC, 2009).

This ROD has been prepared pursuant to NRC regulations at 10 CFR § 51.102(b) and § 51.103(a)(1)-(4). Additionally, pursuant to 10 CFR § 51.103(c), this ROD incorporates by reference materials contained in the Final SEIS.

On January 5, 2010, the NRC staff notified the public of Powertech's application for a materials license. The NRC staff also informed members of the public that they could request a hearing in connection with Powertech's application. *Notice of Opportunity for Hearing, License Application Request of Powertech (USA) Inc. Dewey-Burdock In Situ Uranium Recovery Facility in Fall River and Custer Counties, SD*, 75 Fed. Reg. 467. The NRC's Atomic Safety and Licensing Board Panel (ASLBP), an independent, trial-level adjudicatory body, granted hearing requests from the Oglala Sioux Tribe and a group that is now referred to as the Consolidated Intervenors (ASLBP, 2010). The ASLBP has scheduled an oral hearing for August 2014, and the hearing may involve environmental issues. This ROD may be revised in accordance with any ASLBP decision on those issues.

The Decision:

This ROD documents the NRC staff's decision to issue a materials license to Powertech for its proposed Dewey-Burdock ISR Project in Custer and Fall River Counties, South Dakota (Materials License SUA-1600; NRC, 2014c). The license will authorize Powertech to possess uranium source and byproduct materials at the Dewey-Burdock facility. Under its license, Powertech will be able to construct and operate its facilities as proposed in its license application and under the conditions in its NRC license.

The proposed Dewey-Burdock ISR Project will be located approximately 21 kilometers (13 miles) north-northwest of Edgemont, South Dakota, in southern Custer and northern Fall River Counties. The proposed facility will encompass approximately 4,282 hectares (10,580 acres), which consists of two contiguous mining units, the Burdock Unit and the Dewey Unit. Powertech intends to recover uranium and produce yellowcake at the Dewey-Burdock site. Powertech's proposed activities include construction, operation, aquifer restoration, and decommissioning of its ISR facility. In addition, Powertech has proposed that liquid wastewater

generated during uranium recovery be disposed of through one of the following methods: (i) deep well disposal via Class V injection wells, (ii) land application, or (iii) a combination of deep well disposal and land application. Together, these actions represent the "proposed action" evaluated in the Final SEIS.

During the ISR process, an oxidant-charged solution, called a lixiviant, will be injected into the production zone aquifer (uranium orebody) through injection wells. The lixiviant will be composed of native groundwater (from the production zone aquifer) and a combination of carbon dioxide and gaseous oxygen. As the lixiviant circulates through the production zone, it will oxidize and dissolve the mineralized uranium, which is present in a reduced chemical state. The resulting uranium-rich solution will be drawn to recovery wells by pumping and then transferred to a processing facility via a network of underground pipelines. At the processing facility, the uranium will be removed from solution via ion exchange. The resulting barren solution will then be recharged with the oxidant and reinjected to recover more uranium.

Alternatives Considered in Reaching the Decision:
The NRC staff analyzed a number of alternatives in detail before deciding to issue Powertech a license. These alternatives included the proposed action in the license application (including the three alternative wastewater disposal options) and the no-action alternative. Under the no-action alternative, the NRC staff would not approve Powertech's license application and, as a result, Powertech would not construct or operate the proposed Dewey-Burdock ISR Project. The no-action alternative served as a baseline for comparing the potential environmental impacts of the proposed action. In Volume 1 of the Final SEIS (NRC, 2014a), the NRC staff describes both the proposed action and the no-action alternative (Section 2.1) and compares their potential environmental impacts (Section 2.3).

The NRC staff considered several other alternatives when evaluating the proposed action. The staff eliminated these alternatives from detailed analysis, however, for reasons discussed in Volume 1, Section 2.2, of the Final SEIS (NRC, 2014a). These alternatives included conventional uranium mining techniques and associated uranium milling alternatives (conventional milling and heap leaching) for the proposed project site, the use of alternative lixiviants (acid- or ammonia-based lixiviants), alternative project sites, and alternative well completion methods at the proposed project site.

In addition, the NRC staff considered alternative methods for disposing of liquid waste. The staff discusses these alternatives in Volume 1, Section 2.1.1.2, of the Final SEIS (NRC, 2014a). Specifically, the NRC staff considered what would occur if the U.S. Environmental Protection Agency does not grant Powertech an underground injection control (UIC) permit for Class V injection wells. The staff determined that Powertech would in that case need to rely solely on land application for liquid wastewater disposal or seek an NRC license amendment approving another disposal option. Thus, in Final SEIS Section 2.1.1.2 the staff evaluates the use of evaporation ponds and surface water discharge, which have historically been used by ISR facilities to manage and dispose of liquid wastes. The staff also compares characteristics of these two methods with those of Class V well injection and land application. Further, in Section 4.14.1.4 of the Final SEIS (NRC, 2014a), the staff evaluates the potential environmental impacts of using evaporation ponds and surface water discharge.

The alternatives identified above were included in the range of alternatives analyzed in the Final SEIS.

Preferences Among Alternatives Based on Relevant Factors:
In Volume 1, Chapters 4 and 5, of the Final SEIS (NRC, 2014a), the NRC staff assessed the potential environmental impacts from the construction, operation, aquifer restoration, and decommissioning of the proposed Dewey-Burdock ISR Project. The staff also assessed the potential impacts of three alternative wastewater disposal options and the no-action alternative. The NRC staff assessed the impacts of these alternatives on land use, transportation, geology and soils, water resources, ecological resources, air quality, noise, historical and cultural resources, visual and scenic resources, socioeconomics, environmental justice, public and occupational health and safety, and waste management. The staff compared the potential environmental impacts of the proposed action and the no-action alternative in Volume 1, Section 2.3, of the Final SEIS (NRC, 2014a). Additionally, in Volume 2, Chapter 8, of the Final SEIS (NRC, 2014b), the staff analyzed the benefits and costs of the proposed action and no-action alternative. In preparing the Final SEIS, the NRC staff also considered, evaluated, and addressed the public comments received on the Draft SEIS published on November 26, 2012 (77 Fed. Reg. 70,486).

After weighing the impacts of the proposed action and comparing the alternatives, the NRC staff determined that the proposed action is the preferred alternative and that the NRC should issue a source materials license for the proposed action. The NRC staff based its decision on: (i) the license application (including the applicant's environmental report) (Powertech, 2009a-c); (ii) the applicant's responses to NRC staff requests for additional information (Powertech, 2010a-c; 2011; 2012a-c; 2013); (iii) the NRC staff's consultations with Federal, State, and local agencies and with Native American Tribes; (iv) independent NRC staff review; (v) NRC staff consideration of comments received on the Draft SEIS (see Appendix E in Volume 2 of the Final SEIS (NRC, 2014b)); and (vi) the assessments in the NRC staff's Final SEIS (NRC, 2014a-b) and Safety Evaluation Report (NRC, 2014d) for the Dewey-Burdock ISR Project and in the GEIS (NRC, 2009).

Measures to Avoid or Minimize Environmental Harm from the Alternative Selected:
As described below, the NRC has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected. In its license application (Powertech, 2009a-c) and in response to NRC staff requests for additional information (Powertech, 2010a–c; 2011; 2012a-c), the applicant identified mitigation measures to control and minimize potential adverse environmental impacts from construction, operation, aquifer restoration, and decommissioning of the Dewey-Burdock ISR Project. The applicant also identified environmental measures and monitoring programs to verify compliance with standards for the protection of worker health and safety in operational areas and for protection of the public and environment beyond the facility boundary. As discussed below, the applicant's mitigation measures and monitoring programs are included by the NRC staff as conditions in the materials license.

The mitigation measures identified by the applicant are listed for each resource area in Volume 2, Table 6.2-1, Section 6.2, of the Final SEIS (NRC, 2014b). Because many of the applicant's proposed mitigation measures apply to all four phases of the ISR process, they are listed together in the table. The applicant's environmental measures and monitoring programs for the Dewey-Burdock ISR Project are described in detail in Volume 2, Chapter 7, of the Final SEIS (NRC, 2014b), organized as follows: Radiological Monitoring (Section 7.2), Physicochemical Monitoring (Section 7.3), Ecological Monitoring (Section 7.4), Land Application Monitoring (Section 7.5), and Class V Deep Injection Well Monitoring (Section 7.6). These monitoring programs will provide data on operational and environmental conditions so that prompt corrective actions can be implemented when adverse conditions are detected. In this regard,

these programs will help to limit potential environmental impacts at the Dewey-Burdock ISR Facility and the surrounding areas.

Administrative Condition 9.2 of Materials License SUA-1600 (NRC, 2014c) requires Powertech to conduct operations in accordance with the commitments, representations, and statements contained in its license application and supplementary submittals. License Condition 9.2 incorporates by reference Powertech's approved application and the supplements to its application. Powertech's commitments, representations, and statements include the mitigation measures and monitoring programs described above. Additional license conditions relevant to mitigation and monitoring include: mitigation of potential impacts to cultural resources (Administrative Condition 9.8); documentation in association with monitoring programs (Administrative Condition 9.10); and implementation of a preoperational and operational sampling plan if land application is utilized (Operations, Controls, Limits, and Restrictions – Standard Condition 10.12).

References:

75 Fed. Reg. 467. *Federal Register*, Vol. 75, No. 2, p. 467–471. "Notice of Opportunity for Hearing, License Application Request of Powertech (USA) Inc. Dewey-Burdock In Situ Uranium Recovery Facility in Fall River and Custer Counties, SD, and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information (SUNSI) for Contention Preparation." January 5, 2010.

77 Fed. Reg. 70,486. *Federal Register*, Vol. 77, No. 227, p. 70486-70487. "Supplemental Environmental Impact Statement for Proposed Dewey-Burdock In-Situ Uranium Recovery Project in Custer and Fall River Counties, SD." November 26, 2012.

ASLBP (Atomic Safety and Licensing Board). "Memorandum and Order (Ruling on Petitions to Intervene and Requests for Hearing)." In the Matter of Powertech (USA), Inc. (Dewey-Burdock In Situ Uranium Recovery Facility) Docket No. 40-9075-MLA. ASLBP No. 10-898-02-MLA BD01. ADAMS Accession No. ML102170300. Washington, DC: U.S. Nuclear Regulatory Commission, ASLBP. August 5, 2010.

NRC (U.S. Nuclear Regulatory Commission). NUREG-1910, "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota." Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Final Report. Supplement 4, Volume 1. ADAMS Accession No. ML14024A477. Washington, DC: NRC, Office of Federal and State Materials and Environmental Management Programs. January 2014a.

NRC. NUREG-1910, "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota." Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Final Report. Supplement 4, Volume 2. ADAMS Accession No. ML14024A478. Washington, DC: NRC, Office of Federal and State Materials and Environmental Management Programs. January 2014b.

NRC. "Materials License SUA-1600, Dewey-Burdock Project in Fall River and Custer Counties, South Dakota." ADAMS Accession No. ML14043A392. Washington, DC: NRC, Office of Federal and State Materials and Environmental Management Programs. 2014c.

NRC. Safety Evaluation Report (Revised) for the Dewey-Burdock Project, Fall River and Custer Counties, South Dakota." Materials License No. SUA-1600. ADAMS Accession No. ML14043A347. Washington, DC: NRC, Office of Federal and State Materials and Environmental Management Programs. March 2014d.

NRC. NUREG–1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities." ADAMS Accession Nos. ML091480244 (Volume 1) and ML091480188 (Volume 2). Washington, DC: NRC. May 2009.

Powertech (Powertech (USA) Inc.). "Final Air Modelling Report and Protocol (3 of 3)." Email (July 11) from J. Mays to R. Burrows, NRC, Office of Administration. ADAMS Accession No. ML13196A118. Greenwood Village, Colorado: Powertech 2013.

Powertech. "Re: Powertech (USA) Inc.'s Supplemental Sampling Plan and Responses to Comments Regarding Draft License SUA-1600, Dewey-Burdock Project, Docket No. 40-9075, TAC No. J00606." Letter from R. Blubaugh, Vice President—Environmental, Health and Safety Resources, Powertech to R. Burrows, NRC. ADAMS Accession no. ML12305A056. October 19, 2012a.

Powertech. "Dewey-Burdock Project Groundwater Discharge Plan, Custer and Fall River Counties, South Dakota." ADAMS Accession Nos. ML12195A039 and ML12195A040. Edgemont, South Dakota: Powertech. March 2012b.

Powertech. "Dewey-Burdock Project Emissions Inventory Revisions." Email (July 31) from R. Blubaugh to Bradley Werling, Southwest Research Institute®. ADAMS Accession No. ML12216A220. South Dakota: Powertech. 2012c.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License, Fall River and Custer Counties, South Dakota, Technical Report RAI Responses, June, 2011." ADAMS Accession No. ML112071064. Greenwood Village, Colorado: Powertech. 2011.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota ER_RAI Response August 11, 2010." ADAMS Accession No. ML102380516. Greenwood Village, Colorado: Powertech. 2010a.

Powertech. "Subject: Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal and Email Requests for Clarification of Selected Issues Related to the Dewey-Burdock Uranium Project Environmental Review Docket No. 40-9075; TAC No. J 00533." Letter (November 4) from R. Blubaugh, Vice President-Environmental Health and Safety Resources to R. Burrows, Project Manager, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission. ADAMS Accession No. ML110820582. Greenwood Village, Colorado: Powertech. 2010b.

Powertech. "Subject: Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal Request for Clarification of Response Regarding Inclusion of Emissions from Drilling Disposal Wells; Dewey-Burdock Uranium Project Environmental Review Docket No. 40-9075; TAC No. J 00533." Letter (November 17) from R. Blubaugh, Vice President-Environmental Health and Safety Resources to R. Burrows, Project Manager, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission. ADAMS Accession No. ML103220208. Greenwood Village, Colorado: Powertech. 2010c.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License, Fall River and Custer Counties, South Dakota—Environmental Report." Docket No. 040-09075. ADAMS Accession No. ML092870160. Greenwood Village, Colorado: Powertech. August 2009a.

Powertech. "Dewey-Burdock Project, Application for NRC Uranium Recovery License, Fall River and Custer Counties, South Dakota—Technical Report." Docket No. 040-09075. ADAMS Accession No. ML092870160. Greenwood Village, Colorado: Powertech. August 2009b.

Powertech. "Dewey-Burdock Project, Supplement to Application for NRC Uranium Recovery License Dated February 2009." Docket No. 040-09075. ADAMS Accession No. ML092870160. Greenwood Village, Colorado: Powertech. August 2009c.

Docket No.: 04009075
License No.: SUA-1600

FOR THE NUCLEAR REGULATORY COMMISSION

Date: **4/8/14**

/RA/
Andrew Persinko, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

NRC FORM 374

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and the applicable parts of Title 10, Code of Federal Regulations, Chapter I, Parts 19, 20, 30, 31, 32, 33, 34, 35, 36, 39, 40, 70, and 71, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Powertech (USA) Inc. 2. 5575 DTC Parkway, Suite 140 Greenwood Village, CO 80111	3. License Number SUA-1600 4. Expiration Date April 8, 2024 5. Docket No. 40-09075 Reference No.

6. Byproduct Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum amount that Licensee May Possess at Any One Time Under This License
a. Natural Uranium b. Byproduct material as defined in 10 CFR 40.4	Any Unspecified	a. Unlimited b. Quantity generated under operation authorized by this license

SECTION 9: Administrative Conditions

9.1 The authorized place of use shall be the licensee's Dewey-Burdock Project in Fall River and Custer Counties, South Dakota. The licensee shall conduct operations within the license boundaries shown in Figure 1.4-1 of the approved license application.

9.2 The licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the license application dated February 28, 2009 (Accession No. ML091200014), which is supplemented by the submittals dated August 10, 2009 (Accession No. ML092870160); June 28, 2011 (Accession No. ML112071064); February 27, 2012 (Accession No. ML120620195); April 11, 2012 (Accession No. ML121030013); June 13, 2012 (Accession No. ML12173A038); June 27, 2012 (Accession No. ML12179A534); and October 19, 2012 (Accession No. ML12305A056). The approved application and supplements are, hereby, incorporated by reference, except where superseded by specific conditions in this license. The licensee must maintain at least one copy of its complete, updated, and approved license application at the licensed facility. Unless otherwise specified, all references to the "license application" refer to the current, updated application including updates made per License Condition (LC) 9.4.

Whenever the words "will" or "shall" are used in the above referenced documents, it shall denote a requirement. The use of "verification" in this license with respect to a document submitted for NRC staff review means a written acknowledgement by U.S. Nuclear Regulatory Commission (NRC) staff that the specified submitted material is consistent with commitments in the approved license application, or requirements in a license condition or regulation. A verification will not require a license amendment.

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9.3 All written notices and reports sent to the U.S. Nuclear Regulatory Commission (NRC) as required under this license and by regulation shall be addressed as follows: ATTN: Document Control Desk, Director, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. An additional copy shall be submitted to: Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate, Division of Waste Management and Environmental Protection, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Two White Flint North, 11545 Rockville Pike, Mail Stop T-8F5, Rockville, MD 20852-2738. Incidents and events that require telephone notification shall be made to the NRC Operations Center at (301) 816-5100 (collect calls accepted).

9.4 Change, Test, and Experiment License Condition

A) The licensee may, without obtaining a license amendment pursuant to 10 CFR 40.44, and subject to conditions specified in (B) of this condition:

i Make changes to the facility as described in the license application;

ii Make changes to the procedures as described in the license application; and

iii Conduct tests or experiments not described in the license application.

B) The licensee shall obtain a license amendment pursuant to 10 CFR 40.44 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:

i Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the license application;

ii Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a facility structure, equipment, or monitoring system (SEMS) important to safety previously evaluated in the license application;

iii Result in more than a minimal increase in the consequences of an accident previously evaluated in the license application;

iv Result in more than a minimal increase in the consequences of a malfunction of an SEMS previously evaluated in the license application;

v Create a possibility for an accident of a different type than any previously evaluated in the license application;

vi Create a possibility for a malfunction of an SEMS with a different result than previously evaluated in the license application;

vii Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER), environmental impact statement (EIS), environmental assessment (EA) or technical evaluation reports (TERs) or other analysis and evaluations for license amendments.

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viii For purposes of this paragraph as applied to this license, SEMS means any SEMS that has been referenced in a staff SER, TER, EA, or EIS and supplements and amendments thereof.

C) Additionally, the licensee must obtain a license amendment unless the change, test, or experiment is consistent with the NRC staff's previous conclusions, or the basis of or analysis leading to those conclusions, regarding actions, designs, or design configurations analyzed and selected in the site or facility SER, TER, and EIS or EA. This includes all supplements and amendments to the license, as well as all SERs, TERs, EAs, and EISs associated with amendments to this license.

D) The licensee's determinations concerning (B) and (C) of this condition shall be made by a Safety and Environmental Review Panel (SERP). The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management (e.g., a Plant Manager) and shall be responsible for financial approval for changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP, as appropriate, to address technical aspects such as groundwater or surface water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.

E) The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations made by the SERP that provide the basis for determining changes are in compliance with (B) of this condition. The licensee shall furnish, in an annual report to the NRC, a description of such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the NRC changed pages, which shall include both a change indicator for the area changed (e.g., a bold line vertically drawn in the margin adjacent to the portion actually changed) and a page change identification (date of change, change number, or both) for the operations plan and reclamation plan of the approved license application that reflects changes made under this condition.

9.5 Financial Assurance. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR Part 40, Appendix A, Criterion 9, to adequately cover the estimated costs of decommissioning and decontamination, if accomplished by a third party. This surety arrangement shall cover offsite disposal of radioactive solid process or evaporation pond residues, and groundwater restoration pursuant to 10 CFR Part 40, Appendix A Criterion 5B (5). The surety shall also include the costs associated with all soil and water sampling analyses necessary to confirm the accomplishment of decontamination.

Proposed annual updates to the financial assurance amount, consistent with 10 CFR Part 40, Appendix A, Criterion 9, shall be provided to the NRC 90 days prior to the anniversary date. The financial assurance anniversary date for the Dewey-Burdock Project will be the date on which the first surety instrument is approved by the NRC. If the NRC has not approved a proposed revision

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30 days prior to the expiration date of the existing financial assurance arrangement, the licensee shall extend the existing arrangement, prior to expiration, for 1 year. Along with each proposed revision or annual update of the financial assurance estimate, the licensee shall submit supporting documentation, showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15-percent contingency of the financial assurance estimate, changes in engineering plans, activities performed, and any other conditions affecting the estimated costs for site closure.

Within 90 days of NRC approval of a revised closure (decommissioning) plan and its cost estimate, the licensee shall submit, for NRC review and approval, a proposed revision to the financial assurance arrangement if estimated costs exceed the amount covered in the existing arrangement. The revised financial assurance instrument shall then be in effect within 30 days of written NRC approval of the documents.

At least 90 days prior to beginning construction associated with any planned expansion or operational change that was not included in the annual financial assurance update, the licensee shall provide, for NRC review and approval, an updated estimate to cover the expansion or change. The licensee shall also provide the NRC with copies of financial-assurance-related correspondence submitted to the U.S. Environmental Protection Agency, a copy of the U.S. Environmental Protection Agency's financial assurance review, and the final approved financial assurance arrangement. The licensee also must ensure that the financial assurance instrument, where authorized to be held by a State or other Federal agency, identifies the NRC-related portion of the instrument and covers the activities discussed earlier in this license condition. The basis for the cost estimate is the NRC-approved site decommissioning and reclamation plan and any NRC approved revisions to the plan. Reclamation and decommissioning cost estimates and annual updates should follow the outline in Appendix C, "Recommended Outline for Site-Specific In Situ Leach Facility Reclamation and Stabilization Cost Estimates," to NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications—Final Report."

The licensee shall continuously maintain an approved surety instrument for the Dewey-Burdock Project, in favor of the NRC except for plugging and abandoning of all Class III and Class V injection wells, which will be maintained in favor of the U.S. Environmental Protection Agency. The initial surety estimate shall be submitted for NRC staff review and approval within 90 days of license issuance, and the surety instrument shall be submitted for NRC staff review and approval 90 days prior to commencing operations. The initial surety estimate shall include a reasonable estimate for the duration of groundwater restoration based on current experiences at licensed ISR facilities. The licensee shall also calculate pore volumes based on the actual screen lengths of injection and production wells and not by ore zone thickness.

9.6 Release of surficially contaminated equipment, materials, or packages for unrestricted use shall be in accordance with the NRC guidance document "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," (the Guidelines) dated April 1993 (ADAMS Accession No. ML003745526) or suitable alternative procedures approved by NRC prior to any such release.

Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides shall apply independently.

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Personnel performing contamination surveys for items released for unrestricted use shall meet the qualifications for health physics technicians or radiation safety officers defined in Regulatory Guide 8.31 (as revised). Personal effects (e.g., notebooks and flash lights) which are hand carried need not be subjected to the qualified individual survey or evaluation, but these items should be subjected to the same survey requirements as the individual possessing the items.

Regulatory Guide 8.30 (as revised), Table 2, shall apply to the removal to unrestricted areas of equipment, materials, or packages that have the potential for accessible surface contamination levels above background. The licensee shall submit to the NRC for review and written verification a contamination control program. The program shall provide sufficient detail to demonstrate how the licensee will maintain radiological controls over the equipment, materials, or packages that have the potential for accessible surface contamination levels above background, until they have been released for unrestricted use as specified in the Guidelines, and what methods will be used to limit the spread of contamination to unrestricted areas. The contamination control program shall demonstrate how the licensee will limit the spread of contamination when moving or transporting potentially contaminated equipment, materials, or packages (pumps, valves, piping, filters, etc.) from restricted or controlled areas through uncontrolled areas. The licensee shall receive written verification of the licensee's contamination control program from the NRC prior to implementing such a program in lieu of the recommendations in RG 8.30.

The licensee may identify a qualified designee(s) to perform surveys, associated with the licensee's contamination control program when moving or transporting potentially contaminated equipment, materials, or packages from restricted or controlled areas through uncontrolled areas and back into controlled or restricted areas. The qualified designee(s) shall have education, training, and experience, in addition to general radiation worker training, as specified by the licensee. The education, training, and experience required by the licensee for qualified designees shall be submitted to the NRC for review and written verification. The licensee shall receive written verification of its qualified designee(s) training program from the NRC prior to its implementation.

9.7 The licensee shall follow the guidance set forth in the current versions of NRC Regulatory Guides 8.22, "Bioassay at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As Is Reasonably Achievable (ALARA)" or NRC-approved equivalent measures.

9.8 Cultural Resources. Before engaging in any developmental activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory if such survey has not been previously conducted and submitted to the NRC. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations (36 CFR Part 800), as well as the Archaeological Resources Protection Act (as amended) and its implementing regulations (43 CFR Part 7).

In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 CFR Part 800, and no disturbance of the area shall occur until the licensee has received authorization from the NRC, the South Dakota State Historic Preservation Officer, and the Bureau of Land Management (if on Bureau of Land Management Land) to proceed.

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The licensee shall comply with the terms and conditions included in a Programmatic Agreement (PA) executed on April 7, 2014 (ADAMS Accession No. ML14066A344) that was developed to protect cultural resources within the Dewey-Burdock project boundary. If the PA is terminated, the licensee shall comply with Stipulation 16(c) of the PA. Therefore, in the event the PA is terminated, Powertech is required to follow the terms and conditions provided in the PA for on-going ground-disturbing activities, and is not permitted to begin ground-disturbing activities in unevaluated areas, until the NRC completes consultation and a new PA is executed, or the NRC has requested, taken into account, and responded to the comments of the ACHP under 36 CFR § 800.7(c)(4).

9.9 The licensee shall dispose of solid byproduct material from the Dewey-Burdock Project at a site that is licensed by the NRC or an NRC Agreement State to receive byproduct material. The licensee's approved solid byproduct material disposal agreement must be maintained on site. In the event that the agreement expires or is terminated, the licensee shall notify the NRC within seven working days after the date of expiration or termination. A new agreement shall be submitted for NRC staff review and written verification within 90 days after expiration or termination, or the licensee will be prohibited from further lixiviant injection.

9.10 The results of the following activities, operations, or actions shall be documented: sampling; analyses; surveys or monitoring; survey/ monitoring equipment calibrations; reports on audits and inspections; all meetings and training courses; and any subsequent reviews, investigations, or corrective actions required by NRC regulation or this license. Unless otherwise specified in a license condition or applicable NRC regulation, all documentation required by this license shall be maintained at the site until license termination, and is subject to NRC review and inspection.

9.11 The licensee is hereby exempted from the requirements of 10 CFR 20.1902(e) for areas within the facility, provided that all entrances to the facility are conspicuously posted with the words, "CAUTION: ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL."

SECTION 10: **Operations, Controls, Limits, and Restrictions**

Standard Conditions

10.1 The licensee shall use a lixiviant composed of native groundwater and a combination of carbon dioxide and gaseous oxygen, as specified in the approved license application.

10.2 Facility Throughput. The Dewey-Burdock Project throughput shall not exceed an average annual flow rate of 4,000 gallons per minute, excluding restoration flow. The annual production of yellowcake shall not exceed 1 million pounds.

10.3 At least 12 months prior to initiation of any planned final site decommissioning, reclamation, or groundwater restoration, the licensee shall submit a detailed decommissioning plan for NRC staff review and approval. The plan shall represent as-built conditions at the Dewey-Burdock Project.

10.4 The licensee shall have written standard operating procedures (SOPs) prior to operations for:

A) All routine operational activities involving radioactive and nonradioactive materials associated with licensed activities that are handled, processed, stored, or transported by employees;

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B) All routine nonoperational activities involving radioactive materials, including in-plant radiation protection, quality assurance for the respirator program, and environmental monitoring; and

C) Emergency procedures for potential accidents/unusual occurrences, including significant equipment or facility damage, pipe breaks and spills, loss or theft of yellowcake or sealed sources, significant fires, and other natural disasters.

The SOPs shall include appropriate radiation safety practices to be followed in accordance with 10 CFR Part 20. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. Current copies of the SOPs shall be kept in the area(s) of the production facility where they are utilized. These SOPs are subject to inspection, including the preoperational inspection specified in LC 12.3.

10.5 Mechanical Integrity Tests (MITs). The licensee shall construct all wells in accordance with methods described in Sections 3.1.2.2 and 3.1.2.3 of the approved license application. The licensee shall perform well MITs on each injection and production well before the wells are utilized and on wells that have been serviced with down hole drilling or reaming equipment or procedures that could damage the well casing. Additionally, the licensee shall retest each well at least once every 5 years. The licensee shall perform MITs in accordance with Section 3.1.2.4 of the licensee's approved license application. Any failed well casing that cannot be repaired to pass the MIT shall be appropriately plugged and abandoned in accordance with Section 6.1.8 of the approved license application.

10.6 Groundwater Restoration. The licensee shall conduct groundwater restoration activities in accordance with Section 6.1 of the approved license application. Permanent cessation of lixiviant injection in a production area would signify the licensee's intent to shift from the principal activity of uranium recovery to the initiation of groundwater restoration and decommissioning for any particular production area. If the licensee determines that these activities are expected to exceed 24 months for any particular production area, the licensee shall submit an alternate schedule request that meets the requirements of 10 CFR 40.42.

Restoration Standards. Hazardous constituents in the groundwater shall be restored to the numerical groundwater protection standards required by 10 CFR Part 40, Appendix A, Criterion 5B(5). In submitting any license amendment application requesting review and approval of proposed alternate concentration limits (ACLs) pursuant to Criterion 5B(6), the licensee must show that it has first made practicable effort to restore the specified hazardous constituents to the background or maximum contaminant levels (whichever is greater).

Restoration Stability Monitoring. The licensee shall conduct sampling of all constituents of concern on a quarterly basis during restoration stability monitoring. The sampling shall include the specified production zone aquifer wells. The applicant shall continue the stability monitoring until the data show that the most recent four consecutive quarters indicate no statistically significant increasing trend for all constituents of concern that would lead to an exceedance above the respective standard in 10 CFR Part 40, Appendix A, Criterion 5B(5).

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Notwithstanding the LC 9.4 change process, the licensee shall not implement any changes to groundwater restoration or post-restoration monitoring plans without written NRC verification that the criteria in LC 9.4 do not require a license amendment. The licensee shall submit all changes to groundwater restoration or post-restoration monitoring plans to the NRC staff, for review and written verification, at least 60 days prior to commencement of groundwater restoration in a production area.

10.7 The licensee shall maintain a net inward hydraulic gradient at a wellfield as measured from the surrounding perimeter monitoring well ring starting when lixiviant is first injected into the production zone and continuing until initiation of the stabilization period.

10.8 The licensee is permitted to construct and operate storage and treatment ponds, as described in Section 4.2 of the approved license application. Routine pond inspections will be conducted consistent with inspection procedures described in Regulatory Guide 3.11.

10.9 The licensee shall establish and conduct an effluent and environmental monitoring program in accordance with those programs described in Section 5.7.8 and Section 5.7.7 of the approved license application.

Facility Specific Conditions

10.10 Hydrologic Test Packages.

A) Prior to principal activities in a new wellfield, the licensee shall submit a hydrologic test package to the NRC at least 60 days prior to the planned start date of lixiviant injection. The hydrologic test package for B-WF-1 or D-WF-1, whichever is developed first, will be submitted for review and written verification while the remaining hydrologic test packages will be submitted for NRC staff review except as described in paragraph B of this License Condition. In each hydrologic test data package, the licensee will document that all perimeter monitoring wells are screened in the appropriate horizon in order to provide timely detection of an excursion. Contents of a wellfield package shall include:

- A description of the proposed wellfield (location, extent, etc.).
- Map(s) showing the proposed production and injection well patterns and locations of all monitor wells.
- Geologic cross sections and cross section location maps.
- Isopach maps of the production zone sand and overlying and underlying confining units.
- Discussion of aquifer test procedures, including well completion reports.
- Discussion of the results and conclusions of aquifer tests, including raw data, drawdown match curves, potentiometric surface maps, water level graphs, drawdown maps and, when appropriate, directional transmissivity data and graphs.
- Sufficient information to show that wells in the monitor well ring are in adequate communication with the production patterns.
- All raw analytical data for Commission-approved background water quality.
- Summary tables of analytical data showing computed Commission-approved background water quality.
- Descriptions of statistical methods for computing Commission-approved background water quality.

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- Any other information pertinent to the proposed wellfield area tested will be included and discussed.

B) The licensee will submit, for NRC review and approval, hydrologic test packages for wellfields BWF-6, -7, and -8. No extraction will be permitted in these wellfields until the staff approves the hydrologic package. Hydrologic packages shall include all the information in paragraph A of this license condition and aquifer test results that address the partially unsaturated conditions of the Chilson Aquifer in these wellfields. These hydrologic packages will also contain a justification for well spacings in the monitoring well ring and overlying and underlying aquifers.

10.11 The licensee is prohibited from using the “glue and screw” method of joining well casings to construct any monitoring, injection, or production well.

10.12 If land application is utilized, the licensee will implement a pre operational and operational sampling plan, as discussed in Section 6.0 of the licensee’s Groundwater Discharge Plan submitted to and per the conditions in its Groundwater Discharge Plan permit issued by the South Dakota Department of Environment and Natural Resources, until principal activities at the land application areas cease.

10.13 The licensee shall conduct radiological characterization of airborne samples for natural U, Th-230, Ra-226, Po-210, and Pb-210 for each restricted area air particulate sampling location at a frequency of once every 6 months for the first 2 years following issuance of the initial license, and annually thereafter to ensure compliance with 10 CFR 20.1204(g). The licensee shall also evaluate changes to plant operations to determine if more frequent radionuclide analyses are required for compliance with 10 CFR 20.1204(g).

10.14 The licensee shall ensure radiation safety training is consistent with the current versions of Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," Regulatory Guide 8.29, “Instruction Concerning Risks from Occupational Radiation Exposure," and Section 2.5 of Regulatory Guide 8.31, or NRC-approved equivalent guidance.

SECTION 11: Monitoring, Recording, and Bookkeeping Requirements

Standard Conditions

11.1 In addition to reports required to be submitted to NRC or maintained on-site by Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the facility:

A) Quarterly reports that include a summary of excursion parameter concentrations, wells placed on or removed from excursion status, corrective actions taken, and the results obtained for all wells that were on excursion status during that quarter. These reports shall be submitted to NRC within 60 days following completion of the reporting period.

B) Semiannual reports that discuss the status of wellfields in operation (including last date of lixiviant injection), progress of wellfields in restoration and restoration progress, status of any long-term excursions, and a summary of MITs during the reporting period. These reports shall be submitted to NRC within 60 days following completion of the reporting period.

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C) Quarterly reports summarizing daily flow rates for each injection and production well and injection manifold pressures on the entire system. These reports shall be made available for inspection upon request.

D) Consistent with Regulatory Position 2 of Regulatory Guide 4.14, semiannual reports that summarize the results of the operational effluent and environmental monitoring program. The licensee shall submit these reports consistent with the terms of Regulatory Guide 4.14.

11.2 The licensee shall submit to the NRC the results of its annual review of its radiation protection program content and implementation performed in accordance with 10 CFR 20.1101(c). These results shall include an analysis of dose to individual members of the public consistent with 10 CFR 20.1301 and 10 CFR 20.1302.

11.3 Establishment of Commission-Approved Background Water Quality. Prior to injection of lixiviant in each production wellfield, as defined by the licensee, the licensee shall establish Commission-approved background groundwater quality data for the ore zone, overlying aquifers, underlying aquifers, alluvial aquifers (where present), and the perimeter monitoring areas. Commission-approved background sampling will be performed in accordance with Section 5.7.8 of the approved license application, and samples shall be analyzed for the parameters listed in Table 6.1-1 of the approved application. The licensee shall submit any revisions to its Commission-approved background water quality sampling plan to the NRC staff for review and approval.

11.4 Establishment of UCLs. Prior to injection of lixiviant into each production wellfield, as defined by the licensee, the licensee shall establish excursion parameters and their respective upper control limits (UCLs) in the designated overlying aquifer(s), underlying aquifer, and perimeter monitoring areas in accordance with Section 5.7.8 of the approved license application. Unless otherwise determined, the site-specific excursion parameters are chloride, conductivity, and total alkalinity. The UCLs shall be established for each excursion control parameter and for each well based on the mean plus five standard deviations of the data collected for LC 11.3. The UCL for chloride can be set at the sum of the background mean concentration and either (a) five standard deviations or (b) 15 mg/L, whichever sum provides the higher limit. The licensee shall submit any revisions to its plan for establishing UCLs to the NRC staff for review and approval.

11.5 Excursion Monitoring. Monitoring for excursions shall occur twice monthly, and no more than 14 days apart in any given month during operations, for all wells where UCLs have been established per Section 5.7.8 of the approved license application. If a designated monitor well is not sampled within 14 days of a previous sampling event, the reasons for this postponement shall be documented. Sampling shall not be postponed for more than 5 days.

If the concentrations of any two excursion indicator parameters exceed their respective UCL or any one excursion indicator parameter exceeds its UCL by 20 percent, the excursion criterion is exceeded and a verification sample shall be taken from that well within 48 hours after results of the first analyses are received. If the verification sample confirms that the excursion criterion is exceeded, the well shall be placed on excursion status. If the verification sample does not confirm that the excursion criterion is exceeded, a third sample shall be taken within 48 hours after the results of the verification sample are received. If the third sample shows that the excursion criterion is exceeded, the well shall be placed on excursion status. If the third sample does not show that the excursion criterion is exceeded, the first sample shall be considered an error and routine excursion monitoring will be resumed (the well is not placed on excursion status).

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Upon confirmation of an excursion, the licensee shall notify NRC, as discussed below, implement corrective action, and increase the sampling frequency for the excursion indicator parameters at the well on excursion status to at least once every 7 days. Corrective actions for confirmed excursions may be, but are not limited to, those described in Section 5.7.8 of the approved license application. An excursion is considered corrected when concentrations of all indicator parameters are below the concentration levels defining the excursion for three consecutive weekly samples.

If an excursion is not corrected within 60 days of confirmation, the licensee shall either (a) terminate injection of lixiviant within the wellfield until the excursion is corrected; or (b) increase the surety in an amount to cover the full third-party cost of correcting and cleaning up the excursion. The surety increase shall remain in force until the NRC has verified that the excursion has been corrected and remediated. The written 60-day excursion report shall identify which course of action the licensee is taking. Under no circumstances does this condition eliminate the requirement that the licensee remediate the excursion to meet groundwater protection standards as required by LC 10.6 for all constituents established per LC 11.3.

The licensee shall notify the NRC Project Manager (PM) by telephone or email within 24 hours of confirming a lixiviant excursion, and by letter within 7 days from the time the excursion is confirmed, pursuant to LC 11.6 and 9.3. A written report describing the excursion event, corrective actions taken, and the corrective action results shall be submitted to the NRC within 60 days of the excursion confirmation. For all wells that remain on excursion status after 60 days, the licensee shall submit a report as discussed in LC 11.1(A).

11.6 Until license termination, the licensee shall maintain documentation on unplanned releases of source or byproduct material (including process solutions) and process chemicals. Documented information shall include, but not be limited to, the date, spill volume, total activity of each radionuclide released, radiological survey results, soil sample results (if taken), corrective actions, results of postremediation surveys (if taken), a map showing the spill location and the impacted area, and an evaluation of NRC reporting criteria.

The licensee shall have written procedures for evaluating the consequences of the spill or incident/event against 10 CFR Part 20, Subpart M, “Reports,” and 10 CFR 40.60 reporting criteria. If the criteria are met, the licensee shall report to the NRC Operations Center as required.

If the licensee must report any production area excursion or spill of source material, byproduct material, or process chemicals that may have an impact on the environment, or any other incident/event, to any State or other Federal agency, the licensee shall make a report to the NRC Headquarters Project Manager (PM) by telephone or electronic mail (e-mail) within 24 hours. In accordance with LC 9.3, this notification shall be followed, within 30 days of the notification, by submittal of a written report to NRC Headquarters detailing the conditions leading to the spill or incident/event, corrective actions taken, and results achieved.

Facility Specific Conditions

11.7 The licensee shall submit semi-annual reports that present the flow rates and volumes of liquid effluent discharged to Class V disposal wells and land application areas, influent flow rates into satellite and central processing plants, and bleed rates. The first report is due no later than 12 months after the start of operations, and shall account for all effluent discharges and inflows during the previous 12 months.

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11.8 After the initial land use update discussed in LC 12.15, every 12 months thereafter the licensee shall submit a land use update report for NRC staff review, until groundwater restoration and decommissioning are completed and approved by the NRC.

SECTION 12.0: Preoperational Conditions

Standard Conditions

12.1 Prior to commencement of operations in any production area, the licensee shall obtain all necessary permits, licenses, and approvals from the appropriate regulatory authorities. The licensee shall also submit a copy of all permits for its Class III and Class V underground injection wells to the NRC.

12.2 Prior to commencement of operations, the licensee shall coordinate emergency response requirements with local authorities, fire department, medical facilities, and other emergency services. The licensee shall document these coordination activities and maintain such documentation on-site.

12.3 The licensee shall not commence operations until the NRC performs a preoperational inspection to confirm, in part, that written operating procedures and approved radiation safety and environmental monitoring programs are in place, and that preoperational testing is complete. The licensee should notify the NRC, at least 90 days prior to the expected commencement of operations, to allow the NRC sufficient time to plan and perform the preoperational inspection.

12.4 The licensee shall identify the location, screen depth, and estimated pumping rate of any new groundwater wells or new use of an existing well within the license area and within 2 kilometers (1.25 miles) of any proposed wellfield boundary, as measured from the perimeter monitoring well ring, since the application was submitted to the NRC. The licensee shall evaluate the impact of ISR operations to potential groundwater users and recommend any additional monitoring or other measures to protect groundwater users. The evaluation shall be submitted to the NRC for review within 6 months of discovery of such well use.

12.5 Prior to commencement of operations, the licensee shall submit the qualifications of radiation safety staff members for NRC staff review and written verification.

12.6 Prior to commencement of operations, the licensee shall submit a copy of the solid byproduct material disposal agreement to the NRC.

Facility Specific Conditions

12.7 At least 60 days prior to construction, the licensee will propose in writing, for NRC review and written verification, a monitoring well network for the Fall River Aquifer in the Burdock area for those wellfields in which the Chilson Aquifer is the extraction zone.

12.8 The licensee will continue to collect additional meteorological data on a continuous basis at a data recovery rate of 90 percent until the data collected is determined by the NRC staff to be representative of long-term conditions. Justification of the similarity or validity of the data will include analysis of the statistical data presented to illustrate confidence in the representativeness of the data. The data collected shall include, at a minimum, wind speed, wind direction, and an annual wind rose. The submittal shall include a summary of the stability classification.

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12.9 The licensee shall submit preoperational surface water analytical data for the new surface water sampling locations to the NRC for review and written verification within 3 months of the initiation of operations. Surface water analytical data shall be of the same completeness (e.g. parameters, quality of analyses, and frequency) as the data provided in the licensee's June 2011 submittal (ADAMS Accession No. ML112071064).

12.10 Prior to commencement of operations, the licensee will collect four quarterly groundwater samples from each well within 2 km (1.25 mi) of the boundary of any wellfield, as measured from the perimeter monitoring well ring. This data shall be submitted to the NRC staff for review and written verification. Furthermore, all domestic, livestock, and crop irrigation wells within 2 km (1.25 mi) of the boundary of any wellfield, as measured from the perimeter monitoring well ring, will be included in the routine environmental sampling program provided that well owners consent to sampling and the condition of the wells renders them suitable for sampling.

12.11 No later than 30 days prior to construction, the licensee will provide additional statistical analysis of the soil sampling data and gamma measurements to establish sufficient statistical relationships. If such relationships are not sufficient for use at the site, additional procedures or data shall be submitted to the NRC staff for review and written verification.

12.12 No later than 30 days before the start of operations, the licensee shall provide the NRC staff, for review and written verification, its procedures for documenting the wellfield inspections. These procedures shall include the personnel tasked with performing these inspections, items to be inspected, criteria for determining upset conditions, and the manner in which the inspections will be documented.

12.13 No later than 30 days prior to the preoperational inspection, the licensee shall provide to the NRC staff, for review and written verification, its procedures for preparing logs of the dryer and emissions control system performance in accordance with 10 CFR Part 40, Appendix A, Criterion 8. The procedure shall include the manner in which logs for inspection will be produced and maintained at the Dewey-Burdock Project. These procedures shall also specify specific job functions or categories of personnel responsible for responding to malfunctions of the dryer and emissions control system and the manner in which such responsible persons are notified of malfunctions.

12.14 No later than 90 days before the start of operations, the licensee shall provide, for the NRC Staff review and written verification, the qualifications and training required for RSO designees for reviewing and issuing radiation work permits.

12.15 No later than 30 days before the start of operations, the licensee shall submit a report for NRC staff review updating land use descriptions within the Dewey-Burdock Project and within 2 miles of the license boundary. This report shall identify actual land use changes, new structures and the purpose, and new water supply wells and the purpose.

12.16 At least 30 days prior to the preoperational inspection, the licensee shall provide a list of its instrumentation to be used during operations, including the manufacturer, model number or a description, and the range of sensitivity of the radiation survey meters for measuring beta radiation. The licensee shall also provide a plan for conducting beta surveys in process areas.

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12.17 No later than 30 days before the preoperational inspection, the licensee shall submit to the NRC staff, for review and written verification, an acceptable method to ensure the soluble intake of uranium will be ALARA.

12.18 The licensee shall submit to the NRC staff for review and written verification the procedures by which it will ensure that unmonitored employees will not exceed 10 percent of the dose limits in 10 CFR Part 20, Subpart C.

12.19 The licensee shall prepare a bioassay QA/QC procedure that is consistent with Regulatory Guide 8.22. This procedure shall be made available for NRC staff review and written verification during the preoperational inspection.

12.20 No later than 30 days before the preoperational inspection, the licensee shall develop a survey program for beta-gamma contamination for personnel exiting from restricted areas that complies with the requirements of 10 CFR Part 20, Subpart F.

12.21 The licensee shall provide, for NRC staff review and written verification, the surface contamination detection capability (scan MDC) for radiation survey meters used for contamination surveys to release equipment and materials for unrestricted use and for personnel contamination surveys. The detection capability in the scanning mode for the alpha and beta-gamma radiation expected shall be provided in terms of dpm per 100 cm^2.

12.22 No later than 30 days before the preoperational inspection, the licensee shall provide to the NRC staff, for review and written verification, written procedures for its airborne effluent and environmental monitoring program that:

A. Discuss how, in accordance with 10 CFR 40.65, the quantity of the principal radionuclides from all point and diffuse sources will be accounted for in, and verified by, surveys and/or monitoring.

B. Evaluate the member(s) of the public likely to receive the highest exposures from licensed operations consistent with 10 CFR 20.1302.

C. Discuss and identify how radon (radon-222) progeny will be factored into analyzing potential public dose from operations consistent with 10 CFR Part 20, Appendix B, Table 2.

D. Discuss how, in accordance with 10 CFR 20.1501, the occupational dose (gaseous and particulate) received throughout the entire License Area from licensed operations will be accounted for, and verified by, surveys and/or monitoring.

12.23 Within 90 days of receipt of an NRC license, the licensee will submit to the NRC for review and approval a revised decommissioning, decontamination, and reclamation plan. The revised plan will include soil cleanup criteria for radionuclides other than radium based on the radium benchmark dose method, as well as procedures for monitoring beta-gamma contamination on equipment, structures, and material released for unrestricted use. The soil cleanup criteria, based on the radium benchmark dose methodology for U and other radionuclides, will demonstrate that residual radioactivity in soil meets the criteria in 10 CFR Part 40, Appendix A, Criterion 6(6). The revised plan will also include procedures for restoring stream channels to their original geomorphology.

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12.24 At least 60 days prior to the preoperational inspection, the licensee will submit a completed Quality Assurance Project Plan (QAPP) to the NRC for review to verify that the QAPP will be consistent with Regulatory Guide 4.15 (as revised).

12.25 No later than 60 days prior to construction, the licensee shall submit to the NRC for review and written verification, a pond detection monitoring plan that contains the number, locations, and screen depths of groundwater monitoring wells to installed around the Burdock area and Dewey area ponds. The plan shall also include sampling frequency and sampling parameters. Monitoring wells installed to comply with the licensee's Groundwater Discharge Permit issued by the State of South Dakota may be incorporated into this monitoring network.

FOR THE NUCLEAR REGULATORY COMMISSION

Date: 4/8/2014

/RA/

Andrew Persinko, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title:	Powertech USA, Inc.: Dewey-Burdock in Situ Uranium Recovery Facility
Docket Number:	40-9075-ML
ASLBP Number:	10-898-02-MLA-BD01
Location:	Rapid City, South Dakota
Date:	Tuesday, August 19, 2014
Work Order No.:	NRC-1008 Pages 692-920

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response as to whether the documents that Mr. Parsons seeks are subject to the mandatory disclosure rules.

MR. PUGSLEY: Your Honor, we don't -- we have not had an opportunity to read this motion. We've been preparing for this hearing, and unfortunately we don't have an initial response at this time.

CHAIRMAN FROEHLICH: Okay. The type of documents that were described, Staff Counsel, are those the type of documents to be -- to the extent you understand what is being asked for, are these the type of documents that are normally required to be disclosed as part of the mandatory disclosure rules?

MR. CLARK: If the Staff -- again, if the Staff received the documents because our disclosure obligations are broader, we would have disclosed them. As to whether Powertech needs to disclose them, I guess I'd say two things. First, these are fairly recent documents from July. The argument was that they should have been disclosed in the August 1st updates. Typically, many NRC Boards close -- set a date for the final disclosure which is typically about a month before the hearing, so this is kind of unusual, just that there hasn't been any cutoff date.

CHAIRMAN FROEHLICH: Right.

MR. CLARK: But the argument -- I don't

understand the relevance of -- I understand there are additional mitigation measures and that Contention 6 refers to mitigation, but the claim in the Contention 6 is the EIS, the Final EIS didn't discuss mitigation sufficiently. The existence of some later mitigation measures which were actually referred to in the EIS, they were referred to as being in progress, the avian monitoring plan which is mentioned extensively in the EIS, the Staff understood that the plan would be developed. I do not see how the fact that an avian monitoring plan was finalized either tends to prove or disprove the completeness of the Staff's review.

Likewise with the plan of operations, so I would agree with Mr. Parsons that there's very limited information, so I won't want to take a position on that. The Staff simply doesn't know enough about that. But the claim in Contention 6 is the Staff didn't sufficiently discuss mitigation measures, and that it failed to evaluate the effectiveness of mitigation measures. I don't see how the Staff could have evaluated something that did not exist until after -- until seven months after it finalized the EIS. Thus, I don't see it as being, obviously, relevant to Contention 6, and I don't see any strong basis for saying that Powertech needed to disclose the

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NUCLEAR REGULATORY COMMISSION

Title:	Powertech USA, Inc.: Dewey-Burdock in Situ Uranium Recovery Facility
Docket Number:	40-9075-ML
ASLBP Number:	10-898-02-MLA-BD01
Location:	Rapid City, South Dakota
Date:	Wednesday, August 20, 2014
Work Order No.:	NRC-1008 Pages 921-1170

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for each listed constituent for determining baseline water quality conditions," close quote.

Are there water quality indicators in that table that were not measured, or are you alleging that not enough samples were taken to satisfy that criteria in NUREG-1569?

DR. MORAN: Let me break that up into one question.

JUDGE BARNETT: Sure.

DR. MORAN: I'm not sure I understand exactly how you worded it, but let me try a shot at it since we're not in a court. I don't know if every one of those constituents was included on every sample that they took. There's just so much information in so many different places I can't say.

What I am -- well, first, what I would say is there are several other constituents I would require if I were doing this myself, and have done it in similar cases. And these are not just to be picky. These are really hydro-geologically important constituents and --

JUDGE BARNETT: Well, what would you pick that's not there?

DR. MORAN: For one, one of the most common metals that's in a roll-front water quality is

strontium. Lithium. But again, this is off the top of my head.

JUDGE BARNETT: Sure.

DR. MORAN: Did I understand your question correctly, sir?

JUDGE BARNETT: Yes, I think so. What I'm asking is are there things in that table that are missing? And as I understood, your answer was you could not answer that specifically because there's so much data. Is that right?

DR. MORAN: Of this specific table --

JUDGE BARNETT: Correct.

DR. MORAN: -- compared to what they actually determined?

JUDGE BARNETT: Correct.

DR. MORAN: That I can't answer. I mean, it's voluminous.

JUDGE BARNETT: Sure.

DR. MORAN: But what I am also saying is that there are constituents that are obviously hydro-geologically important --

JUDGE BARNETT: That aren't --

MR. ELLISON: -- and they're also in EPA-recommended documents for ISL.

JUDGE BARNETT: Okay. Thank you. That's

I'm looking at Exhibit APP 013 at pages 7 and 8, quote, "NUREG-1569 clearly defines three phases of groundwater monitoring." Then you're quoting NUREG-1569. "There are three distinct phases of groundwater and surface water monitoring: pre-operational, operational and restoration."

So the operational and restoration monitoring, will that occur outside of the NEPA process?

MR. LAWRENCE: Are you addressing the question to me?

MR. DEMUTH: He's asking me.

JUDGE BARNETT: Oh, I'm sorry. Mr. Demuth. I'm sorry.

MR. DEMUTH: Judge Barnett, I'm not sure I understand that question in terms of the legal aspects of it. Certainly that operational monitoring will occur under the regulation and reporting to NRC. And so those data will be collected, analyzed and reported in the manner specified by 1569, and certainly in a manner specified in the TR and the ER. To what extent that jumps to NEPA, I'm not the lawyer, so I can't answer that question.

JUDGE BARNETT: Well, who will have access to that data and can it be challenged? I'm talking

about the operational and restoration data now. Will that data be publicly available, or just the applicants have that data?

MR. DEMUTH: My understanding is that information will be submitted to NRC. It will be publicly available certainly on ADAMS. NRC Staff could specify the exact method. But that would be public information that could be reviewed by anyone.

JUDGE BARNETT: Okay. You also on page 8 of your testimony, quote NUREG-1569 as follows: "Wellfield hydrologic and water chemistry data are collected before in situ leach operations to establish a basis for comparing operational monitoring data. Hydrologic data are used to: (1) evaluate whether the wellfield can be operated safely."

So you need additional information other than what's available today to determine whether the wellfield can be operated safely? Am I reading that correctly?

MR. DEMUTH: Yes, you are. It would be additional confirmatory information on a wellfield scale, and that is one of the premises of 1569 and historic regulation of ISR facilities. 1569 mandates us really to collect data on a regional scale for a permit application which is prudent and warranted. As

we move into a wellfield scale, then there's additional information. And one example is the pump test where you verify that your monitor wells are connected and there are valid monitoring points and also demonstrate confinement above and below. So, yes, that would be further confirmation, but it's part of a well-established process.

JUDGE COLE: In the latter part you're referring to the information contained in well packages?

MR. DEMUTH: Yes, sir.

JUDGE COLE: Prior to operation?

MR. DEMUTH: That is correct.

JUDGE BARNETT: Okay. Something that doesn't have anything to do with this hearing, but were the sampling results from the domestic wells shared with the property owners?

MR. DEMUTH: I can't answer that question. I would guess that it would be, but Powertech would have to answer that question, sir.

JUDGE BARNETT: Okay. If those wells are still being used, I would recommend that be done. Doesn't have anything to do with this hearing.

Finally, have you testified in NRC proceedings about other ISR projects?

that's being mined. So in the case where you would have an overlying Fall River that did not have mineralization and you were producing from the Chilson, you would be required to maintain your fluid control in that Chilson. So you would place monitoring points in the Fall River to demonstrate that you were not losing control of your fluids.

JUDGE COLE: So you wouldn't have any screens taking in liquid from the Fall River?

MR. LAWRENCE: No stream, no, sir.

JUDGE COLE: Screen.

MR. LAWRENCE: Oh, screen. Correct, yes, right. The wells will be designed so that they are discretely screened in the zones that they need to be for purposes of monitoring. If we are trying to monitor, if there are impacts to the overlying aquifer, then those monitor wells would be screened specifically in that zone and not through the confining unit into the deeper zone.

JUDGE BARNETT: So if I understood it then, you do need for the Fuson shale to be relatively impermeable. Is that correct?

MR. LAWRENCE: Correct.

JUDGE COLE: Unless you're going to mine two aquifers.

as clearly as I had hoped.

MS. JEHLE: Excuse me, 008A through B.

JUDGE COLE: The Final EIS is four parts, NRC-008-A1, A2, B1, and B2.

JUDGE BARNETT: So on page 3-34 of the FSEIS, I'm going to address this question to the Staff and the Applicant. It's page 206 of the PDF.

Go to the last paragraph. There you go, right there, it's fine.

So I'm reading from the second sentence of the last paragraph in the FSEIS and it says, "Based on the 1979 aquifer test, Boggs & Jenkins, 1980, suggested there may be a direct connection between the Fall River and the Chilson aquifers with the Fuson. Additional aquifer pumping tests conducted in the Burdock area in 2008 also demonstrated hydraulic connection between the Fall River and the Chilson through the intervening Fuson shale. Interpretations of both the 1979 and 2008 pumping test results were found to be consistent with a leaky confined aquifer model. The Applicant developed a numerical groundwater model using site-specific geological hydrologic information. Based on the results of the numerical model, the Applicant concluded that vertical leakage through the Fuson shale is caused by

improperly installed wells or improperly abandoned boreholes."

So it appears in the FSEIS that it acknowledges that it is leaky, whether it's coming from boreholes or whatever else, it is leaky.

I'll ask the Staff, is that correct? Am I reading that correctly?

MR. PRIKRYL: Yes, that's correct.

JUDGE BARNETT: Would you concur with Powertech experts -- concur that the Fuson is leaky, for whatever reason? Improperly plugged boreholes or whatever reason?

MR. LAWRENCE: You're asking Powertech?

JUDGE BARNETT: Yes, asking Powertech.

MR. LAWRENCE: Yes, there were certainly conditions that demonstrated communication.

JUDGE BARNETT: Back to my question, if these things -- if it has to be -- if you're depending on it not being permeable and it is leaky, regardless of what's causing it, how then are you meeting your criteria for not impacting the environment?

MR. LAWRENCE: That goes back to the development of the wellfield data package. If you run a specific test in the area that you plan to mine, and identify leakage that is occurring, particularly if

you can identify that it is an improperly abandoned borehole or improperly constructed well, as was the case in these tests, you can remedy that situation, plug that borehole, rerun the tests and show that basically you have retained confinement.

JUDGE BARNETT: And all that would occur outside the FSEIS?

MR. LAWRENCE: Yes.

JUDGE BARNETT: Also, if I go to OST-9 please. And this is at page 61. It's actually on page 63 of the document. I'm sorry, 63 of the exhibit, page 53 of the document. Right there. Actually, you can see somebody has made the notation in the margin there.

So I'm reading from this. This was TVA's report of how do you respond -- I'm going to ask this of the Applicant and the Staff, how do you respond to TVA's conclusion that the "results of the aquifer tests at the project site suggested that the Fuson shale is not an effective barrier near and northeast of the shaft site"?

MR. LAWRENCE: If you'll notice in the top of that paragraph, the very first line says "a second aquifer test was run in which an inflatable packer was used to isolate the two aquifers."

The problem with these tests was they drilled one well as you pointed out and screened it in both intervals at the same time and they counted on running an inflatable packer between the two zones of interest to run two different tests. Personally or professionally, I would never do that. I'm not sure why they ran it that way. Some people feel like packers are an adequate way to isolate zones, but in a case like this where you're trying to demonstrate you have isolation, I think that was a terribly designed pumping test.

JUDGE BARNETT: So your conclusion is TVA was incorrect?

MR. LAWRENCE: I am.

MR. DEMUTH: If I might add to that, Judge Barnett, the objective of these tests were to evaluate underground mining operations. This was not conducted for ISR operations. And in addition, the pumping rate as noted in the second to top paragraph was 261 gallons a minute.

A different objective is a different type of test.

JUDGE BARNETT: I understand that, but if the aquifer -- I'm sorry, the aquitard is leaky, it's leaky, right? It doesn't leak under certain tests and

not under others. Maybe you can see it better in certain tests and not others, but if it's leaky, it's leaky. Is that correct?

MR. DEMUTH: I would not dispute that, but again, what type of flux do you need to have where it's a problem or it's not a problem?

JUDGE BARNETT: That's what I'm asking you.

MR. DEMUTH: Okay. Well, in this case, our data indicates that there is not sufficient flow across the Fuson where it's an issue, except in one area where we have a well which is completed in both zones and allows it to communicate. There may be one or two unplugged exploration boreholes which are identified in the application. So in that area, the wellfield, any wellfield test is going to have to be examined very carefully.

Other areas of the site we don't see the same issues.

JUDGE BARNETT: So do you contend now that based on the information you have, the Fuson shale is not leaky?

MR. DEMUTH: I'm not saying that. I'm saying that the Fuson shale has properties which support safe ISR mining for the site. And again,

you consider a mile away close.

DR. LaGARRY: I do consider a mile away close.

JUDGE COLE: Even when the groundwater is traveling, you know, somewhere between one and six feet per year?

DR. LaGARRY: In my previous experience, I was a geological mapper and stratigrapher with the Nebraska Geological Survey. And we mapped many, many, many faults in northwestern Nebraska and adjacent South Dakota. And our finding is that these things occur in sets. And so you would have perhaps scores of joints and faults all aligned, going in the same direction because the rocks they pass through are brittle.

So then what's quite often the case is that the most dominant of these features stands as a representative for the whole set. So if somebody found a fault and they called it the Dewey fault, then what they might, in fact, be seeing is a zone several miles wide in which the largest crack with the most offset is, in fact, the one they identified.

This is true of well-known faults like the Toadstool Park fault; the White Clay-Sandoz Ranch fault in which a major fault of perhaps 100 meters of

offset is well noted in the scientific literature. But you can go north and south of the White Clay fault and find multiple sets of these things. And the reason why I considered the faults noted close to Dewey-Burdock is that faults and fractures are ubiquitous throughout the entire region and it seemed entirely implausible to me that these sets of faults across the entire southern Black Hills region prevalent in rocks that we've been mapping for upwards of 20 years, that there should suddenly be a blank spot in a map.

It seemed far more likely to me that whatever United States Geological Survey studies that were done used this practice of assuming that the joints don't matter or the small offset faults don't matter and that instead they identify and recognize the major fault. These things are such that if you're not specifically looking for them, then you often don't find them and for some structural geological purposes all you have to do is identify the major one. For example, in the case of the White Clay fault which goes from the southern Black Hills into Nebraska to the border of Cherry County, there is one fault in the scientific literature.

However, we repeatedly demonstrated and

published that there are scores of ancillary things. It's called an imbricated fault in which the entire region is fractured. The faults might be a couple of tenths of a mile apart, but the largest crack is chosen as a representative of the entire set. And so that's why in my opinion that a well-marked, well-known fault identified in the -- prior to the work there at Dewey-Burdock could, in fact, be a representative of a standing of an entire set of faults.

JUDGE COLE: Okay, so you say it's possible.

DR. LaGARRY: In my opinion, it's most likely that that fault represents --

JUDGE COLE: Even though there are no reports of faults or structural problems within the 16 square mile area proposed for ISR mining?

DR. LaGARRY: Prior to geological mapping that we conducted with the Nebraska Geological Survey, there were no faults recognized in northwestern Nebraska either, except for these major ones that had been noted in the older literature.

Depending on what a geologist's purpose is, sometimes they note them, sometimes they don't. Other times, they are so ubiquitous and so common that

the geologist doing the work just assumes that everybody is aware that they're there. So in the case of this mining activity in a place such as Dewey-Burdock, it's no different than the areas in northwest Nebraska that had gone 150 years of geological research, at least research going back to the early 1890s, didn't notice any of these faults. However, they are there and we've discovered them subsequently. So to me, it's clear that in an area that hasn't been prospected specifically for sets of joints and faults, that they might not have been noted in the older scientific literatures.

JUDGE COLE: We've got 6,000 holes poked in the 16 square mile area.

DR. LaGARRY: That's right.

JUDGE COLE: Wouldn't these have identified faults somewhere in that area?

DR. LaGARRY: If the faults are not -- if the boreholes are not cherry picked, because let's say there's 4,000 boreholes --

JUDGE COLE: I don't know what that means, cherry picked.

DR. LaGARRY: Cherry picked means picking the ones that support what it is you want to do.

JUDGE COLE: I assume they didn't do that.

So what people are after is the new, the different, the unique, the showy, the big offset of a big fault that you can tie to some sort of other events in the region. So this TVA report recognizes that the whole area is fractured and that breccia pipes form along these fractures, but they didn't make it into the scientific literature for maps. But if I was to take a geological mapping field crew out there, we would find them because we're looking for them.

JUDGE COLE: With these 6,000 plus boreholes in this relatively small area, wouldn't there be some evidence there of discontinuities in the --

DR. LaGARRY: If we could review them all, there very might well be. And in fact, there may be many because that's the -- although that kind of data density isn't necessarily useful for something like defining an orebody or perhaps hydrological modeling, for stratigraphic work which is what I do, they're essential because if you have 100 feet between 2 data points, between 2 boreholes that can accommodate dozens of joints that would be invisible otherwise. So the more data you have, the more data points with 6,000 boreholes to look at, one very well might find many, many, many of these cracks and fractures and

might be able to trace them all through the project area.

JUDGE COLE: Well, in looking at an e-log, how -- is it easy or difficult to identify if there's a fault somewhere in that pile?

DR. LaGARRY: You have to look at the closely spaced ones and look for small differences in offset between them. And so it will largely depend on the quality of the logs, but if the logs are standard quality and there's enough of them and you can follow lithologic breaks as noted in the logs, you will see small amounts of offset. It's typical, the example I cited earlier of the White Clay fault which has the big one that everybody maps, has tens of meters and sometimes scores of meters of offset. But you go to the ancillary ones, the ones that radiate north and south of it and they might have a meter, two meters, three meters, four meters, five meters of offset which the original investigator didn't think was worthy of mentioning so they only mapped the big one. But for the purposes of such projects and containing fluids and the maintenance of confining layers, you know if you can recognize these things, what you're doing is you're recognizing an open pipe across which -- through which fluids can migrate, both up and down and

side to side. So the more dense the data, the better.

JUDGE COLE: And you're saying that this hasn't been investigated?

DR. LaGARRY: It hasn't been specifically investigated. I would find it -- enough of these things might be fatal to such an activity, and so there's really no incentive to spend a lot of time hunting for faults and joints, unless of course, that's your structural geologist or geologic mapper and you're looking for faults and joints.

JUDGE COLE: So the people that were reviewing these logs just weren't looking for that kind of thing?

DR. LaGARRY: They may not have been. One of the things I find in my own work is that prior to the widespread adoption of plate tectonics theory in the 1980s and '90s, and this includes a lot of the older scientific literature from this region, people made the assumption that rocks were more bend-y than break-y. And so they would go around -- because they used modeling clay. They used Plasticine and a big vice and they pressed the vice and they watched all the Plasticine bend and they said oh, yes, that's the geological structure we've got here. But since the advent of plate tectonics theory and the idea that the

earth's crust is thin and brittle, work that's done in the 1990s and younger, makes this assumption in their work that any time there's a fault or a fold, people expect to see lots of these joints and fractures in the rock.

So it's a thing commonly overlooked in older scientific literature which is why site characterization on the ground is so important in a situation like this because as mining goes forward and they get to the wellfield specific data and they go forward in mining, these things pop up. And they're not considered and they're not taken into account.

From my reading of the technical reports and the maps provided, you can -- there's faults in the area are visible from outer space, from space shuttle radar. We've used them at other ISL sites in northwest Nebraska to locate faults that bisect the orebodies that were never found in Environmental Impact Statements or planning documents for mines. If you're specifically looking for them, then you find them. If you're not specifically looking for them or your focus is some other aspect of the geology, then typically you don't see them.

JUDGE COLE: Mr. Moran, you had indicated to me that you had a contribution to make in this

other discussion we were having and part of this.

DR. MORAN: What I've heard of Dr. LaGarry's comment, I totally agree with, first. Secondly, essentially all of the old TVA-related reports and the AEC-funded reports and the old USGS reports from the '60s, '70s, and '80s, all state that there are faults and fractures that affect groundwater movement in the area. In most cases, it is true that they're not talking specifically about that specific site, but many of them are right around it. And when you overlay the site boundary for Dewey-Burdock on top of some of the new satellite images, you can see that you're darn close and that some of the other structure goes right through it.

MR. DEMUTH: Dr. Cole, if I could add to that. I agree with Dr. LaGarry in some situations. In regional structures, you can have multiple features. They're not a line on the map. And often you can have a disturbed zone that might occur over several miles and we see that with mapping that's been done on the Long Mountain structural zone and with the Dewey fault. The southernmost identified portion of the Dewey fault is to the north of the site and does not occur on the site.

Secondly, contrary to what Dr. LaGarry

stated, Powertech is in the business of moving fluid to produce uranium. So a thorough understanding of the subsurface geology is really key to that. And if there are faults that impacts their operation in terms of producing uranium. So their interest, rather than being to not pay attention to the details rather is to pay great attention to the details.

In addition, we have worked several ISR projects that successfully mined with faults in the orebody. So the fact that there might be some small scale features in the orebody is not a deal killer and in addition, as hydrogeologists, we have other information. We have water level information. We have gradient information. We have all this other information that tells us about continuity or lack thereof in the groundwater system. So there's more than just the geology. There's more than a surface liniment that goes into understanding the conceptual model. So we have lots of pieces of information to support the conceptual model that's been presented here.

JUDGE COLE: All right, thank you.

JUDGE BARNETT: Okay, we've talked about the leaky aquitards or not, and faults and fractures a little bit. So I want to switch gears and talk

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NUCLEAR REGULATORY COMMISSION

Title:	Powertech USA, Inc.: Dewey-Burdock in Situ Uranium Recovery Facility
Docket Number:	40-9075-ML
ASLBP Number:	10-898-02-MLA-BD01
Location:	Rapid City, South Dakota
Date:	Thursday, August 21, 2014
Work Order No.:	NRC-1008 Pages 1171-1328

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agency to finalize an EIS.

In conclusion, the Staff complied with NEPA by considering related actions. And the Staff's witnesses look forward to answering the Board's questions.

CHAIRMAN FROEHLICH: Thank you, Mr. Clark. Mr. Pugsley.

MR. PUGSLEY: Thank you, Your Honor, Members of the Board. May it please the Court, with respect to Contention 6, it is Powertech's position that its NRC license and record of decision more than adequately assesses mitigation measures proposed to be developed and implemented for the Dewey-Burdock project, as well as connected actions.

For purposes of Contention 6, one of the major allegations levied against the FSEIS includes an allegation, a statement that mitigation measures were relegated to nothing more than a simple summary chart at the beginning of Chapter 6 of that document. That is absolutely incorrect.

Each resource area addressed in the FSEIS had its own analysis of potential mitigation measures. And to the extent necessary and practicable, they were evaluated individually.

As Mr. Clark stated and we would, as the

Licensee, incorporate all of Mr. Clark's previous statements by reference for the record, mitigation plans are permitted to be developed after license issuance per the Hydro Resource's case as cited by Mr. Clark.

With respect to groundwater mitigation, it is extensively addressed in the FSEIS. There are multiple references and discussions regarding items such as post-license issuance pump tests and hydrologic wellfield packages, which was discussed comprehensively yesterday, as well as post-operational restoration and stabilization monitoring.

Air emissions as well were addressed specifically in the document, as well as the SER, including the fact that Powertech cannot dispose of 11e(2) byproduct material onsite, per the Commission's policy under 10CFR Part 40, Appendix A, Criterion 2.

With respect to cultural resources, Powertech says we agree with Mr. Clark's assessment of that mitigation and would add that regulations for Section 106 at 36CFR 800.6 entitled resolution of adverse effects, which was the jumping-off point for the Staff to develop a Part 800.14 programmatic agreement, specifically states the purpose of continuing consultation through this is to develop and

evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties. That language, on its face, speaks to the fact that the programmatic agreement is, itself, a mitigation measure.

With respect to Contention 6, our Witnesses will be Mr. Hal Demuth, Mr. Doyl Fritz and Ms. Gwyn McKee.

With respect to Contention 9, again, Powertech's license and record of decision demonstrates that NRC Staff adequately considered connected actions and interacted with federal agencies. As a general matter, connected actions here should be limited to those with federal agencies, as state agencies, per case law, do not apply.

Specific allegations under this contention include a failure to consult with EPA during the development of the NEPA process, specifically with respect to Class III and Class V wells.

This fails to consider several factors, including the fact that NRC Staff interacted with EPA during the development of the draft supplemental EIS. EPA did, indeed, submit comments during the 45-day comment period on the draft supplemental EIS and also,

within feet of blasting and haul trucks.

So once they start having their youngsters -- there's a paper out. It's a generational acclimation. You're an adult eagle. You have youngsters. They grow up amidst these activities. That's normal to them and it just perpetuates itself.

JUDGE BARNETT: Okay. The mitigation plans that you just described there for the eagles, are they in the FSEIS now?

MS. MCKEE: Reference to the plans are in numerous locations in the FSEIS. The plan is not finalized. It is a draft plan at this time. It is still being collaboratively developed with the state and federal agencies and it's being tweaked. The format and content of the draft plan has been changed just over the course of the last few months.

But the plan will be finalized and approved by the South Dakota Department of Environment and Natural Resources and Game and Fish as a permit condition before any construction begins.

JUDGE BARNETT: Okay, but the plan that exists in FSEIS for the mitigation plans for the eagles, would you call that thorough and comprehensive?

MS. MCKEE: I would, based on the

JUDGE COLE: Would precipitation with barium sulphide satisfy that requirement generally?

MR. DEMUTH: I'm not a process engineer so I think, you know, barium chloride has certainly been used historically for treatment of uranium to a degree but more so radium, so the process has been used historically. How effective that is to meet the 10 CFR 20 standards is somewhat dependent on each facility and the makeup water.

JUDGE COLE: Is it barium chloride or barium sulfate or both?

MR. DEMUTH: I believe barium chloride but --

MR. FRITZ: I think the application says barium chloride.

FEMALE PARTICIPANT: Yes.

JUDGE COLE: Okay, thank you.

CHAIRMAN FROEHLICH: I mixed up my papers and forgot a few questions having to do with mitigation, and that was references I guess in the FSEIS to best management practices, BMPs, and that's mentioned a number of places as things that would be used or approaches that would be used to mitigate the effects of different problems that arose. I would ask the Staff, who determines what are the best management

practices for any given task?

MS. YILMA: Your Honor, the Applicant did provide some best management practices but they are typical of ISR operations also, so it's a mixture of the Applicant proposal plus our knowledge of what are best management practices from other facilities.

CHAIRMAN FROEHLICH: The best management practices I guess that are referred to, are they a set of standards, a set of procedures that are drawn up by either a government agency or an industry group or where did that come from?

MS. YILMA: It could be that. Can I just read one thing --

CHAIRMAN FROEHLICH: Sure.

MS. YILMA: -- that we have in Section 6, Chapter 6 of the SEIS? We say, "Best management practices are processes, techniques, procedures or considerations that could be used to effectively avoid or reduce potential environmental impacts." So there are processes, techniques and procedures, that industry practices is one of them.

JUDGE BARNETT: BMPs, is that a term of art from EPA?

MR. PRIKRYL: What was that question? Does it come from EPA?

JUDGE BARNETT: Does EPA have a list of best management practices and is that what you're referring to?

MR. PRIKRYL: No. No, not in this case and I'm not sure if they do have a list of BMPs for ISR.

JUDGE BARNETT: Okay, so I guess that kind of goes back to Judge Froehlich's question. Where is the BMPs? How do you decide what's a BMP?

MR. FRITZ: I could speak a little bit to that, not in every discipline but, for example, on surface water protection. The plan calls for, there's an extensive plan in there for flood control, how we're going to protect surface waters and facilities, things from washing downstream so to speak.

We've mapped the floodplains. We're locating facilities, buildings and ponds outside of floodplains and further diverting runoff around those things, storms at least up to the 100-year storm, and for major facilities the state of South Dakota requires a probable maximum storm design, so.

And then beyond that, we've got stormwater sediment control, and that varies. Let's say during the construction phase when you've got the most disturbance opened up, before you get your temporary

re-veg in, you might put best management practices in.

Even though you got control with a pond downstream, you might go upstream and put a silt fence, a real temporary measure till you get vegetation or a rock check dam.

JUDGE BARNETT: Okay, I understand. So you said you might put BMPs in. Where do you get that list of BMPs I guess?

MR. FRITZ: Well, in this case the Office of Surface Mining and the state of Wyoming have developed a lot of sediment control best management practices, check dams, build dikes.

I think it's specific to different disciplines. There's a set for a certain area for sediment control and maybe something else. I think EPA's word for it is best available control technology and that would deal with air quality control. But I think it kind of depends on what discipline you're working in what the best management practice is and the different stage of development.

MS. YILMA: Your Honor, may I interject? You are correct. There are government agencies' best management practices, such as EPA would have best management practices on how to control, for instance, constituents from getting into the groundwater. There

are best management practices for land remediation, revegetation.

So it is a combination of government agencies' requirements and recommended suggestions to avoid, minimize or eliminate impacts on certain areas. It could be soil, could be air, could be water, various different things.

JUDGE BARNETT: Thank you.

CHAIRMAN FROEHLICH: I guess that was the basis of my concern. I noticed a number of places throughout the FSEIS that there was reference to best management practice, but it didn't include immediately thereafter EPA guidance on this or that. It just said best management practice.

I was curious how someone reading this, a member of the public or whatever, who wanted to comment would know exactly what practice was going to be applied and would be able to give input as to its effectiveness, whatever it might be when it's used as one of the mitigation techniques.

MS. YILMA: In our SEIS if we reference best management practices we would say something like stormwater runoff, having a tree to reduce soil erosion for instance, you know, growing vegetation, sorry, growing vegetation to reduce soil erosion.

And then in Chapter 6 we do talk about certain things in best management practices. Corrective actions that could be implemented are something that we discuss in Chapter 6, specific management actions such as programs, procedures.

In this case it could be the emergency procedures that the Applicant is going to be developing for various spills that they would have to contain within or reporting criteria. We talk about them in opening section of Chapter 6.

CHAIRMAN FROEHLICH: I guess my concern was that I thought I had seen in a number of places that Staff would apply the best management practices to mitigate a particular impact.

And by reading it had no idea what best management practices the Staff was going to rely upon to mitigate that or where I could find them or where someone could comment to you on their effectiveness.

MS. YILMA: Best management practices are common practices, like the EPA's guidance or DENR's guidance for each resource area. It is why that we don't get prescriptive in them because there are guidance out there for each resource area like the gentleman from Powertech stated.

CHAIRMAN FROEHLICH: The cumulative

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

OPENING WRITTEN TESTIMONY OF DR. ROBERT E. MORAN

I, Dr. Robert E. Moran, do hereby swear that the following written testimony is true to the best of my knowledge:

I. Basis for Testimony as an Expert in Hydrogeology

The opinions below are based on my review of the materials in the hearing record, including those materials referenced in my previous declarations and in the testimony below. My qualifications as an expert in hydrogeology and geochemistry are summarized in this testimony, and are set out more completely in the documents contained in the hearing record that detail my education, training, and experience. My curricula vitae is attached.

By way of summary, I earned my Ph.D. in, Geological Sciences from University of Texas, Austin in 1974 after earning my B.A. in Zoology from San Francisco State College in 1966. I am a hydrogeologist and geochemist with more than 42 years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, NGO's, law firms, and governmental agencies at all levels. Much of my technical expertise involves the quality and geochemistry of natural and contaminated waters and sediments as related to mining, nuclear fuel cycle sites, industrial development, geothermal resources, hazardous wastes, and water supply development. In addition, I have significant experience in the application of remote sensing to natural issues, development of resource policy, and litigation support. I have often taught courses to technical and general audiences, and have given expert testimony on numerous occasions. Countries worked in include: Australia, Greece, Bulgaria, Mali, Senegal, Guinea, Gambia, Ghana, South Africa, Iraqi Kurdistan, Oman, Pakistan, Kazakhstan, Kyrgyzstan, Mongolia, Romania, Russia (Buryatia), Papua New Guinea, Argentina, Bolivia, Chile, Colombia, Guatemala, Honduras, Mexico, Peru, El Salvador, Belgium, France, Canada, Great Britain, United States.

D. Data Provided Entirely by the Applicant is not an Accepted or Reliable Basis for Analysis.

1. *Expert Opinion*: Analytical results that rely entirely on data provided by the project proponent are not considered reliable by professional hydrogeologists and other water experts.

2. *Basis of Opinion*: Almost none of the relevant Application data, relied upon in the FSEIS, were collected by financially-independent parties. Preparation of most of the documents was directed and paid for by the applicant. The "independent" federal agency with the most, long-term hydrogeologic experience in this region, the Rapid City USGS staff, have not been included as cooperating agencies in the preparation of the FSEIS. Some relevant data collected by USGS was not included in the FSEIS analysis, as it was considered by NRC Staff to be preliminary. In order for the FSEIS to be scientifically acceptable, the available data should have be provided, interpreted, and included in the analysis, and any questions regarding its finality should be noted. Excluding available USGS data results in an unreliable analysis in the FSEIS.

Some of the recent documents provided to NRC Staff by the applicant are largely authored by the applicant, not their consultants. In my experience, this is a signal of significant conflict of interest and the possibility that the consultants were unwilling and unable to give the applicant the desired answer. Many of the significant conclusions in these filings disregard unfavorable details and lack the analytical methods and rigor used by professional hydrogeologists, geochemists, and other water experts. The employment of self-serving analytical methodology does not stand up to accepted scientific methods.

III. Contention 3: The Targeted Production Zones are Unable to Contain Fluids

A. The Targeted Zones are not Hydraulically Isolated

1. *Expert Opinion*: Dewey-Burdock uranium ore zones are not hydraulically-isolated from other geologic units, other aquifers, or zones outside the project area.

2. *Basis for Opinion*: The NRC Staff has disregarded the conclusions of numerous hydrogeologic experts (both Powertech-funded and independent experts) in stating the following (Final SEIS, Exec. Summary, p. xxxvi): "Alluvial aquifers are separated from production zone and surrounding aquifers by thick aquitards (confining units) and, therefore, are not hydraulically connected to production zone and surrounding aquifers."

This incorrect and overly-simplistic statement clearly contradicts expert opinions which state or infer that, long-term, all of the relevant D-B water-bearing zones are hydrogeologically-interconnected (i.e. Keene 1973; Gott, et. al., 1974; TVA, 1979; Butz,

et. al., 1980; Smith, 2005; Boggs & Jenkins, 1980, Boggs, 1983, Bredehoeft et. al., 1983; Knight Piesold, 2008).

Upon conducting extensive pumping tests and monitoring, Boggs (1980) concluded: "The aquifer test results indicate that the Fuson member of the Lakota formation is a **leaky** aquitard separating the Fall River and Lakota aquifers. The hydraulic communication between the two aquifers observed during the tests is believed to be the result of (1) **general leakage through the primary pore space and naturally occurring joints and fractures of the Fuson shall,** and (2) direct connection of aquifers via numerous old unplugged exploratory boreholes." (Emphasis added). *Ibid*, p.31.

After reviewing the relevant data, reports and various combinations of satellite imagery, I also conclude that these relevant Dewey-Burdock water-bearing zones are hydrogeologically-interconnected, especially when subjected to long-term pumping as proposed by the Applicant.

Powertech's management and ground water experts have made inconsistent statements about whether the Dewey-Burdock confining units are leaky or not, varying between individual reports, deposition opinions and public hearing testimony. For example, in the Application and Final SEIS, Powertech and NRC Staff assert that all of the relevant pumping tests indicated that the Dewey-Burdock sandstones behaved as leaky-confined aquifers (SEIS, p. 3-34). The consultants who conducted these pumping tests reported the same conclusions. Nevertheless, the SEIS, p. 3-36, states:

"Based on results of the numerical model, the applicant concluded that vertical leakage through the Fuson Shale is caused by *improperly installed wells or improperly abandoned boreholes."*

It is not unusual for the inter-fingering sands, shales, etc. of sedimentary uranium deposits to be hydrogeologically-interconnected, when pumped, long-term. In fact, it is the norm.

Keene (1973) stated that the existence of improperly plugged uranium test holes has contributed to the drop in yields from flowing wells in the Fall River formation. "This practice is not only wasteful of water, "but will ultimately lead to loss of pressure in the aquifer and possible contamination of the Fall River and Lakota aquifers." Keene, p. 24. Neither the Applicant nor the Final SEIS addressed how the Applicant's proposed ISL mining operation will be affected the 1000s of pre-existing boreholes, many of which have never been plugged correctly.

B. Potential Groundwater-Flow Pathways

1. *Expert Opinion*: Potential groundwater-flow pathways in and near the project area are critical to analyzing the proposal and impacts from operations.

2. *Basis for Opinion*: Dewey-Burdock sediments are hydrogeologically interconnected by several potential pathways, which include:

-inter-fingering sediments;
-fractures and faults;
-breccia pipes and / or collapse structures;
-4000 to 6000 exploration boreholes (Bush, 2010, Update Technical Report, prepared for Powertech, states approximately 6000 drill holes are present at D-B);
-oil test wells.

Drilling of hundreds and thousands of wells since the 1880s has caused a drop in artesian pressure of the various sedimentary aquifers in the southern Black Hills areas (Darton, 1909; Davis, Dyer &Powell, 1961, Keene, 1973). Therefore, many wells and boreholes that formerly flowed to the land surface no longer do so, but still contain water under pressure. Thus, contrary to the FSEIS and Application materials, upward flowing waters in these wells and boreholes can interconnect and mix between the various vertical water-bearing zones without showing any expression at the land surface.

"Interview reports indicate that the yields from the Fall River sands have dropped within recent years. Part of this problem is probably due to incrustation…..However, some of this loss of head may result from the recent uranium exploration program. The author personally saw uranium test holes that were uncased, unplugged, and flowing at the surface. This practice is not only wasteful of water, but will ultimately lead to loss of pressure in the aquifer and possible contamination of the Fall River and Lakota aquifers." Keene (1973) p.24: Re. Fall River Fm:

These inconsistencies make clear that Powertech and NRC Staff have failed to define the detailed, long-term hydrogeologic characteristics and behavior of the relevant Dewey-Burdock aquifers and adjacent sediments. In my opinion, the lack of support for NRC Staff's conclusion renders its conclusion scientifically invalid.

C. Significant Geological Structures Allow Migration

1. *Expert Opinion*: The FSEIS and Application rely on the erroneous claim that no significant geologic structures are present at the D-B Project site that could allow migration of water vertically or horizontally.

2. *Basis for Opinion*: The no-migration premise of the FSEIS and Application is contradicted by numerous published reports, such as: Braddock,1963; Butz, et. al.,1980; Gott, et. al., 1974; Smith, 2005; TVA, 1979. Keene also concluded that the recharge of the Inyan Kara by the Minnelusa formation occurred in part through "fault zones. Keene, 1973, p. 1.

As Keene (1973) noted: "The determination of a recharge rate is extremely important in a study of ground-water conditions of a watershed…" *Ibid*, p.35. While the "usual" methods for obtaining such information "are costly, time consuming and involved

extensive pumping tests, infiltration tests and a relatively large amount of instrumentation…only by the determination of a recharge rate for a particular aquifer can realistic withdrawal rates be applied to preclude 'mining' of our groundwater resources…Determination of a recharge rate for the Fall River Formations would be extremely difficult….because of the contribution of water from the Minnelusa Formation along the faults in the area." *Ibid*, p. 35-36.

The existence of a "trench" in the potentiometric surface of the Fall River aquifer "where the Cheyenne River flows through Inyan Kara rocks…suggests that the Inyan Kara strata are contributing some water to the river…Residents living along the Cheyenne River report that the river will flow at Rocky Ford (T9S R4E) when the river at Edgemont and Hat Creek are dry." Keene (1973), p. 36. Rocky Ford (T9S R4E) is down stream from the D-B site. If the ground water in the Inyan Kara becomes contaminated Applicant's proposed ISL mining operation, such contamination could affect the water quality of the Cheyenne River at or around Rocky Ford. Rocky Ford is in the vicinity of the Black Hills Wild Horse Sanctuary. Thus, the surface waters that run through the Sanctuary's property could be directly impacted by the contamination of the Inyan Kara aquifer.

In addition, review of several forms of D-B-area satellite imagery by myself and senior remote-sensing experts at Front Range Natural Resources, Ft. Collins, CO, shows clearly that this area is intersected by numerous faults and fractures. The imagery also shows evidence of circular geologic features at the land surface, indicating the presence of collapse structures.

D. Breccia and Collapse Features are Present

1. *Expert Opinion:* Breccia pipes/solution or collapse features are present in the project area that are critical to analyzing the hydrological baseline and project impacts.

2. *Basis for Opinion*: Numerous authors state that breccia pipes / collapse structures allow upward flow of ground waters from the Paleozoic formations to the Inyan Kara rocks at the southern margins of the Black Hills [Bowles, 1968; Braddock, 1963; Keene, 1973; Gott, et. al., 1974; TVA, 1979; Butz, et. al., 1980. Carter, et. al., 2003; state such recharge to the Inyan Kara may occur via such pathways.] For example:

Keene cited Bowles 1968 "excellent study of groundwater movement within the Inyan Kara Group for southwestern South Dakota. In this study, Bowles suggests that water in the Lakota and Fall River Formations originates in the Minnelusa formation …then moves upward along the breccia pipes…Some pipes have been reported to have stoped upwards as much as 1300 feet into rocks of the Inyan Kara Group (Bowles, 1968). This allows recharge of the Lakota and Fall River Formations from artesian water rising from the Minnelusa Formation. Keene, p. 1, 31.

However, several Powertech reports and the Final SEIS argue that there is no evidence that breccia pipes or related collapse structures exist within the D-B property [i.e. NRC, 2014(Final SEIS); NRC, 2013 (March), Safety Evaluation Report, p.40; Clarification of Breccia Pipes, LSMPA, Append. 3.2-C. [Sept. 2012].

In Appendix 3.2-C of the Large Scale Mine Permit Application [Powertech 2012 (Sept.)] Powertech presents a map, Plate 2, which shows a red line that supposedly represents the area in which evidence of breccia pipes and collapse structures have been reported. This Plate was modified by Powertech from an original oversize plate in Gott, et. al., 1974, [U.S.G.S. Professional Paper 763], Plate 4. However, Powertech has misrepresented the data on the original U.S.G.S. map, neglecting to include several locations within the outcrop areas of the Inyan Kara rocks that were originally described as being "topographic depressions" or "structures of possible solution origin". Clearly the original U.S.G.S. authors mapped these areas within the Inyan Kara rocks—near the D-B project-- as probable locations of solution features, such as breccia pipes.

Similar circular, topographic features can be seen on modern, satellite imagery of the D-B site and surrounding areas. It is my opinion and that of senior remote-sensing experts at Front Range Natural Resources, Ft. Collins, CO, that these features likely represent solution / collapse structures.

Neither Powertech nor the NRC Staff have presented any detailed interpretations of the D-B structural geology using high-quality satellite imagery. Until such studies have been performed, it is reasonable to assume that these circular features are potential pathways for upward migration of ground waters into the Inyan Kara sediments.

E. NRC Staff Deferred Analysis of Difficult Hydrological Controversies

1. *Expert Opinion*: NRC Staff did not meaningfully consider my comments and opinions in preparing the FSEIS and issuing the License.

2. *Basis for Opinion*: Instead of meaningfully addressing my opinions, or the cited literature confirming the complex hydrology of the project area, this FSEIS and license allowed Powertech to delay conducting detailed hydrogeologic testing and determination of detailed aquifer cleanup standards until after the NRC has given project approval. Detailed hydrogeologic and water quality studies identified in my comments must be conducted in order to support scientifically credible identification, disclosure and analysis of the complex hydrogeological impacts and effects of the D-B proposal. By delaying the response to issues I raised until after the FSEIS and License issue, it is not possible for regulators, other hydrogeologists, or the public to reliably evaluate potential impacts and consequences to natural resources and the environment.

Based on my experience, the delayed analysis raises the question as to whether other relevant applicant-generated or contracted water / hydrogeology-related reports exist, besides those listed in the various Applications and the SEIS. I would expect that other reports do exist, as the reports listed in the Application and SEIS do not include the

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Rules, Announcements, and Directives Branch (RADB)
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: Comments on Docket ID NRC-2012-0277; Draft Supplemental Environmental Impact Statement, Proposed Dewey-Burdock In Situ Leach Uranium Mine, South Dakota

Ms. Bladey,

Please accept these comments regarding the above referenced docket ID on behalf of the Oglala Sioux Tribe. At the outset, it is important to bring to BLM's and NRC staff's attention some significant problems with the Dewey-Burdock Draft Supplemental Environmental Impact Statement (DSEIS), particularly with regard to presentation of the scientific and technical bases for a large number of assumptions made in the DSEIS.[1] The NRC staff's use of citations to materials incorporated by reference into the DSEIS is inadequate to justify the scientific conclusions presented.

For example, for reference after reference, the document simply refers to "Powertech 2011" as a source for fundamental conclusions upon which the DSEIS analysis is premised. These assumptions include such basic conclusions as those as to the permeability of the under and over-lying geologic structures (i.e., p. 2-17, 4-56), and the use of "numerical simulations" to evaluate "groundwater conditions" necessary for evaluating monitoring well spacing to detect impacts from lixiviant excursions (i.e., p. 2-16). Many more examples exist throughout the entire DSEIS where it is impossible to identify and assess the referenced materials. The generic citation to "Powertech 2011)" is meaningless without more description and detail of where the information is contained in the document. The Powertech 2011 submittal itself is made up of some 5000 pages of documents. See webpage screen shot showing the list of documents which make up this submittal attached as Exhibit 1. This problem exists with regard to the NRC's reliance on other Powertech submittals as well, including those referenced as "Powertech 2009" and "Powertech 2010" among others. This lack of any specificity makes it virtually impossible to find the precise basis for conclusions made in the DSEIS. The use of generic references obfuscates the technical basis for the analysis and conclusions as to the potential impacts of the project to the point it violates the APA and NEPA, and implementing regulations. See 10 C.F.R. Part 51 (appendix A to subpart A, note 1)(allowing incorporation by reference to material outside a NEPA document, but only "without impeding agency and public review of the action" and only where the material's content is "briefly described").

Further, the DSEIS references the draft license produced by NRC Staff for the Dewey-Burdock proposal as support for the conclusions in the document. DSEIS at 2-71, 4-217. However, it appears that NRC Staff recently issued a revised draft license mere days before the close of the public comment

[1] Throughout these comments, to the extent BLM intends to rely on this SEIS as a basis for its approval of any Mining Plans of Operation for the Dewey-Burdock project, the comments herein are specifically directed at BLM as well as NRC staff.

period on the DSEIS, rendering these references stale. This unfortunate timing results in the inability of the Tribe and any member of the public to meaningfully review the new draft license, despite the fact that the DSEIS specifically relies on the draft license as a supporting reference. This document was never made publicly available during the comment period, in violation of NRC regulations which require that "no material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment." Id. NRC regulations also require that "copies of … any related comments and environmental documents, will be made available on the NRC web site." 10 C.F.R. § 51.120. Release of a new draft license within just days of the close of comment, without providing any notice, let alone public distribution of the new draft license document itself, does not provide a reasonable opportunity for the public to review and comment.

As a result of these systemic flaws in the manner in which scientific justifications are presented and the lack of time for the public to review information purported to be relied upon in the DSEIS, the document must be re-published in a manner that provides the necessary information, with the commensurate additional public comment period.

Failure to Require or Provide Necessary Baseline Data

Throughout the DSEIS, NRC proposes to allow Powertech to defer collection of critical data that is admittedly necessary to conduct a review of the project and the resulting impacts. According to the DSEIS, substantial information related to baseline conditions at the site, and needed to assess the impacts of the proposed operations, is not proposed to even be collected or reviewed until long after the NEPA process has concluded. This scheme is not allowable under NEPA.

Under NEPA, an agency is required to "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. The establishment of the baseline conditions of the affected environment is a fundamental requirement of the NEPA process:

> NEPA clearly requires that consideration of environmental impacts of proposed projects take place *before* [a final decision] is made." LaFlamme v. FERC, 842 F.2d 1063, 1071 (9th Cir.1988) (emphasis in original). **Once a project begins, the "pre-project environment" becomes a thing of the past, thereby making evaluation of the project's effect on pre-project resources impossible**. *Id.* **Without establishing the baseline conditions which exist in the vicinity … before [the project] begins, there is simply no way to determine what effect the proposed [project] will have on the environment and, consequently, no way to comply with NEPA.**

Half Moon Bay Fisherman's Mark't Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988) (emphasis added). "**In analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions**." Western Watersheds Project v. BLM, 552 F.Supp.2d 1113, 1126 (D. Nev. 2008) (emphasis added). "The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process." Council of Environmental Quality, Considering Cumulative Effects under the National Environmental Policy Act (May 11, 1999).

In this case, the DSEIS has not demonstrated that a baseline has been adequately established. For instance, the DSEIS admits that the applicant has failed to acquire necessary information related to groundwater at the site and hydro-geologic information. For example, the DSEIS admits that substantial water quality data collection and aquifer pump tests will only be conducted after license issuance. DSEIS at 2-16, 7-8, 7-14, 7-17. In fact, the document admits that the NRC staff has yet to even require the

company to design proposals for non-production monitoring wells designed to detect leaks of toxic materials above and below the target ore bodies. Id. Despite the critical importance of these monitoring wells, and their design and placement, the DSEIS proposes that the plan for such wells be proposed only after a "pump test" is complete. DSEIS at 2-17. The DSEIS admits that these tests have yet to even be designed, let alone carried out so that the public has the opportunity to comment on the actual plans proposed for this facility. Id.

This scheme deprives the Tribe, the public and any other reviewing parties any opportunity to review or comment on these important plans. Such an "approve first – plan later" tactic renders it impossible to assess or analyze the potential impacts associated with the proposed mining operation. As such, it violates NEPA's requirement that the affected environment be described in the NEPA document, and within the NEPA process. It is little comfort that "the applicant must present each monitoring well program to EPA for administrative approval before installing proposed wells. In addition, wells completed in overlying and underlying aquifers are subject to sampling procedures, remedial actions, and reporting requirements prescribed in NRC and EPA rules and regulations." DSEIS at 2-17. These "administrative approvals" have been arbitrarily excluded from the NEPA process, and appear to be completely outside any public review or scrutiny – in violation of NEPA. The same problem exists for the NRC's reliance on a Safety and Environmental Review Panel (SERP) to review baseline data, including hydrogeologic results and documentation. DSEIS at 2-18. NEPA does not allow the use of such bodies to the exclusion of presenting data in the DSEIS itself. Even if NRC could rely on post-NEPA review by a SERP, the DSEIS fails to discuss the nature of the SERP or how the objectivity would be preserved, let along how the Tribe and the public could expect to participate in a meaningful way in the review. The time for this review is in the NEPA document, not in some bureaucratic process shielded from timely outside review.

CEQ regulations specifically prohibit an agency from failing to gather necessary data in order to assess the impacts associated with a proposal. 40 C.F.R. § 1502.22 imposes detailed requirements and justifications necessary for any agency to decline to provide necessary and relevant information. None of these tests have been acknowledged, let alone met, by the DSEIS – nor could they likely be, as the test for not acquiring the relevant information turns on the cost to do so being "exorbitant". In this case, this information is specifically planned to be acquired as part of the project development, but is simply being deferred until after the NEPA process. Deferring the gathering of such information until after the NEPA process based purely on the convenience to the operator, is not allowable.

Importantly, the details of how the baseline is established and documented is critical to an understanding of the potential impacts associated with the proposed mine. The manner in which baseline water quality information is gathered is crucial to any analysis that relies on the data. The problems that can flow from analysis and models based on poorly gathered information is often characterized as a garbage in/garbage out. This colloquialism is more technically addressed in the attached memo from Dr. Richard Abitz and confirms that the scientific methodology employed for establishing baseline at a proposed ISL mine is important. Abitz Report attached as Exhibit 2. As a precondition to conducting modeling and analysis, NRC and BLM must confirm that a credible scientific method is employed to establish an accurate baseline. Unfortunately, no details with regard to methodology of acquiring baseline are described in the DSEIS. As described by Dr. Abitz, valid statistical methods and a systematic grid covering all horizons of the aquifer must be employed with respect to baseline ground water quality collection. This includes water quality information throughout the vertical extent of the affected aquifers and a spatially representative sampling protocol to provide the necessary information on ground water characteristics outside of the proposed mining zone, to

accurately characterize site conditions. Lastly, as noted by Dr. Abitz, any proposed methodology that seeks to average site conditions is inappropriate, as it results in a baseline plan which is inappropriately skewed toward demonstrating a lower overall water quality. Such an approach could exaggerate the true extent of any naturally diminished water quality resulting from the presence of uranium and other heavy metals in the aquifer region. Dr. Abitz' report, and each of the critiques contained therein (including air sampling protocol issues) along with the references cited, are expressly incorporated into these comments as if fully set forth herein. Apart from failing to set forth a competent baseline in the DSEIS, the issues described in Dr. Abitz' memo have not been described or otherwise addressed in the DSEIS.

Of particular note concerning the lack of meaningful baseline data are the thousands of historic drill and bore holes within the project area. The DSEIS admits that these bore holes exist and could cause serious environmental impacts by providing a pathway for spread of contamination in the groundwater. DSEIS at 3-20. The DSEIS also admits that pump test data is necessary "to demonstrate that solutions can be controlled with typical wellfield bleed rates and to detect and identify leakage due to anomalies such as improperly plugged wells and exploration boreholes." DSEIS 2-18. However, instead of requiring that Powertech collect the necessary data for analysis in the DSEIS, NRC attempts to entirely evade this issue with statements that "[w]hile the applicant cannot confirm that all historic borings were properly plugged and abandoned, the applicant has made commitments to ensure that unplugged drill holes will not impact human health or the environment during operations." DSEIS at 3-20. Such unsupported assertions do not comply with NEPA's "hard look" mandate. NRC does not identify the source of the Powertech's "commitments," nor how Powertech proposes to "ensure" such protections. Indeed, NRC attempts to argue simply that "there is no other evidence indicating that previously unplugged borings are current groundwater flow pathways." Id. Citing to a lack of evidence is of little value in terms of NEPA compliance when NRC proposes to simply defer collection of that very data that would provide that information. Simply put, NRC cannot simply state that no evidence exists when there are methods to acquire such information that can, and will be employed at a later date to, analyze this issue. Avoiding scrutiny of a difficult problem by deferring collection and analysis of such critical information until after license approval cannot stand up under NEPA.

Even if deferral of necessary data collection was allowable, there in fact is evidence that the historic drill holes provide a conduit for ground water migration. The DSEIS states that in the southwest corner of the Burdock area there is "groundwater [ ] discharging to the ground surface from the Fall River aquifer and Chilson aquifer (Chilson Member of the Lakota Formation) through improperly plugged exploratory boreholes." DSEIS at 3-23. This information necessitates a more detailed review of the issue of historic wells or bore holes – and requires that any feasible pump tests or other analysis be performed as part of the NEPA process, with necessary opportunities for public and agency review and comment, in order to assess the potential impacts of the project.

Additionally, the DSEIS identifies areas where the Fall River aquifer proposed to be mined is not hydrologically confined. Instead of requiring the collection of the data necessary to determine the potential impacts of mining in this unconfined aquifer, NRC instead suggests that "[t]he applicant has committed, as part of the license condition, to conduct additional hydrogeological investigations…." DSEIS at 3-37. As with the other fundamental gaps in meaningful data, this lack of baseline data collection as part of the NEPA process severely undermines the public's (and the agencies') ability to understand and evaluate the potential impacts of the operation. Indeed, it appears throughout the DSEIS that any time there is a question about the impacts, instead of requiring collection of the data necessary to do a proper analysis, NRC and BLM simply allow the company to defer collection of any

data to a later (post-NEPA) time – then claim that "no evidence" exists to demonstrate serious impacts would occur. This is backward. The burden is on the applicant in an NRC proceeding to demonstrate the ability to protect the environment and the public health and on NRC to comply with NEPA. Citing to a lack of evidence when it is due to a lack of any meaningful investigation, is not allowable.

Lastly, this lack of meaningful information is not limited to water impacts. For example, with regard to air impacts, the DSEIS states that "[t]he applicant committed to perform additional air dispersion modeling before the final SEIS is prepared." DSEIS at xxxvii. Deferral of data gathering with respect to air is no more justifiable than for water. Further, presentation of new data in a Final EIS, without disclosing it in a draft and providing for public review and comment, violates NEPA's public disclosure and participation requirements.

Many of these issues regarding lack of characterization, baseline data collection, or evidence of ability to contain contamination once ISL mining begins were addressed in detail in the Declaration of Robert Moran, which was attached to the Oglala Sioux Tribe's Petition to Intervene in this matter. Dr. Moran's previous testimony is attached hereto as Exhibit 3 and is expressly incorporated into these comments, as if set forth fully herein. As a result, NRC and BLM must address each of Dr. Moran's critiques in the context of the SEIS and its obligation to respond to comments.

Mitigation Measures Are Not Adequately Analyzed

NEPA requires the agencies to: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," 40 CFR § 1502.14(f); and (2) "include discussions of: . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 CFR § 1502.16(h). NEPA regulations define "mitigation" as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§ 1508.20(a)-(e). "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989).

Specifically in the mining context, federal courts hold that NEPA also requires that the agency fully review whether the mitigation will be effective. See South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 728 (9th Cir. 2009). "The [agency's] broad generalizations and vague references to mitigation measures … do not constitute the detail as to mitigation measures that would be undertaken, and their effectiveness, that the [agency] is required to provide." Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1380-81 (9th Cir. 1998). The DSEIS's reliance on a future, as yet-unsubmitted, mitigation to prevent/mitigate adverse impacts to these resources also violates NRC and BLM duties under NEPA and the National Historic Preservation Act [NHPA]. The NHPA, and its implementing regulations, require full review of these impacts as part of the public review process – something which has not occurred here.

Thus, to the extent NRC and BLM rely on mitigation for any impacts, such mitigation must be specifically spelled-out, at least in reasonable detail, and the effectiveness of the proposed mitigation must be analyzed. In this case, the DSEIS expressly relies on mitigation in justifying a preliminary recommendation to issue the proposed license. DSEIS at xlv, xxx. Unfortunately, the proposed mitigation consists overwhelmingly of a list of plans to be developed later, outside the NEPA process. DSEIS at 6-1 through 6-19. Much like the failure to analyze baseline data, the DSEIS fails to provide the

any of the required detailed analysis of proposed mitigation measures, and makes no attempt to evaluate the effectiveness of any of the proposed mitigation. For instance, the DSEIS repeatedly refers to Powertech's commitment to restore groundwater back to its pre-mining condition. "The applicant will also be required to restore groundwater parameters affected by ISR operations to levels that are protective of human health and safety." DSEIS at 2-69. The DSEIS similarly simply states that Powertech will be required to restore aquifers to background concentrations. DSEIS at 4-51, 5-52, 4-64. However, such assurances, without any evaluation of how effective these restorations efforts are expected to be, do not satisfy NEPA.

Here, historic evidence demonstrates that ISL uranium mines have a very poor record of restoring ground water aquifers – in fact, none have ever actually restored an aquifer. Indeed, as recently described by the U.S. Geological Survey, "**to date, no remediation of an ISR operation in the US has successfully returned the aquifer to baseline conditions. Often at the end of monitoring, contaminants continue to increase by reoxidation and resolubilation of species reduced during remediation."** J.K. Otton, S. Hall, "In-situ recovery uranium mining in the United States: Overview of production and remediation issues," U.S. Geological Survey, 2009 (IAEA-CN-175/87)(emphasis added)(attached as Exhibit 4). Similar post-mining increases in contamination levels in impacted aquifers are described in more detail in other USGS publications. See Hall, S. "Groundwater Restoration at Uranium In-Situ Recovery Mines, South Texas Coastal Plain," USGS Open File Report 2009-1143 (2009)(attached as Exhibit 5). Independent research focused on ISL uranium mining efforts in Texas also demonstrated the ineffectiveness of industry and regulatory agency assurances of the ability to restore aquifers to pre-mining water quality. Darling, B., "Report on Findings Related to the Restoration of In-Situ Uranium Mines in South Texas," Southwest Groundwater Consulting, LLC (2008) (attached as Exhibit 6). These issues echo the issues regarding repeated failures of industry and regulators to meet pollution control assurances as set forth in the Oglala Sioux Tribe's successful Petition to Intervene in the Dewey-Burdock licensing process. Petition to Intervene at 1-11 (attached as Exhibit 7). Lastly, recent investigative journalism pieces have also exposed the lack of effective mitigation for ISL uranium mining operations such as that proposed at Dewey-Burdock. See Lustgarten, Abrahm, "On a Wyoming Ranch, Feds Sacrifice Tomorrow's Water to Mine Uranium Today," ProPublica, Dec. 26, 2012 (attached as Exhibit 8).

The ISL industry's historic and ongoing inability to control aquifer contamination and restore groundwater impacted by ISL uranium mining must be acknowledged and competently addressed within the NEPA process. While the DSEIS presents some general methods for restoration of the groundwater following mining operations, it does not provide detail as to how this proponent expects to succeed where all others have failed, assess any objective criteria for the effectiveness of these methods, nor how these issues affect the potential impacts of the proposed project. A detailed evaluation of the effectiveness of any proposed mitigation measure is required by NEPA. This lack of analysis of proposed mitigation measures is expansive, and not limited to ground water mitigation. The current mitigation measure list consists of a multi-page chart which simply lists each proposed mitigation measure, with no elaboration or other analysis of how the operator expects to accomplish these items, or how effective each is expected to be (if at all), as required by NEPA. To comply with NEPA, each mitigation measure must be detailed with specific description, supporting data, and analysis of process and effectiveness within the context of a Draft NEPA document. As it stands, the NRC and BLM must conduct this necessary work, then re-issue the DSEIS for meaningful public and agency review.

Cumulative Impacts Have Not Been Adequately Addressed

"The CEQ regulations require agencies to discuss the cumulative impacts of a project as part of the environmental analysis. 40 C.F.R. § 1508.7." Davis v. Mineta, 302 F.3d at 1125 (10th Cir. 2002). "Of course, effects must be considered cumulatively, and impacts that are insignificant standing alone continue to require analysis if they are significant when combined with other impacts. 40 C.F.R. §1508.25(a)(2)." New Mexico ex rel. Richardson, 565 F.3d at 713, n. 36. Federal courts have recently interpreted the cumulative impact requirement in the mining context:

> In a cumulative impact analysis, an agency must take a "hard look" at all actions. [A NEPA] analysis of cumulative impacts must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment. … Without such information, neither the courts nor the public … can be assured that the [agency] provided the hard look that it is required to provide.

Te-Moak Tribe of Western Shoshone, 608 F.3d 592, 603 (9th Cir. 2010) (rejecting NEPA document for mineral exploration that had failed to include detailed analysis of impacts from nearby proposed mining operations).

A cumulative impact analysis must provide a "useful analysis" that includes a detailed and **quantified** evaluation of cumulative impacts to allow for informed decision-making and public disclosure. Kern v. U.S. Bureau of Land Management, 284 F.3d 1062, 1066 (9th Cir. 2002). The NEPA requirement to analyze cumulative impacts prevents agencies from undertaking a piecemeal review of environmental impacts. Earth Island Institute v. U.S. Forest Service, 351 F.3d 1291, 1306-07 (9th Cir. 2003).

The NEPA obligation to consider cumulative impacts extends to all "past," "present," and "reasonably foreseeable" future projects. Great Basin Mine Watch v. Hankins, 456 F.3d 955, 971-974 (9th Cir. 2006) (requiring "mine-specific … cumulative data," a "quantified assessment of their [other projects] combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed mining operations in the region).

This cumulative impacts analysis thus must address not only past uranium mining in the region, including the abandoned and unreclaimed uranium mines within the project area, but also present and foreseeable uranium development. In particular, Powertech admits that this facility is proposed to be used as a processing site for ongoing uranium mineral development in the region, even identifying specific projects that would provide future feed the Burdock regional processing/milling facility:

> It is likely that he CPP at the Burdock site will continue to operate for several years following the decommissioning of the Proposed Action well fields. The CPP may continue to process uranium from other ISL projects such as the nearby Powertech (USA) satellite ISL projects of Aladdin and Dewey Terrace planned in Wyoming, as well as possible tolling arrangements with other operators.

Dewey-Burdock Project Application for NRC Uranium Recovery License Fall River and Custer Counties South Dakota Technical Report at p. 1-8. Indeed, Powertech specifically asserted that future processing of ore from the Aladdin and Dewey Terrace facilities are part of the "Proposed Action" included in the Dewey-Burdock license application:

> It is likely that the CPP at the Burdock site will continue to operate for several years following the D&D of the project well fields. **The Proposed Action is for the plant to continue to receive and process uranium loaded resins from other Proposed Projects such as Powertech's nearby Aladdin and Dewey Terrace Proposed Satellite Facility Projects planned in Wyoming or from other licensed ISL operators or other licensed facilities generating uranium-loaded resins that are compatible with the Powertech (USA) production process.**

Dewey-Burdock Project Application for NRC Uranium Recovery License Fall River and Custer Counties, South Dakota, Environmental Report, February 2009 at p. 1-25 (emphasis added).

Despite the project proponent's inclusion of these future activities in the application, the DSEIS mentions these mining projects only briefly in the "affected environment" portion of the document with no analysis of the impacts. See DSEIS at 3-6. This omission is glaring light of acknowledgment that the Aladdin project is only 8 miles away (DSEIS at 3-6) – and Powertech's aggressive advancement of the Aladdin project and Dewey-Terrace project. See Powertech press release and NI 43-101 report (attached as Exhibit 9). Other mining development in and around the Black Hills region must be evaluated, including the Cameco operations in Nebraska and the proposed Bear Lodge rare earth minerals mine.

Also of concern with respect to cumulative impacts are those associated with the Black Hills Ordnance Depot. Issues of soil and ground water contamination associated with this site are well-documented. The cumulative impact analysis must address potential exacerbation of ground water contamination associated with chemicals from the Depot caused by the proposed Dewey-Burdock project, including ground water pumping both for mining purposes and for fresh water use, along with deep injection disposal.

The DSEIS Fails to Consider All Reasonable Alternatives

The range of alternatives is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. NEPA requires agencies to "rigorously explore and objectively evaluate" a range of alternatives to proposed federal actions. See 40 C.F.R. §§ 1502.14(a) and 1508.25(c). "An agency must look at every reasonable alternative." Northwest Envtl. Defense Center v. Bonneville Power Admin., 117 F.3d 1520, 1538 (9th Cir. 1997). An agency violates NEPA by failing to "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14). This evaluation extends to considering more environmentally protective alternatives and mitigation measures. See e.g., Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1122-1123 (9th Cir. 2002) (and cases cited therein).

NEPA requires that an actual "range" of alternatives be considered, so that the Act will "preclude agencies from defining the objectives of their actions in terms so unreasonably narrow that they can be accomplished by only one alternative (i.e. the applicant's proposed project)." Colorado Envtl. Coalition v. Dombeck, 185 F.3d 1162, 1174 (10th Cir. 1999), *citing* Simmons v. United States Corps of Engineers, 120 F.3d 664, 669 (7th Cir. 1997). This requirement prevents the EIS from becoming "a foreordained formality." City of New York v. Department of Transp., 715 F.2d 732, 743 (2nd Cir. 1983). See also Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002).

Numerous unexplored and unreviewed alternatives exist. For instance, the NRC should consider an alternative that precludes adoption of any Alternate Concentration Limits (ACL's) for ground water restoration. This is a reasonable alternative, as this is the law in places such as Colorado. Further, NRC

should consider an alternative of allowing the proponent to move forward with mining of additional well-fields only upon a demonstration that it has operated without excursions, and has restored and demonstrated long-term stability of restoration in previously-mined well-fields. Along these lines, NRC should consider an alternative of allowing operations at either the Dewey or Burdock areas only upon a demonstration that the other area has been successfully mined without excursion and with full, stable, restoration, and only allowing uranium extraction to occur in areas of the aquifers demonstrated to be confined – and disallow any extraction from aquifers, or portions of aquifers, for which the applicant has not yet demonstrated confined conditions.

The Project Does Not Comply with the 1872 Mining Law or the Administrative Procedure Act

The operation violates the 1872 Mining Law and the Administrative Procedure Act. Powertech proposes to use lode mining claims for purposes entirely unrelated to the extraction of valuable minerals, despite the requirement that all lode mining claims contain valuable mineral deposits. In fact, the materials provided by Powertech to the BLM and EPA demonstrate that Powertech intends not to extract minerals from lode claims, but solely for deep disposal of toxic mining wastes. Instead of applying only the "unnecessary or undue degradation" under 43 C.F.R. part 3809 to these operations, the BLM must apply its full panoply of FLPMA authorities, including a public interest review and payment of fair market value.

The DSEIS rests on the erroneous assumption that Powertech that has a statutory right to develop federal mineral resources at the site. Thus, according to the DSEIS, Powertech has a statutory right to conduct its processing and waste injection disposal and other operations based solely on the fact that the company has blanketed the projects lands with mining claims. Here, Powertech has filed lode mining claims covering the federal surface lands and the private surface/federal mineral lands in the project area, including those where no actual mining is proposed (i.e., dumping, processing, and other ancillary uses).

According to the DSEIS, the filing of these claims establishes a right under the mining laws and confines the analysis of the project under BLM authority to only a review of whether the operation will cause "unnecessary or undue degradation" under FLPMA. DSEIS at xxvii – xxviii. This position is wrong. Such "rights" can only accrue to the company if these claims are valid under the 1872 Mining Law. Here, there is no evidence in the record that these claims are valid.

Without valid rights under the mining laws, Powertech is subject to the full scope of the BLM's authority under FLPMA, the Multiple Use Sustained Yield Act, and other laws mandating that BLM manage these lands for non-mineral uses. This includes discretionary authority over the project based on a required public interest analysis, and the Fair Market Value (FMV) requirement for the use of public lands not covered by valid mining claims.

The DSEIS's review and the BLM's proposed approval of the Project are based on the overriding assumption that Powertech has statutory rights to use all of the public lands and subsurface at the site under the 1872 Mining Law. However, where Project lands have not been verified to contain, or do not contain, such rights, the BLM's more discretionary multiple use authorities apply. Mineral Policy Center v. Norton, 292 F.Supp.2d 30, 46-51 (D.D.C. 2003); 30 U.S.C. § 22 (only "valuable mineral deposits" are covered by the Mining Law).

A proper application of BLM's multiple use, public interest, and sustained yield mandates to those areas not covered by valid claims would result in a very different Project review, alternatives, and level of protection for public land resources and values, as well as reducing or eliminating the adverse impacts to the use of these lands by members of the public and commenters.

The Mineral Policy Center court specifically recognized the federal government's duty to apply its broader, multiple use authority when mineral development operations are proposed on lands not subject to valid and perfected claims:

> While a claimant can explore for valuable mineral deposits before perfecting a valid mining claim, without such a claim, she has no property rights against the United States (although she may establish rights against other potential claimants), and her use of the land may be circumscribed beyond the UUD standard because it is not explicitly protected by the Mining Law.

292 F.Supp.2d at 47.

The court was equally clear as to what was required to "perfect" a mining claim:

> The Mining Law gives individuals the right to explore for mineral resources on lands that are "free and open" in advance of having made a "discovery" or perfected a valid mining claim. United States v. Locke, 471 U.S. 84, 86, 105 S.Ct. 1785, 85 L.Ed.2d 64 (1985). The Mining Law provides, however, that a mining claim cannot be perfected "until the discovery of the vein or lode." 30 U.S.C. § 23.

Id. at 46 n.19. For mining claims for which BLM has not determined are valid, pursuant to the Mineral Policy Center decision:

> [b]efore an operator perfects her claim, because there are no rights under the Mining Law that must be respected, BLM has wide discretion in deciding whether to approve or disapprove of a miner's proposed plan of operations.

Id. at 48. In its review of the Project, the DSEIS never even considers this "wide discretion" to "approve or disapprove" any part of Powertech's Plan of Operations.

Regarding the requirement for the federal government to obtain Fair Market Value for the use of public lands not covered by valid claims, the court held that, under FLPMA, "the United States [must] receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute." 43 U.S.C. §1701(a)(9). The court held that unless the lands were covered by valid claims (i.e. the situation "otherwise provided for by statute" in § 1701(a)(9)), the agencies must comply with their Fair Market Value duty:

> Operations neither conducted pursuant to valid mining claims nor otherwise explicitly protected by FLPMA or the Mining Law (i.e., exploration activities, ingress and egress, and limited utilization of mill sites) must be evaluated in light of Congress's expressed policy goal for the United States to "receive fair market value of the use of the public lands and their resources." 43 U.S.C. § 1701(a)(9).

Id. at 51.

At Dewey-Burdock, the DSEIS fails to consider the application of these multiple use authorities, and related Fair Market Value requirements pursuant to Mineral Policy Center – in violation of FLPMA, the Mining Law, and their multiple use mandates, as well as the APA's prohibition on arbitrary and capricious decisionmaking.

As the Interior Department has held:

> Generally, absent the discovery of a "valuable mineral deposit" on each of the unpatented lode mining claims, ASARCO would not be entitled to the "exclusive right of possession and enjoyment of all the surface [of the claim]" and subsurface rights under 30 U.S.C. §§ 22 and 26, good against the United States, or ultimately to a patent of the claimed lands, pursuant to 30 U.S.C. §§ 22 and 29 (2000). Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335-36 (1963); Wilbur v. Krushnic, 280 U.S. 306, 316-17 (1930); Cameron v. United States, 252 U.S. 450, 460 (1920); Cole v. Ralph, 252 U.S. 286, 294-96 (1920). In such circumstances, BLM would have discretion to modify or even reject an MPO filed to engage in mining operations and related activity. Great Basin Mine Watch, 146 IBLA 248, 256 (1998) ("Rights to mine under the general mining laws are derivative of a discovery of a valuable mineral deposit").

Center for Biological Diversity, 162 IBLA 268, 278 (2004). "[T]he location of a mining claim does not render a claim presumptively valid and the Department may require a claimant to provide evidence of validity before approving an MPO or allowing other surface disturbance in connection with the claim." Id. at 281.

In addition, BLM's decision not to require the payment of Fair Market Value, and to limit its authority over the use of the ancillary lands, must be supported by substantial evidence in the record– evidence which does not exist. The agency cannot simply assume, without any evidence (and indeed the evidence points to the contrary) that the lands to be buried by the dumps and processing facilities are covered by valid mining claims. The Supreme Court has explained:

> [A]n agency [decision] would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto Ins. Co., 463 U.S. 29, 43 (1983).

In this case, Powertech claims maps show that the lands proposed for the waste disposal, and other non-extractive uses do not contain the requisite valuable minerals (e.g., the mineralized zone is limited), the DSEIS's assumptions of "rights" under the Mining Law are erroneous. At a minimum, the agencies' assumptions of these rights/entitlements should be investigated and supported by detailed factual evidence – evidence lacking in the DSEIS.

The DSEIS Fails to Adequately Address Impacts to Cultural Resources, or Comply with the NHPA

The DSEIS violates NEPA and the NHPA because it fails to include a comprehensive analysis of cultural impacts. In fact, it appears that despite the application having been pending for some three years, there has yet to be done a competent cultural resource inventory of the site. Simply put, the NRC should not have released the admittedly incomplete DSEIS. Powertech had an obligation at the application stage to provide a competent analysis of cultural resources – and it failed to do so. The fact that the company has been either unwilling or unable to gather competent information does not provide a basis to pressure NRC staff to issue an incomplete DSEIS. It is not an excuse that the NHPA section 106 consultation duties are the responsibility of NRC and BLM, rather than that of Powertech. Powertech has no reasonable expectation that its proposed mine in an area of significant cultural importance would not require the requisite detailed review of cultural resources and impacts thereto. The fact that NRC decided instead to issue the DSEIS rather than complete its information violates NEPA's requirements to provide meaningful public comment or review. NRC should suspend the DSEIS process until such information is available, and reissue the draft when the necessary information is acquired and fully reviewed. Making matters worse, NRC appears poised to forgo any draft analysis of the cultural resources impacts, instead indicating only that "[r]esults of the [section 106] consultation will be presented in the final SEIS." DSEIS 1-22. NEPA and the NHPA prohibit any attempt to forgo a complete draft analysis of cultural impacts by going directly to final.

NRC Staff states that it is continuing to consult with certain Tribes. However, some of this consultation has not been as productive as anticipated by the Tribes, including the Oglala Sioux Tribe with respect to historical and cultural survey. See letters from the Tribes to NRC regarding the proposed contract by KLJ with the Turtle Mountain Band of Chippewa Indians and the Three Affiliated Tribes, attached as Exhibit 10. These two Tribes contacted the NRC by letter and stated that the proposed project would not have an affect on historic properties of importance and the THPO also stated that "determination of No Historic Properties Affected Is granted for the project to proceed." DSEIS at 1-17 to 1-18. Despite this response to project, the NRC accepted their participation and contract for the survey.

Furthermore, the Oglala Sioux Tribe and other Sioux Tribes by letters and email to NRC expressed concerns about the proposed contract and company selected (See Letters and Emails to NRC from Tribes from October 2012 to November 2012, including in Exhibit 10). The Oglala Sioux Tribe did request additional time to review the proposed contract but only given additional time to select one individual to participate in the survey with KLJ. (See email from NRC to Oglala Sioux Tribe dated November 2, 2012, included in Exhibit 10).

Significant Historical and Cultural Impacts Are Anticipated for Small Impacts to Local Economy

During the construction phase of the proposed project it is anticipated that there will be a small to large impact upon the historical and cultural resources. DSEIS at xxxix.

NRC is willing to issue a license by allowing Powertech to have an unexpected discovery plan to mitigate or relocate if possible of any historical or cultural resources are found. A plan which has not been drafted or presented to the public or other governmental agencies for review and comment. Id.

The proposed project is expected to have a small impact upon the socioeconomics of the area throughout all phases of the project DSEIS at xl. According to NRC, Operations of the Proposed Dewey-Burdock ISR Project will create new jobs but because of the small workforce size and because most

skilled workers will be drawn from areas outside of the region of influence, impacts on employment will not be noticeable. DSEIS at xl-xli.

The DSEIS Improperly Relies on Other Non-NEPA State and Federal Permits To Defer Review of Impacts

The DSEIS repeatedly relies upon state and other federal agencies to require appropriate mitigation measures to lessen impacts, and uses those permitting processes to simply defer analysis of impacts to these other agencies. For instance, in making its determination that impacts from the use of Class V underground waste injection wells is "small", the DSEIS defers to the fact that "EPA will evaluate the suitability of the formations proposed for Class V well injection. Class V injection disposal will be allowed only when the applicant demonstrates liquid waste can be isolated safely in a deep aquifer." DSEIS at 4-44. NRC similarly defers to a future EPA analysis related to the UIC Class III well permitting process and to the South Dakota state processes. DSEIS at 3-39, 4-54, 4-67, 4-68, B-3. In this way, the DSEIS simply defers analysis of the potential impacts to EPA permits under the Safe Drinking Water Act (SDWA). However, neither EPA UIC permits nor any South Dakota state permits are subject to NEPA.

The NRC is prohibited from such blind reliance on other agencies to conduct its analysis of the baseline, potential impacts, and proposed mitigation associated with a uranium mine proposal. See 10 C.F.R. § 51.71 ("The environmental impact of the proposed action will be considered in the analysis with respect to matters covered by environmental quality standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained."). The DSEIS' reliance on South Dakota permitting processes similarly cannot excuse NRC and BLM responsibilities to fully review the environmental impacts. South Fork Band Council v. BLM, 588 F.3d 718, 726 (9th Cir. 2009)("A non-NEPA document -- let alone one prepared and adopted by a state government -- cannot satisfy a federal agency's obligations under NEPA.").

Failure to Properly Account for Waste Disposal

The applicant proposes to rely on Reverse Osmosis (RO) for treatment of its liquid wastes. DSEIS 3-105. In fact, for the deep waste disposal alternative, Powertech proposes to rely primarily on RO for water treatment. DSEIS at 2-36, 4-33. The DSEIS does not competently account for the extent of the waste that will be generated. The DSEIS states, without any support, that Powertech will recover 70% of the treated water as usable permeate. DSEIS at 2-36, 4-33. However, according to government estimates, reverse osmosis can result in a loss of upwards to 95% of the liquid, which would be left in the waste, leaving a more significant waste stream than analyzed in the DSEIS. See University of North Dakota State University, "Reverse Osmosis" AE-1047 (2008), attached as Exhibit 11. This government document states that reverse osmosis is also prone to fail if not meticulously maintained, and further is not advised for larger volumes of water due to the significant water loss and waste associated with the process. The DSEIS must accurately review Powertech's plan regarding waste disposal to analyze and compensate for these factors.

The DSEIS also fails to adequately address disposal options should the Class V Underground Injection Control permit be denied. The DSEIS stats that "[i[f EPA does not grant the applicant a UIC permit, the applicant would need to rely solely on the proposed land application or seek an NRC license amendment to approve another disposal option before it initiated operations." DSEIS at 2-54. The DSEIS must detail these other potential disposal plans as part of its discussion of impacts, alternatives analysis, and discussion of mitigation.

With respect to the proposed land application disposal, the DSEIS does not detail the water quality expected from the operation, nor detail any anticipated effectiveness of the proposed water treatment proposals. DSEIS at 2-49. The DSEIS does not detail any information regarding plans should the un-reviewed water treatment plan not perform as expected. These gaps are not condonable under NEPA. The effectiveness of any treatment plan directly affects the anticipated impacts of the proposal. Simply stating that Powertech "would" clean the water to standards, without any detailed analysis, does not meet NEPA's analytical requirements.

Further, the DSEIS fails to properly account for impacts to wildlife resulting from land application of ISL wastes. The U.S. Fish and Wildlife Service has expressly stated that the agency "do[es] not recommend land application using center pivot irrigation for the disposal of in-situ mining wastewater." U.S. Fish and Wildlife Service letter to NRC 9/5/07 (attached as Exhibit 12). This expert wildlife agency has published detailed information on the risks of selenium contamination resulting from disposal of ISL wastes via land application. U.S. Fish and Wildlife Service Contaminant Report Number R6/715C/00 (attached as Exhibit 13). The DSEIS must fully account for these impacts and present credible evidence and scientific evaluation addressing why these concerns do not apply in this instance. Anything short of a full review violates NEPA's requirement to take a "hard look" at all environmental impacts.

The proposed project does include the option of surface water treatment of the waste produced during the mining process. The applicant identified several federally and state endangered species but failed to state how they will be affected by the project's waste via land application. DSEIS at 3-43 to 3-60.

Reliance on the Generic Environmental Impact Statement is Unwarranted

At the time the GEIS was issued, substantial critical public comments regarding the process for the GEIS were lodged. NRC appears to not have taken up a discussion of any of the critiques offered on that document. As such, reliance on GEIS is not warranted. Because the GEIS itself did not comply with NEPA, both in process and in substance, it cannot be relied upon in this SEIS. NRC must fully review the comments submitted on the GEIS and assess how those comments affect this SEIS. Failure to do so allows the agency to rely on the GEIS without compliance with NEPA – a violation of NEPA that carries forward to the SEIS for the Dewey-Burdock proposal.

Solid 11e2byproduct Impacts and Environmental Justice

Where a byproduct materials license is being contemplated in the licensing action, NEPA demands that on-site creation and storage of the solid 11e2 byproduct must be fully analyzed in a DSEIS along with an analysis of the plan for off-site shipment and disposal of the waste. Yet, the DSEIS does not analyze the impacts or potential mitigation measures for a range of alternatives available for storing and disposal of solid 11e2 byproduct during operations and during decommissioning and closure. Although some amount of 11e2 byproduct will be created during the operations phase, particularly related to maintenance, repair, and the rolling closure of well-fields, the anticipated type and amount of wastes are not identified in the DSEIS beyond a generic reference. DSEIS 2-10. Further, the DSEIS does not analyze the impacts or alternative plans to store these vaguely referenced solid 11e2 byproduct materials. Instead, the DSEIS contains only a vague intent to ship these materials to the Energy Fuels facility near Blanding, Utah and the Ute Mountain Ute Community at White Mesa. The DSEIS does not reveal that Energy Fuels does not have a disposal cell that is currently licensed to accept direct disposal

of such wastes at any of the Canadian Corporation's U.S. holdings. The confirmed lack of suitable on-site locations for disposal of solid 11e2 byproduct were not revealed or analyzed in the DSEIS.

Because off-site transport and off-site disposal of 11e2 byproduct is an integral part of the present federal action, these impacts and the impacts of on-site storage in anticipation of transport for off-site disposal must be revealed and analyzed in the DSEIS. This DSEIS for the licensing of the creation, storage, transport, and disposal of solid byproduct materials must include disclosure and analysis of reasons why the past and present management of the White Mesa Mill have been unable to meet state and federal standards. According to data published on the Mine Safety Health Administration website, recent inspections identified violations that resulted in tens of thousands of dollars of fines. Other issues of ongoing groundwater contamination and off-site air deposition of radioactive materials at the White Mesa Mill must also receive NEPA analysis. Because NRC relies on White Mesa as the disposal site for the wastes, the agency must analyze impacts associated with the operation and disposal of the Powertech wastes at the White Mesa location. Similarly, alternative disposal sites were improperly not identified or analyzed in the DSEIS – despite admissions that alternate sites may be necessary due to lack of any existing contract for solid 11e2 byproduct disposal space.

Additional and serious environmental justice issues are raised by the assumption that these solid 11e2 byproduct materials will be sent to San Juan County, Utah. Census data confirms that San Juan County, Utah is comprised of 49% "American Indian and Native Alaska persons." http://quickfacts.census.gov/qfd/states/49/49037.html. "White persons not Hispanic" only comprise 44.2% of San Juan County's population, and 29.4% of the county population lives below the poverty line. *Id*.

The NRC's past practice of relying on project proponent assumptions and future promises to find a disposal site at some date after licensed wastes are created did not work at reactors. This repudiated practice of creating waste without a confirmed disposal site cannot be allowed to extend to the D-B ISL project. Even if this were permissible under UMTRCA and applicable NRC rules (esp. Appendix A), which it is not, NEPA requires that NRC must fully disclose and analyze the foreseeable impacts of solid 11e2 byproduct disposal. A new DSEIS must be prepared that confirms whether or not a licensed site currently exists to accept Powertech's solid 11e2 byproduct. Because the answer is likely 'no,' the lack of licensed disposal capacity contradicts Powertech's assumptions and a DSEIS built on the assumption that Powertech can obtain a contract for waste disposal space. A new DSEIS analysis must also analyze other potential alternative sites to ensure off-site capacity will be maintained open via license and contract to ensure space is available for disposal of solid 11e2 byproduct materials during decommissioning.

The present DSEIS is fatally flawed, as it fails to disclose and analyze the impacts of creation, storage, transport, and disposal of solid 11e2 byproduct. A new NEPA scoping notice must issue that reveals the project area for the 11e2 byproduct license includes the Utah disposal site and the transportation routes, as well as other reasonable alternative disposal plans.

Threatened and Endangered Species

Endangered Species Act Section 7 consultation was not completed, and imperiled species were glossed over in the DSEIS. However, the DSEIS at Section 3.6.1.2.2 "explains that sharp-tailed grouse (Tympanuchus phasianellus), ruffed grouse (Bonasa umbellus), and Greater sage-grouse (Centrocercus urophasianus) could potentially occur in the proposed project area."

Although the Greater Sage-grouse is a candidate species, NEPA analysis is still required for impacts. Although relevant information is available, the DSEIS chose to ignore the studies and draft recommendations.

> In August 2012, FWS issued a draft report to help achieve sage-grouse conservation objectives before the 2015 decision. Recommendations from these studies could be implemented at the proposed Dewey-Burdock ISR Project when they are finalized and become available.

DSEIS at 4-84. NRC need not, and indeed cannot, issue the DSEIS without incorporating the information into the analysis of impacts, and potential mitigation measures for this imperiled species.

The result is that the DEIS fails to provide the required analysis of the conservation objectives that could be adopted to protect the imperiled Greater sage grouse, and its habitat. There is no valid basis to delay the analysis until after the licensing decision is made. Instead, NEPA requires that the analysis be conducted at the earliest possible time. To the extent that generation of additional information is anticipated about foreseeable impacts, the supplementation process cannot be used to defeat NEPA's timely disclosure and analysis purposes.

Further, language used in the DSEIS could misinform the public and the decisionmaker, particularly where the indirect effects to the endangered whooping crane is expected to occur at the site during migration. DSEIS at 4-92.

> No federally listed species are known to occur on the proposed Dewey-Burdock ISR Project site (FWS, 2010). No federal- or state-listed sensitive plant species, endangered or threatened plant species, or designated critical habitats were observed within the proposed project site during baseline wildlife surveys (Powertech, 2009a); therefore, there will be no direct impact to these species.

DSEIS at 4-91. Observation of a listed species within the project site is not relevant to the question of whether or not there will be a direct impact to these species. The analysis, having been arbitrarily constrained, must be presented in a new DSEIS that recognizes the on and off-site impacts on wildlife, including but not limited to those species listed under the Endangered Species Act.

Despite the USFWS determination that Whooping Cranes are expected to occur at the site, NRC staff made an arbitrary and contrary conclusion that finds no basis in the record:

> NRC staff conclude that migrating whooping cranes will not likely occur at the proposed site based on their traditional migratory pathway (FWS, 2009). If cranes navigate west of the traditional migratory pathway, NRC staff conclude that it is likely cranes will select other appropriate habitat for roosting, resting, and foraging during the proposed ISR facility lifecycle, and that construction activities will not affect the existence of the species' population in the proposed project area.

DSEIS at 4-92. The appendix contains no effort to consult or gain USFWS concurrence in the NRC staff conclusion. Where the action clearly "may adversely effect" the whooping crane, consultation with USFWS must take place. NRC staff has not sought consultation, even though both USFWS and the DSEIS confirm that a "no effect" determination is not available for the Powertech Project. As confirmed by the Supreme Court, where staff's conclusions deviate from those of the USFWS regarding species impacts, "the action agency must not only articulate its reasons for disagreement (which ordinarily requires species and habitat investigations that are not within the action agency's expertise), [the action agency]

runs a substantial risk if its (inexpert) reasons turn out to be wrong." Bennett v. Spear, 520 U.S. 154, 169 (U.S. 1997)(discussing possible criminal and civil penalties that may be imposed on agencies and "its employees").

> The DEIS also forwards an unreasonably bounded analysis regarding the Black-footed ferret:
>
> Black-footed ferrets (Mustela nigripes) are not present in the site vicinity at this time (BLM, 2009a; FWS, 2010; SEIS Section 3.6.3). However, the presence of the black-tailed prairie dog(Cynomys ludovicianus) in the northwestern corner of the proposed project area provides potentially suitable habitat for the black-footed ferret.
>
> Because there have been no occurrences of black-footed ferrets within the proposed project area and the prairie dog colony on the site is likely too small to support and sustain a breeding population of black-footed ferrets (as described in SEIS Section 3.6.3), NRC staff conclude that the proposed project construction would not result in a direct effect on current or future ferret populations.

DSEIS at 4-92 - 4-93. As with the whooping crane, the DSEIS does not document any attempt to seek USFWS concurrence or consolation regarding a listed species that the Powertech project "may effect." Instead, the DSEIS reveals that suitable habitat exists within the project area.

On operations, the DSEIS makes a "no-jeopardy" conclusion without benefit of the ESA Section 7 consultation process. Although impacts are identified, there is no evidence that NRC's determination is based on the necessary expertise and investigations.

> "the impacts are expected to noticeably alter important attributes of the terrestrial environment; however, staff do not expect these impacts to threaten the continued existence of any species."

DSEIS at 4-105(emphasis supplied"). See Bennett v. Spear, 520 U.S. 154, 158 (U.S. 1997)(describing statutory Section 7 process that is required to ensure an agency does not threaten the "continued existence" of listed species). As described above, the NRC and its employees ignore the ESA consultation requirements "at its own peril." Id. at 169. Further, there is no basis to segregate the ESA consultation from the NEPA analysis.

Impacts from disposal of 11e2 byproduct materials, water disposal and decommissioning activities are expected to have a "MODERATE impact on vegetation, small- to medium-sized mammals, raptors, upland game birds, waterfowl and shorebirds, nongame and migratory birds, and reptiles. . ." DSEIS 4-106. However, a detailed examination of the impacts on wildlife from waste disposal is not provided. Most egregious, the impacts of transporting solid 11e2 byproduct materials to Utah are not analyzed. There is no mention of these foreseeable disposal and decommissioning impacts in the 2009 and 2010 correspondence with USFWS. For example, all travel routes to Utah implicate the listed Lynx. Proper consultation with USFWS will no doubt reveal other listed species beyond those identified by NRC staff.

Many other impacted and listed species must be examined in a correlated ESA consultation and NEPA analysis that is based on a project area for the 11e2 byproduct license that includes the assumed Utah disposal and the transportation routes. Section 7 consultation with USFWS must be engaged based on a full range of foreseeable impacts of the 11e2 byproduct licensing action, including the confirmed need for off-site disposal of solid radioactive materials during operation and closure.

Air Emissions

The DSEIS lacks current and confirmed information on air emissions and their impacts on various "receptors" in the region. Although not identified or analyzed in the DSEIS, these "receptors" include people, plants, animals, water bodies, soil, National Parks, etc. Instead of analysis based on a competent air emission dispersion model, the DSEIS provides a model based on admittedly incomplete and erroneous information.

> This modeling used the initial emission inventory the applicant provided (Powertech, 2010a). However, the applicant revised the mobile source emission inventory in part to incorporate mitigation measures and improve the accuracy of the emissions expected from the ISR activities (Powertech, 2012d).

4-110. Instead of delaying the DSEIS to allow Powertech to provide correct information and modeling data, the DSEIS was released prematurely.

> The applicant has committed to update the air dispersion modeling before the final SEIS is prepared (Powertech, 2012d). The final SEIS analyses would be based on this updated modeling. SEIS Section 4.7.1describes the scope of this update, which would include PSD and Air Quality Related Values modeling for the Wind Cave National Park. The applicant has yet to complete the formal air quality permit process including providing any SDDENR-required documentation and information (Powertech, 2010a).

DSEIS at 4-114. Further, an emission inventory for PM2.5 particulate emissions, to which radioactive elements may attach and be dispersed via regional dispersion, were not available and were not considered in the DEIS dispersion modeling. DSEIS at C-16.

A DSEIS based on Powertech's "commitment to provide accurate and useful information on air emissions in a final SEIS does not fulfill NRC's NEPA duties. That portions of the emissions permitting is being done by another agency does not relieve NRC of the NEPA duty to analyze the direct, indirect, and cumulative impacts of the project in the DSEIS that is subjected to comment by the public and other agencies.

Further, averaging of wind speed and direction data across years, days, and hours masks the effects of notorious wind gusts that buffet the region. The annual wind rose data fails to account for seasonal differences in wind direction and velocity. DSEIS at 3-6. Narrower intervals should have been collected and used to provide a reliable impacts analysis. The DSEIS methodology is not compliant with any accepted methodology, resulting in an analysis that masks impacts of wind gusts and major wind storm events. The DSEIS does not analyze the impacts of radioactive and non-radioactive particulate emissions will vary greatly across the range from calm surface to the wind-driven waves that the freeboard is designed to hold. DSEIS at 2-57. However, the varying particulate and radon emission rates from the disposal of liquid 11e2 byproduct via evaporation are not analyzed.

The DSEIS makes no mention of the foreseeable impact of major wind storm events, including tornadoes, on the facility or the dispersion of emissions from the facility.

Unresolved questions of radioactive contamination at the site are related the DSEIS reliance on incomplete and incorrect emissions and meteorological data. Even though "[e]levated gamma readings are also present in the northern part of the Dewey area and are likely due to the deposition of windblown dust from the abandoned surface," (DSEIS at 3-102), the DSEIS does not attempt to explain

the meteorological basis for the "Northeast Anomalous Area." DSEIS at 3-94-96. An explanation is provided by published Custer, S.D. wind rose data that shows the dominant wind direction during the summer months in many parts of South Dakota blows from southeast, not the northeast, as is assumed by the annually averaged wind rose used in the DSEIS. http://climate.sdstate.edu/windrose/windrose.shtm . The frequent south and east to north and west emissions dispersal in summer, along with the high wind speeds in July and August, has consequences for "receptors" to the north and east of the Powertech site.

There is no indication that the National Park Service has been invited to participate as a cooperating agency or to otherwise participate in the air emissions analysis, only a suggestion that such input will come after the DSEIS comment period has closed. DSEIS at 4-112. Although the DSEIS does not identify the specific "receptors," the analysis of the air emissions and the impact on human health and environment must be provided for review and comment in a DSEIS.

Global Warming and Long-Term Impacts

The cumulative impacts analysis limits global warming to an arbitrary 10 year period. Although the project lifetime of the D-B ISL Project is not easily discerned from the DSEIS, it appears that there is a 6 year construction period, followed by 12 year operations, followed by an uncertain number of years for decommissioning. DSEIS at 4-205. The project lifetime set forth in the DEIS thus appears to exceed 20 years. This is in addition to the use of the CPP for additional satellite mines and proposed tolling agreements for other mining operations in the region.

The DSEIS should be reissued with a clearly articulated project lifetime and a cumulative impacts analysis that corresponds with the project lifetime and the foreseeable long-term impacts of the proposed project. Particular to global warming, the carbon disposal capacity of Earth's atmosphere throughout the lifetime of the project should be addressed in a similar manner to the analysis used for the diminishing availability of solid waste disposal facilities. DSEIS at 3-106 (discussing waste disposal limitations based on receiving capacity). Whether the waste stream is carbon emissions or solid waste, the recognized lack of disposal capacity going forward must be analyzed beyond the arbitrary 10 year period used to bound the global warming analysis.

Cooperating Agencies

Consistent with NEPA's "one EIS" requirement, all agencies of the federal government are required to cooperate in the analysis of a federal action to ensure a comprehensive and efficient analysis of the impacts on the environment from the perspective of present and future generations. 42 USC §§ 4331(a), 4332(2). The NEPA regulations implement the mandate that Federal agencies prepare NEPA analyses and documentation "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise. 40 CFR §§ 1501.6, 1508.5. This requirement is consistent with the NEPA mandates that prevent the federal officials from delaying and segmenting analysis of a project so as to avoid the required analysis of the full project by sweeping difficult problems under the rug. Thus, it is mandatory for all federal agencies to be included as cooperating agencies where such agencies have jurisdiction or special expertise. Although it is not mandatory for all federal, state, and local governments to participate, it is the lead agency's duty to take the necessary steps at the "earliest possible time" to provide a meaningful opportunity for such government entities to participate as cooperating agencies.

The NRC staff, in preparing the DSEIS, was required to utilize the analysis and proposals of the "cooperating agencies" to the "maximum extent possible." 40 CFR §§ 1501.6(a)(2). Instead, the NRC has ignored its lead agency responsibilities by unilaterally producing a NEPA analysis that fails to provide the required "hard look" at a range of issues, informed and identified by the participation of relevant state, federal, local, and Tribal agencies.

The DSEIS does not identify any attempt by the NRC to invite or to ensure the participation of all relevant cooperating agencies. This unlawful approach insulates the NRC from the give-and-take NEPA analysis promotes among those agencies with jurisdiction and special expertise. Inviting the participation of "cooperating agencies" is necessary to examine the full range of infrastructure problems and environmental impacts. The participation of these cooperating agencies will allow responsible federal and state agency personnel to voice their concerns and to work with other agencies to identify and address impacts, alternatives, and mitigation measures identified in other portions of these comments.

The DSEIS identifies many entities that are required, by law, to be invited to participate in the NEPA process. Federal agencies with expertise and/or jurisdiction over impacts of the project include the Army Corps of Engineers, Fish and Wildlife Service, Environmental Protection Agency, Federal Energy Regulatory Commission, and U.S. Department of Transportation, among others. Local and state entities include agencies from South Dakota, Wyoming, Colorado, and Utah such as the Department of Transportation, Department of Public Health and Environment, Wildlife and Parks, Water Engineers Office, and neighboring municipalities.

Relevant Indian Tribes, including the Oglala Sioux Tribe should also have been invited to participate as cooperating agencies on a government-to-government basis. Instead, the Tribal interests have been relegated to cultural and archeological interests. Other Tribal governments, including the Ute Mountain Ute Tribe located next to the proposed 11e2 byproduct disposal cells, must be invited to participate as cooperating agencies.

The "cooperating agency" requirement cannot be remedied at this late stage in the NEPA process. Instead, the NRC needs to return to the scoping stage, where the cooperating agencies can assist in constructing a NEPA analysis that reveals the full range of impacts and alternative courses of action that are familiar to the regional governments, but are largely foreign to distant NRC staff. By meeting this requirement, the analysis benefits the fullest range of federal, state, and local government agencies and the public interest.

There is no indication that BLM actually participated in the NEPA process. Instead, the DSEIS confirms that, "To fulfill this requirement, the applicant submitted a POO to BLM for the Dewey-Burdock ISR Project on August 26, 2009. Powertech modified the POO and resubmitted it to BLM on January 28, 2011." DSEIS at xxvii, same at 1-1. Nothing more appears to have been done to involve BLM in this NEPA process. Although the POO review involved BLM's FLPMA jurisdiction and land management duties, there is no indication in the DSEIS that BLM has been engaged in the NEPA process in any way other than being named a cooperating agency in the DEIS.

Staff Recommendations Have Unlawfully Preceded Final EIS

It is a basic requirement of NEPA that "the moment at which an agency must have a final statement ready 'is the time at which it makes a recommendation or report on a proposal for federal

action.'" Kleppe v. Sierra Club, 427 U.S. 390, 406 (U.S. 1976) *quoting* Aberdeen & Rockfish R. Co. v. SCRAP, 422 U.S. 289, 320 (1975) (SCRAP II) (emphasis in original).

By contrast, NRC staff has issued numerous recommendations in support of the issuance of the requested license. The most recent are a series of draft licenses - one in July 2012 and one in January 2013. Where the draft licenses serve as an agency recommendation on the action to be taken on the application, staff has acted under its relevant authorities in a manner that violates the statutory mandates of NEPA for fully informed, reasoned decisionmaking. Id.

Although it may have been proper to include a draft license as the "preferred alternative" to be compared across a range of alternatives, the DSEIS did not take that approach. Instead, the draft license has been prepared concurrently with the DSEIS. When the Tribe requested more time to provide comments on the draft license, this request was denied. Email exchange attached as Exhibit 14. Instead, staff confirmed that the DSEIS was issued without first obtaining the necessary information:

> To the contrary, the analysis in certain sections of the DSEIS presumes that Powertech will later submit information to address outstanding issues, and the changes to the draft license reflect information that Powertech has submitted over the last five months.

Id. The courts have long rejected NRC staff's current approach as contrary to one of the substantive statutory purposes of an EIS, which "helps insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug." Silva v. Lynn, 482 F.2d 1282, 1285 (1st Cir. 1973). Assembling and including information on outstanding issues before the DSEIS is released for comment is a crucial part of the give and take of the NEPA process.

> Moreover, where comments from responsible experts or sister agencies disclose new or conflicting data or opinions that cause concern that the agency may not have fully evaluated the project and its alternatives, these comments may not simply be ignored. There must be good faith, reasoned analysis in response.

Id. See also National Audubon Society v. Hoffman, 132 F.3d 7, 12 (2d Cir. 1997)(An EIS "'insures the integrity of the agency process by forcing it to face those stubborn, difficult-to-answer objections without ignoring them or sweeping them under the rug' and serves as an 'environmental full disclosure law so that the public can weigh a project's benefits against its environmental costs.'").

Instead of the following the process required by NEPA, the DSEIS has been prepared in a manner where outstanding issues are being unlawfully shielded from scrutiny of the public and other agencies, both of which are integral to the NEPA process. See 40 C.F.R. § 1508.7 (EIS must analyze direct impacts of a proposed action and the indirect and cumulative impacts of "past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." These deficiencies cannot be remedied by simply issuing a final SEIS or addressing these "outstanding issues' after license is issued based on of staff recommendations in the form of a series of draft licenses, all of which were prepared without NEPA scrutiny. These NEPA deficiencies must be remedied by reissuing a scoping notice that identifies these issues, and presents them for review by the Tribe, the public and other agencies in the NEPA document at the earliest possible time.

Submitted this 10th day of January, 2013,

/s/ Jeffrey C. Parsons

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Attorneys for Oglala Sioux Tribe

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
South Dakota Field Office
310 Roundup Street
Belle Fourche, South Dakota 57717-1698
www.blm.gov/mt

In Reply Refer To:
3809/3715
SDM 99819

July 8, 2014

Powertech (USA) Inc.
Attn: Richard E. Blubaugh
5575 DTC Parkway, Suite 140
Greenwood Village, Colorado, 80111
RE: Dewey Burdock Project Plan of Operations

This letter is in follow up to the conference call held on May 28, 2014. As discussed in that call the Bureau of Land Management has reviewed your Plan of Operations (POO) pursuant to 43 Code of Federal Regulations (CFR) §3809.411(a) and determined that additional information is required to approve your plan of POO. BLM is requesting this information pursuant to 43 CFR §3809.401 (b)(2)(i) which requires, "Maps of the project area at an appropriate scale showing the location of exploration activities, drill sites, mining activities, processing facilities, waste rock and tailing disposal areas, support facilities, structures, buildings, and access routes." Please be aware that BLM needs to know where access roads will be located even if surface grading or other improvements will not be implemented. Furthermore, as discussed during the call BLM needs to know these specific locations as the proposed mining activity is to occur in an area where known cultural resources occur.

The POO describes multiple mitigation measures that will be used as elements of project engineering. However, BLM requires site specific information describing those measures which will be implemented on the public lands portion of this project pursuant to 43 CFR §3809.401(b)(2). This should include the length and width of proposed roads as well as construction methods to be used in road creation (e.g. if water bars will be used and the distance between water bars). With regards to fences the POO needs to describe the type of fence to be used (e.g. barbwire), the specifications (e.g. distance between poles, size of poles, bury depth of poles, width of H-braces, wire types and distance between wires as well as distance between lowest wire and ground surface) as well as the height and length of fences proposed to be constructed. Fences constructed on BLM lands typically meet those standards required by the BLM Fencing Handbook H-174-1. Upon request a copy of this handbook can be provided to you. The POO should also include a description of any signs which will be placed on these fences, the proposed location of signs as well as the text which will be written on the signs.

The POO amendment of February 2011 also describes installation of power lines. With regards to the power lines the POO needs to describe the type of power lines needed to be installed (e.g. single pole, double pole, wood or metal), the distance between poles, the total length of power infrastructure to be installed, locations of transformers or other infrastructure items and the voltage capacity of the power lines to be installed. The POO will also need to describe measures

to be taken in power line construction to protect raptors (including eagles); power lines on BLM administered lands are typically constructed to Avian Power Line Interaction Committee (APLIC) standards.

Under the air quality control plan in the POO the water will be used to control dust on mine roads. Please include in the POO if this will occur on BLM administered lands and if so please identify which roads may be watered. Furthermore, if a dust abatement agent such magnesium chloride will also be used to aid in dust abatement please include this information.
The POO includes a soil management plan however, the POO must include:

a. how soil will be salvaged in advance of construction
b. salvage depth
c. salvage cutoff criteria
d. soil stockpile locations and volumes (if located on BLM administered lands)
e. measures to protect the stockpile from erosion and preserve soil viability; specifically those measures which will be used on BLM administered lands
f. placement thickness at time of reclamation

According to the Plan of Operations as submitted, additional drilling is required for detailed characterization of the ore body, and this drilling is required prior to final engineering of the well field to be used for the in situ uranium extraction process. Please be aware that if this final drilling will result in less than five (5) acres of surface disturbance, these mining activities would be acceptable under a Notice pursuant to 43 CFR §3809.21. A Notice must be filed in this office and accepted as complete prior to conducting surface disturbing activities on BLM administered lands. The Notice does not need to be submitted on any particular form and the information requirements for a Notice are provided at 43 CFR §3809.301.

The Plan of Operations also describes the use of fences and signs for the purpose of controlling public access to the well field when it is in operation. The amendment to the Plan of Operations received in February 2011 also included the placement of a power line on BLM administered lands. Please be aware that these fences and structures constitute occupancy of public lands pursuant to 43 CFR §3715.0-5. Prior to construction of structures or fences which will remain on public lands for more than 14 days you will need to request concurrence for occupancy from the BLM 43 CFR §3715.2. The request for concurrence does not need to be on any particular form, and the information requirements are provided at 43 CFR §3715.3-2. Please be aware that a request for occupancy can be included with the POO.

If you have any questions, please contact Nathan Arave at (406) 233-3163.

Sincerely

Marian M. Atkins
Field Manager

POWERTECH (USA) INC.

John M. Mays
Chief Operating Officer

January 10, 2014

Ms. Linda Downey
Legal Instruments Examiner
USFWS Migratory Bird Permit Office, Region 6
P.O. Box 25486, DFC 60154
Denver, CO 80225-0486

RE: USFWS Application 3-200-71: Eagle Take to Protect an Interest in a Particular Locality (Eagle Non-purposeful Take – 50 CFR 22.26) for the Dewey-Burdock Project

Dear Ms. Downey:

Please find enclosed Permit Application Form 3-200-71 for Powertech (USA) Inc.'s (hereafter, Powertech) Dewey-Burdock Project in southwestern South Dakota (SD). Powertech is proposing to develop *in situ recovery* (ISR) operations for uranium resources on mostly private and some public lands (managed by the Bureau of Land Management) controlled through its leases and registered claims encompassing the entire Dewey-Burdock project area.

A resident pair of bald eagles (*Haliaeetus leucocephalus*) has nested in the Dewey (western) portion of the permit area in recent years. The pair and a limited number of other bald eagles also winter in that area. At the suggestion of the SD Ecological Services Field Office (ESFO), Powertech is applying for a non-purposeful eagle take permit from the U.S. Fish and Wildlife Service's Migratory Bird Permit Office (MBPO) for Region 6 in the event take cannot be avoided during construction and operation of the Dewey-Burdock Project.

In addition to the non-purposeful take permit application, Powertech is working collaboratively with the SD ESFO, SD Department of Game, Fish and Parks (SDGFP) and the SD Department of Environment and Natural Resources (SD DENR) to develop a comprehensive Avian Monitoring and Mitigation Plan (Avian Plan). The Avian Plan is a requirement of Powertech's SD DENR state mining permit and provides detailed approaches to monitoring, minimizing, and mitigating impacts to bald eagles and other avian species of concern. The goal of the Avian Plan is to avoid take altogether. Nevertheless, Powertech recognizes that despite proposed procedural and mitigation efforts, the potential remains for ISR operations to cause a take and, thus, Powertech is applying for a "non-purposeful" take permit. Appropriate state-level authorizations are being coordinated with SDGFP and SD DENR.

5575 DTC Parkway, Suite 140
Greenwood Village, CO 80111 USA
Telephone: 303-790-7528
Facsimile: 303-790-3885
Website: www.powertechuranium.com
Email: info@powertechuranium.com

POWERTECH (USA) INC.

A non-purposeful take permit issued by your office will allow development and production of uranium resources near known bald eagle nests and winter roost sites within the permit area. In turn, the project will provide substantial economic development, employment opportunities, and tax revenue to local communities, as well as multiple other communities in South Dakota, Wyoming, and Nebraska.

I appreciate your time and assistance in reviewing the enclosed application. Please do not hesitate to contact me or Lisa Scheinost with any questions at (303) 790-7528.

Sincerely,

John M. Mays, P.E.
Chief Operating Officer

Enclosures: Application 3-200-71

cc: Kevin Kritz, US Fish and Wildlife Service, Denver, CO
Scott Larson, SD Ecological Services Field Office, Pierre, SD
Charlene Bessken, SD Ecological Services Field Office, Pierre, SD
Stan Michals, SD Game, Fish and Parks Rapid City, SD
Gwyn McKee, Thunderbird Wildlife Consulting, Inc., Gillette, WY

5575 DTC Parkway, Suite 140
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Email: info@powertechuranium.com

Department of the Interior
U.S. Fish and Wildlife Service

OMB Control No. 1018-0022
Expires 02/28/2014

Federal Fish and Wildlife Permit Application Form

Click here for addresses.

Return to: U.S. Fish and Wildlife Service (USFWS)

P.O. Box 25486
DFC(60130)
Denver, CO 80225-0486

Type of Activity: **Eagle Take to Protect an Interest in a Particular Locality**

✓ New Application

____ Requesting Renewal or Amendment of Permit # _____

Complete Sections A or B, and C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)

6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, tribe, or institution

1.a. Name of business, agency, tribe, or institution	1.b. Doing business as (dba)
Powertech (USA), Inc.	

2. Tax identification no.	3. Description of business, agency, or institution
20-4989218	In situ uranium recovery

4.a. Principal officer Last name	4.b. Principal officer First name	4.c. Principal officer Middle name/ initial	4.d. Suffix
Mays	John	M	

5. Principal officer title	6. Primary contact
Chief Operating Officer	John Mays

7.a. Business telephone number	7.b. Alternate telephone number	7.c. Business fax number	7.d. Business e-mail address
303-790-7528		303-790-3558	jmays@powertechuranium.com

C. All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)				
5575 DTC Parkway, Suite 140				
1.b. City	**1.c. State**	**1.d. Zip code/Postal code:**	**1.e. County/Province**	**1.f. Country**
Greenwood Village	CO	80111-3012	Arapahoe	USA

2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)				
2.b. City	**2.c. State**	**2.d. Zip code/Postal code:**	**2.e. County/Province**	**2.f. Country**

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount** $500.00 (standard) or $1,000 (programmatic) if you are applying for a new permit or $150.00 (standard) or $500 (programmatic) if you are requesting a substantive amendment of your existing valid permit.. Federal, tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes ☐ If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: _____ No ☑

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50***, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

John Mays — 1/3/14

Signature (**in blue ink**) of applicant/person responsible for permit (No photocopied or stamped signatures) — Date of signature (mm/dd/yyyy)

Please continue to next page

SEE ATTACHED

E. Eagle Take to Protect an Interest in a Particular Locality (Eagle Non-Purposeful Take)
(Bald and Golden Eagle Protection Act, 50 CFR 22.26)

Note: ***A Federal eagle non-purposeful take permit authorizes the disturbance or other take of eagles where the take results from but is not the purpose of an otherwise lawful activity. Permits are available to individuals, agencies, businesses, and other organizations. This permit does not authorize possession of any eagle, eagle parts, or eagle nests. Please read "What You Should Know About A Federal Permit for Non-Purposeful Eagle Take" and the pertinent regulations at 50 CFR 22.26 before you sign and submit your application.***

Please provide the following information numbered accordingly to the questions below on a separate sheet of paper. You should be as specific as possible in your responses. Please do not send pages that are over 8.5" x 11", videotapes, or DVDs. Although you may send supplemental documents that contain some of this information, you must respond to all the specific application requirements in a single attachment that includes all and only the information required in this application form. We strongly recommend that you submit your application at least 60 days prior to the date you need your permit, as required by 50 CFR 13.11(c).

1. A description of your proposed activity that will likely disturb or otherwise take eagles, including:

   (a) A detailed description of the activity that will likely cause the disturbance or other take of eagles;

   (b) The species and number of eagles that are likely to be taken and the likely form of that take (e.g., disturbance, other take);

   (c) Maps, digital photographs, county/city information and latitude/longitude geographic coordinates including any nest tree site(s) that depict the locations of the proposed activity, including the area where eagles are likely to be taken;

   (d) For activities that are likely to disturb eagles (versus other non-purposeful take):

   (1) Maps and digital photographs of the eagle nests, foraging areas, and concentration sites where eagles are likely to be disturbed by the proposed activity (including the latitude/longitude geographic coordinates of the activity area and important eagle-use area(s) and the distance(s) between those areas);

   (2) Whether or not the eagle use area is visible from the activity area, or if screening vegetation or topography blocks the view;

   (3) The nature and extent of existing activities in the vicinity similar in nature, size and use to that being proposed, and the distance between those activities and the important eagle use area(s);

   (e) The dates the activity will start and is projected to end;

   (f) An explanation of what interests(s) in a particular locality will be protected by the take, including any anticipated benefits to the applicant or to the public;

   (g) An explanation of why avoiding the take is not practicable, or for programmatic take, why it is unavoidable; including a detailed description of the avoidance and minimization measures you have incorporated.

   (h) A description of measures including avoidance, minimization, and compensatory mitigation you will implement to offset the detrimental impact of the proposed activity on the regional eagle population.

2. You must retain records relating to the activities conducted under your permit for at least 5 years from the date of expiration of the permit. Please provide the address where these records will be kept.

3. Any permit issued as a result of this application is not valid unless you also have any required State or tribal permits associated with the activity. Have you obtained all required State or tribal permits or approvals to conduct this activity?

____Yes If "yes", attach a copy of the approval(s). ✓ Have applied **(Send copy when issued)** ____ None required

RESPONSES TO USFWS APPLICATION FORM 3-200-71

SECTION E: EAGLE TAKE TO PROTECT AN INTEREST IN A PARTICULAR LOCALITY
(EAGLE NON-PURPOSEFUL TAKE: 50 CFR 22.26)

1. A description of your proposed activity that will likely disturb or otherwise take eagles, including:

(a) A detailed description of the activity that will likely cause the disturbance or other take of eagles;

Powertech (USA) Inc. (hereafter, Powertech) has proposed to develop *in situ recovery* (ISR) operations from uranium resources on leased mineral rights and registered claims for the Dewey-Burdock Project in southwestern South Dakota (SD) (refer to subsection 1c). A resident pair of bald eagles (*Haliaeetus leucocephalus*) has nested in the Dewey (western) portion of the permit area in recent years. The pair and a limited number of other bald eagles also winter in the area. At the suggestion of the SD Ecological Services Field Office (ESFO), Powertech is applying for a non-purposeful eagle take permit from the U.S. Fish and Wildlife Service's Migratory Bird Permit Office (MBPO) for Region 6 in the event take cannot be avoided during construction and operation of the Dewey-Burdock Project.

As shown on Plate 5.3-1 and Plate 5.3-2, a portion of the proposed project facilities, well fields, and infrastructure will be constructed and operated within the 0.5-mile buffers around two known bald eagle nests (BE1a and BE1b) and multiple winter roost sites in or near the Dewey portion of the Dewey-Burdock permit area. This buffer distance is currently recommended by the Wyoming ESFO for golden eagles (*Aquila chrysaetos*), and is also currently being applied by the SD ESFO for the resident pair of bald eagles in the Dewey-Burdock permit area. No trees where bald eagle nests exist or winter roost sites occur will be physically impacted by project-related activities during the life of the project. However, with this application, Powertech is requesting authorization to construct structures and conduct activities, as needed, within the immediate vicinity of the bald eagle nests and roost sites. At present, Powertech's plans estimate the nearest new infrastructure to be a light-use road approximately 152 feet from the BE1b nest to access a water monitoring well located approximately 186 feet from the nest.

Following issuance of all appropriate federal licenses and state mining permits, it is anticipated that construction will commence on the first well fields, satellite processing plant, ponds, water supply well, deep disposal well, land application system, and associated infrastructure including power lines and roads. Project well fields are the closest facilities in the immediate vicinity of the nests and their construction is phased over the life of the project, as needed, to supply production needs. Features of these well fields include hundreds of wells enclosed in small covers, several small buildings called "header houses" to enclose instrumentation and controls, buried pipelines, small power lines, and small light use two-track and gravel roads.

The total anticipated disturbance area over the life of the project is estimated to be approximately 250 to 440 non-contiguous acres across the entire permit area (with less than half near the bald eagle nests). A smaller disturbance area will result if deep disposal wells (Plate 5.3-2) are used

for management of treated wastewater instead of land application (center pivot irrigation) (Plate 5.3-1). Due to the phased nature of well field construction, only about 10 to 15 acres of surface disturbance is expected to occur each year during well field construction after the processing facilities and ponds are built. No blasting or digging of deep pits is required for ISR operations.

In addition to the well fields, facilities including a satellite processing plant, one of the proposed ponds, a Madison water supply well, and two deep disposal wells are planned to be constructed within one or more overlapping 0.5-mile bald eagle buffers. The project will also include small areas of topsoil stripping and stockpiling, construction of new and/or improved access roads, underground pipelines, overhead power lines (transmission and distribution lines), water monitoring wells, and fenced enclosures around well fields. Surface disturbance will be consolidated into common areas and corridors to the extent practicable throughout the permit area. The bulk of the facilities will be constructed north of the BE1b nest (most recently active), with the greatest level of surface disturbance from that construction to occur near the outer edge of the 0.5-mile buffer (Plates 5.3-1 and 5.3-2). Physical surface disturbance will encompass the largest number of acres (440 acres) under the land application option for treated wastewater disposal (Plate 5.3-1), though that disturbance will mostly consist of surface grading to allow for operation of center pivot irrigation structures such as those commonly used for agricultural applications.

Relatively few facilities other than land application areas and a portion of the well field fall within the 0.5-mile buffer for the older BE1a nest. In general, few facilities other than well fields also occur within the 0.5-mile buffer of the winter roost sites documented to date.

The number of personnel working in the Dewey portion of the permit area will change over the life of the project. Initial construction of the satellite processing plant and other non-well field facilities would be expected to occur with varying levels of activity over a period of approximately 1 to 2 years with an estimated maximum of 57 persons. Well field construction would be the most intensive activity in proximity to the BE1b nest and would include a maximum of 12 drilling rigs and up to approximately 73 construction personnel. Well field construction will gradually progress across the project area. This approach will facilitate eagle acclimation by initially scheduling construction to avoid nest and winter roost 0.5-mile buffers during the most vulnerable periods in the nesting and winter roosting seasons (e.g., nest building, egg-laying, early incubation, early brooding, severe weather events, etc.). Construction can be scheduled to approach nest and winter roost sites later in the project life when acclimation has been achieved.

Operational staff at the satellite processing plant will be a smaller portion of the overall staff and will range from approximately 6 to 17 persons, whereas operational staff for the entire project is expected to total about 60 persons. In the well field itself, operational activities are expected to be minimal with one operator performing daily visits to each header house, environmental sampling technicians visiting monitoring locations on a bi-weekly basis, and occasional maintenance staff performing tasks such as servicing wells. For the most part, well fields will be monitored remotely via instrumentation and data acquisition systems to minimize the disturbance of bald eagle nest and winter roost areas.

Construction of facilities is expected to occur primarily during daylight hours. Once it is operational, the processing plant will operate 24 hours per day, 7 days per week. Traffic along the main access road to the satellite processing plant (Plates 5.3-1 and 5.3-2) can also be expected to occur at any time of the day or night, though operations are geared to regular day shift operations. Well field activities can be scheduled to occur during daylight hours to the extent practicable to minimize potential impacts to certain wildlife species (especially nesting bald eagles). However, responses to emergency situations could occur at any time of the day or night throughout the year.

Deep disposal wells, land application systems, or a combination of both will be used to dispose treated wastewater generated from ISR operations and groundwater restoration. Powertech intends to utilize deep disposal wells as its primary and sole disposal option if feasible, and land application will only be used should sufficient capacity not be available in deep disposal wells as permitted through the U.S. Environmental Protection Agency (EPA). If land application is used, up to 380 non-contiguous acres of center pivot areas (including 315 acres designated as primary center pivot areas and 65 acres designated as standby center pivot areas) will be irrigated near the processing facility proposed for construction near the northeastern edge of the BE1b 0.5-mile buffer. Land application water would be applied at a rate of approximately 19 inches per year to prevent runoff. Catchment areas would provide containment of all stormwater runoff and snowmelt from the land application system, but such areas would not be allowed to accumulate land-applied effluent.

The first project disturbance near the known bald eagle territory could occur in fall 2014, after the nesting season (i.e., after July 31).

Some surface disturbance is anticipated in the black-tailed prairie dog (*Cynomys ludovicianus*) colony (documented foraging area) located inside the Dewey portion of the permit boundary and near the BE1 nests. That disturbance will include topsoil stripping and stockpiling, as well as associated construction of ISR well fields, ponds, the satellite processing plant, and stormwater catchment areas for the land application systems (if used). As illustrated on Plate 5.3-1, additional prairie dog colonies exist in that area that will not be physically impacted by the Dewey-Burdock project.

(b) The species and number of eagles that are likely to be taken and the likely form of that take (e.g., disturbance, other take);

It is estimated that two bald eagle nest sites and up to five (5) bald eagles could experience take from the Dewey-Burdock project: the resident nesting BE1 pair (two [2] birds) and up to three (3) additional wintering bald eagles.

The BE1 pair has historically used two bald eagle nests in the permit area since monitoring first occurred in 2007: BE1a and BE1b (Plate 5.3-1). That numbering system represents the original nest site and an alternate nest constructed in approximately 2009, respectively; the BE1b nest was built after limited project activities had already begun, such as water well drilling and monitoring, air quality monitoring, etc. The BE1a nest tree is partially alive whereas the BE1b nest tree is dead, along with some of its immediate neighbors. Other mature, live cottonwoods

(i.e., potential nesting and roosting habitat) are present within the BE1 territory, and the resident pair has been documented perching in those trees during monitoring efforts conducted at varying levels since 2007, including multiple occasions in 2013.

Other non-resident bald eagles could also be affected at winter roost sites in the permit area, though no more than three bald eagles (likely two residents and one additional bird) have been recorded in the survey area during monitoring conducted in winter 2007/2008, 2012/2013, and December 2013; winter roost monitoring will continue through winter 2013/2014 and for the life of the project. However, to be conservative and allow for the potential for additional wintering bald eagles, the total number of bald eagles potentially impacted by disturbance is estimated at five (5).

No trees where bald eagle nests exist or winter roost sites occur will be physically impacted by project-related activities during the life of the project. However, for Powertech to produce uranium resources in the Dewey portion of the permit area, including in the immediate vicinity of bald eagle nest and winter roost sites, it must construct and operate ISR facilities. Take could occur in the form of disturbance from construction or operation of these facilities, especially early in the project. However, it is anticipated that the resident bald eagle pair and any additional wintering eagles will acclimate to project facilities and activities once they have become established, much like nesting golden eagles have acclimated to surface coal mine operations (blasting, haulage, and light duty traffic, etc. operating 24/7) in northeast Wyoming (refer to other Region 6 permit applications and Wyoming ESFO determinations regarding take of golden eagles at coal mines). Therefore, Powertech is pursuing a multi-year non-purposeful take permit rather than a programmatic take permit.

One foraging area within the BE1 territory will also be impacted. That area consists of a large black-tailed prairie dog colony (Plates 5.3-1 and 5.3-2). However, foraging areas such as streams (i.e., fish habitat) and additional prairie dog colonies are present in and/or near the Dewey portion of the permit area, and those sites will not be physically impacted by project activities. Remains of fish and prairie dogs have been confirmed under the BE1b nest. In addition, the degree of impact on the prairie dog colony nearest the BE1 nests will vary depending on the method (deep disposal wells or land application) used to dispose of treated wastewater (Plates 5.3-1 and 5.3-2).

(c) Maps, digital photographs, county/city information and latitude/longitude geographic coordinates including any nest tree site(s) that depict the locations of the proposed activity, including the area where eagles are likely to be taken;

The Dewey-Burdock permit area is located approximately 13 miles north-northwest of Edgemont, SD, near the southwestern extent of the Black Hills. The permit area spans northern Fall River County and southern Custer County in southwestern South Dakota; its northwestern edge abuts the state border with Wyoming (Map 1 and Map 2). The area includes approximately 10,580 contiguous acres of mostly private surface and encompasses all or portions of Township (T) 7 South (S), Range (R) 1 East (E), Sections 1-5, 10-12, and 14-15, and T6S, R1E, Sections 20-21 and 27-35.

Nest BE1a Location: Legal Description: SESW 30, T6S, R1E
Latitude/Longitude: 43.494902 degrees/-104.048389 degrees

Nest BE1b Location: Legal Description: NENE 31, T6S, R1E
Latitude/Longitude: 43.491413 degrees/-104.036002 degrees

Map 1 presents all confirmed bald eagle nests within Custer and Fall River counties, SD, including the BE1a and BE1b nests in the Dewey-Burdock permit area. These data were provided on December 19, 2013 by the SD Department of Game, Fish and Parks (SDGFP) using current information from its Natural Heritage Program (SDNHP) and by Thunderbird Wildlife Consulting, Inc. (TWC).

As illustrated, no confirmed bald eagle nests are present in the portions of Weston and Niobrara Counties, Wyoming, that are adjacent to the permit area. The nearest confirmed bald eagle nests in those two counties are located 48 and 49 miles west of the BE1a nest, respectively, in southwestern Weston County. That information was obtained from the current Wyoming Bureau of Land Management (BLM) statewide raptor database, accessed on December 23, 2013: http://www.blm.gov/wy/st/en/resources/public_room/gis/datagis/themes/wildlifegis.html.

Map 2 presents all confirmed eagle nests within a 10-mile radius of the BE1a and BE1b nests. The only confirmed bald eagle nests in that area are the BE1a and BE1b nests within the Dewey-Burdock permit area. One additional eagle nest was documented along Beaver Creek during an aerial search conducted specifically for the permitting process on December 17, 2013. This large tree nest is located approximately 4.0 miles northwest of the BE1a nest. Because the nest is outside the 1.0-mile annual monitoring area for the Dewey-Burdock project, its history is not known. However, biologists saw golden eagles in the vicinity of that nest while traveling to/from the project area during 2013 and it is presumed to be associated with that species. Nevertheless, it could be used by bald eagles and is therefore included on Map 2. Note that nests of other raptor species are also known to be present within the Dewey-Burdock survey area (permit area and 1.0-mile perimeter) or 10-mile search perimeter, but those nests lack the size of confirmed eagle nests and therefore are not shown on Map 2.

Plate 5.3-1 is adapted from South Dakota's large scale mine permitting process and presents the following:

- BE1a and BE1b nests and their 0.5-mile buffers (black boxes and circles, respectively)
- Locations where perched bald eagles were observed during winter (within and/or outside official roost survey windows) and their 0.5-mile buffers (magenta boxes and circles, respectively)
- Existing infrastructure (roads, railroad, overhead power lines, etc.)
- Proposed project facilities and well fields in the vicinity of bald eagle nest and winter roost sites that could result in take relative to these 0.5-mile buffers in the Dewey-

Burdock permit area. This plate shows features under the land application (center pivot) option for disposing of treated wastewater.

Plate 5.3-2 is also adapted from the state large scale mine permitting process and presents the following:

- BE1a and BE1b nests and their 0.5-mile buffers (black boxes and circles, respectively)
- Locations where perched bald eagles were observed during winter (within and/or outside official roost survey windows) and their 0.5-mile buffers (magenta boxes and circles, respectively)
- Existing infrastructure (roads, railroad, overhead power lines, etc.)
- Proposed project facilities and well fields in the vicinity of bald eagle nest and winter roost sites that could result in take relative to these 0.5-mile buffers in the Dewey-Burdock permit area. This plate shows features under the deep disposal well option for disposing of treated wastewater.

Photographs of the nest trees and general vicinity, including foraging areas (i.e., prairie dog colony) are shown below.

Nest BE1a (August 2007)
(Canopy partially recovered in 2013)

Nest BE1a (December 2013-note loss of some tree parts)

Nest BE1b (July 2013-nest tree and most neighbors are dead)

Nest BE1b (October 2013-note loss of some trees near nest tree)
(Active black-tailed prairie dog colony in foreground)

Looking E-SE along ranch two-track located north of BE1b nest tree (December 2013)
(Note loss of trees left of nest tree since summer)

Looking SE from BE1b nest tree area (December 2013)

Looking S-SW of BE1b nest tree (December 2013)

Looking W-SW of BE1b nest tree (December 2013)

For activities that are likely to disturb eagles (versus other non-purposeful take):

(1) Maps and digital photographs of the eagle nests, foraging areas, and concentration sites where eagles are likely to be disturbed by the proposed activity (including the latitude/longitude geographic coordinates of the activity area and important eagle-use area(s) and the distance(s) between those areas);

Refer to responses under 1(a) and 1(c), above, as well as Plate 5.3-1 and Plate 5.3-2.

No trees where bald eagle nests exist or winter roost sites occur will be physically impacted by project-related activities during the life of the project. Project structures relative to each nest and winter roost location are shown on Plates 5.3-1 and 5.3-2. Project structures for the Burdock (eastern) portion of the permit area are not presented, as no bald eagle nest or winter roost sites are known to occur in or within a 0.5-mile of that part of the project.

The largest structure will be the satellite processing plant approximately 0.4 miles northeast of the BE1b nest/winter roost tree and neighboring winter roost sites. The plant will be outside the 0.5-mile buffer for the BE1a nest/winter roost tree, as well as for all other winter roost sites documented to date (Plates 5.3-1 and 5.3-2). Well fields and other supporting facilities and infrastructure such as light use roads, water monitoring wells, ponds, etc. will be constructed at varying distances from the two bald eagle nests and winter roost sites, though several of these features are within the 0.5-mile buffer of the BE1b nest tree (Plates 5.3-1 and 5.3-2). The nearest project-related disturbance to the BE1a nest will be a standby (spare) land application area

approximately 625 feet northeast and within view of the nest tree. As noted, light use roads and monitoring wells will be located near the BE1b nest, with the nearest road located approximately 152 feet southeast and within view of the nest tree. The overall level of disturbance will be less if the preferred method of treated wastewater disposal (deep disposal wells) is approved during the federal licensing and state permitting processes. In addition, operational activities will be scheduled to minimize the potential for disturbing nesting and roosting bald eagles to the extent possible, though emergency situations may require immediate access and response regardless of time of day or year (refer to 1[h], below).

(2) Whether or not the eagle use area is visible from the activity area, or if screening vegetation or topography blocks the view;

Most structures and activities within the 0.5-mile buffers around bald eagle nests and winter roost sites will be visible due to the open terrain and limited presence of woodlands in those areas. However, the areas of greatest regular disturbance once the project is operational (i.e., the satellite processing plant and primary access road) will be partially screened from the BE1b nest tree due to the presence of a small hill; that infrastructure will be outside the 0.5-mile buffer for the BE1a nest tree and all winter roost sites other than the BE1b site.

(3) The nature and extent of existing activities in the vicinity similar in nature, size and use to that being proposed, and the distance between those activities and the important eagle use area(s);

Existing activities in the permit area consist primarily of ranching operations such as year-round livestock grazing (mostly cattle along with a few horses). Limited areas of irrigated hay fields are also present along Beaver Creek immediately west and within 60 feet of the BE1a nest site, and approximately 0.3 miles south of the BE1b nest site. Ranching operations entail: regular light duty traffic (pickup trucks and all-terrain vehicles [ATVs]) to monitor, feed, and move livestock; seasonal haying operations (irrigating, cutting, raking, baling, hauling); and foot traffic to monitor and adjust irrigation head gates along Beaver Creek, repair fences, and conduct other typical ranching activities. The BE1 nest area is also within a SDGFP walk-in hunting area which allows pedestrian access to the hunting public throughout the nesting area, including access to both nest trees during the hunting season(s). Limited monitoring of air quality samplers and water wells, and regular biological monitoring from inside a stationary vehicle, also occur outside the 0.5-mile buffer for the BE1b nest (most recently active). As indicated, ranching activities occur immediately below or adjacent to both nest sites and some winter roost sites throughout the year, with the same access to walk-in hunters during spring and/or fall hunting seasons. Therefore, the BE1 pair is currently exposed to year-round light duty vehicular traffic and limited pedestrian traffic within the 0.5-mile buffer around nest and roost sites.

Existing infrastructure within the nest and roost areas includes the Burlington Northern-Santa Fe railroad that runs roughly north-south through the permit area, South Dewey Road (County Road 6463) that parallels the railroad, several gravel and unimproved (two-track) roads that pass through the permit area and surrounding perimeter (including within 207 to 348 feet of the bald eagle nest sites), overhead power lines, and one unoccupied residence. These features are shown on Plate 5.3-1 and Plate 5.3-2.

(d) The dates the activity will start and is projected to end;

Powertech currently expects completion of its licensing and permitting processes to occur toward the end of 2014 and, thus, no significant activities other than minor environmental monitoring at the project site through at least the first half of 2014 are planned. Once activities begin, construction will be phased and, in particular, well field construction will continue during most of the life of the project with multiple well fields in construction and subsequent operation at the same time. The total duration of well field construction is expected to be approximately 8 years, though the duration could be significantly longer should additional resources be discovered in the area. It is estimated that operation of the completed facilities within the project area may continue for up to 20 years.

(f) An explanation of what interests(s) in a particular locality will be protected by the take, including any anticipated benefits to the applicant or to the public;

Powertech is proposing to develop ISR operations on mostly private and some public lands (managed by the BLM) that it controls through leases and claims encompassing the entire Dewey-Burdock project area. This non-purposeful take application will allow development and production of uranium resources from the project area, which in turn will provide substantial economic development, employment opportunities, and tax revenue to the local community and multiple states in the region including South Dakota, Wyoming, and Nebraska. The product produced, uranium, is used in nuclear power plants for the generation of electricity.

The project is currently undergoing major licensing actions for uranium recovery under the following state and federal agencies:

U.S. Nuclear Regulatory Commission (NRC)
U.S. Environmental Protection Agency (EPA)
South Dakota Department of Environment and Natural Resources (SD DENR)
Bureau of Land Management (BLM)

The following major permits for which applications have been submitted and for which decisions are currently pending include:

Uranium Recovery and Source Materials License (NRC)
Class III Underground Injection Control Permit (EPA)
Class V Underground Injection Control Permit (EPA)
Large Scale Mine Permit (SD DENR)
Inyan Kara Water Right Permit (SD DENR)
Madison Water Right Permit (SD DENR)
Groundwater Discharge Plan (SD DENR)
Plan of Operations (BLM)

The project is being evaluated for its environmental and socioeconomic impacts as part of these state and federal licensing processes. Due to the federal permitting actions involved, the project

is also being evaluated for relevant environmental affects under the National Environmental Policy Act (NEPA), with an initial Draft Supplemental Environmental Impact Statement (SEIS) published by NRC in November of 2012. This process is expected to be completed with a Final SEIS published in early 2014. The most recent socioeconomic evaluation prepared for the project may be found within Powertech's Large Scale Mine Permit application. The evaluation is titled "Dewey-Burdock Project Socioeconomic Study August 2013" and can be found on the SD DENR website at the following URL: http://denr.sd.gov/des/mm/documents/Powertech3/PT83013RevisedAppendix4.pdf.

This study was prepared by an independent socioeconomic expert, Mr. Doyl Fritz, of WWC Engineering, who was found qualified and approved by the SD Board of Minerals and Environment. The socioeconomic study is comprehensive in its analysis of the economic benefits of the project to the region. The report states the following in its summary: "This economic impact analysis indicates that the construction and operation costs including capital costs of this project will result in positive economic benefits to the local and regional economy by the creation of hundreds of jobs and millions of dollars in tax revenue over the life of the project." In brief, economic benefits stated in the report are as follows:

- Creation of 270 new jobs (direct and indirect) during construction
- Creation of an estimated 191 new jobs (direct and indirect) over the life of the project
- Initial construction expenditures of $51 million
- Possible direct tax benefits, including severance tax benefits, of $14.6 million to the State of South Dakota, $6.8 million to Custer County, and $8.3 million to Fall River County, depending on sales price

SRK Consulting of Lakewood, Colorado completed an independently prepared preliminary economic assessment of the project titled "NI 43-101 Technical Report, Preliminary Economic Assessment, Dewey-Burdock Project, April 17, 2012" available on www.sedar.com, an electronic document database for public disclosure of documents required by the Toronto Stock Exchange. This study confirms the economic viability and technical feasibility of the project with detailed estimates of construction and operation expenditures used in support of the socioeconomic analysis.

(g) An explanation of why avoiding the take is not practicable, or for programmatic take, why it is unavoidable; including a detailed description of the avoidance and minimization measures you have incorporated.

Due to the location of the uranium ore bodies relative to the bald eagle nests and some winter roost sites in and near the Dewey-Burdock permit area, avoiding all risk of take is not practicable (refer to Plates 5.3-1 and 5.3-2), especially during the construction phase of the project. Once the well field and processing facility are operational, it is anticipated that bald eagles nesting and roosting in the area will acclimate to those ongoing and continuous activities in the same manner that golden eagles have acclimated to greater levels of disturbance at nearby coal mines, and that bald eagles have acclimated to regular human disturbance near active nests elsewhere in the country (personal communications with Kenneth [Tuk] Jacobson, Arizona Game and Fish Department and Jennifer Ottinger, Thunderbird Wildlife Consulting, Inc.).

The primary goal for obtaining this permit is to allow for a possible non-purposeful take in the event proposed mitigation and acclimation efforts for resident and wintering bald eagles designed to avoid take do not succeed. The acclimation process will be implemented in collaboration with SD state and ESFO personnel, as well as qualified biologists who are experienced in such matters. Examples of avoidance and minimization measures to be incorporated into operations are included in 1(h), below.

(h) A description of measures including avoidance, minimization, and compensatory mitigation you will implement to offset the detrimental impact of the proposed activity on the regional eagle population.

As part of SD permitting requirements, Powertech is working collaboratively with the SDGFP and SD ESFO to develop a comprehensive Avian Monitoring and Mitigation Plan (Avian Plan) that will outline detailed strategies for monitoring, minimizing, and mitigating the potential for unauthorized "take" of bald eagles and other avian species protected under the Migratory Bird Treaty Act (MBTA) and/or Bald and Golden Eagle Protection Act (BGEPA) during construction and operation of the Dewey-Burdock Project. The initial draft of the document has been reviewed by agency personnel and is being revised to address or incorporate input received. Upon approval of the final version by both SDGFP and the SD DENR, the Avian Plan will become part of Powertech's Large Scale Mine Permit, making its contents a state permit requirement for the project's construction and operation.

One aspect of the Avian Plan includes a series of intensive biological monitoring sessions at bald eagle nest and winter roost sites to occur before, during, and after construction of the facilities and infrastructure, with annual monitoring to occur throughout the survey area (permit area and 1.0-mile perimeter) for the life of the project. The initial goal of the biological monitoring program is to further define the resident bald eagle pair's home range, identify additional potential nesting and roosting habitat within the BE1 territory, monitor local prey populations, document the birds' response to existing activities within 0.5-mile buffer areas, and use that collective information to help develop and/or refine protective guidelines to be incorporated into standard operating procedures to minimize the potential for take during construction and operation of the facilities. Long-term monitoring will continue to document year-round bald eagle use areas and responses, if any, to existing activities and new project activities.

During each observation session, biologists will record all pertinent weather conditions (including changes during the session), the type of project activities occurring at the time, the location and duration of those activities, responses (if any) to those activities by bald eagles present at the time, and all other data that may be important for developing or revising procedures to avoid, minimize, or mitigate potential impacts to nesting or roosting eagles.

The biological monitoring program is based primarily on successful, long-term (since 1980) monitoring and mitigation activities employed at surface coal mines in northeastern Wyoming (near the permit area); as noted, coal operations result in levels of disturbance significantly greater than those associated with ISR. Monitoring efforts conducted for bald eagles elsewhere in the U.S. are also incorporated, as appropriate. The content of the Avian Plan is further

supported by the current principal biologist's raptor expertise garnered over more than three decades, including more than 20 years of intensive field observations of bald and/or golden eagle nests, as well as several years supervising both the incubation of bald eagle eggs (among other raptor species) and the rearing, hacking (gradual release), and radio-tracking of juvenile bald eagles and other raptor species.

The Avian Plan is also designed to incorporate information learned from the intensive monitoring sessions into operations to develop, modify, enhance, or revise procedures as needed to further minimize potential impacts. This will be accomplished by participation of biologists and agency personnel in pre-construction and subsequent annual planning sessions to identify potential sources of impacts each year, as well as develop strategies to avoid, minimize, or mitigate those impacts.

As described above, construction and operation of the Dewey-Burdock Project will overlap the 0.5-mile buffer around one or more bald eagle nests and winter roost sites. Results from the biological monitoring and collaborative annual planning efforts outlined above will be used to minimize potential impacts from the project. In addition, various design and operational practices will be investigated and/or used to further avoid, minimize, and/or mitigate potential impacts (e.g., see 1[a], above), including, but not limited to:

- Consolidate infrastructure such as new roads, overhead power lines, etc. into existing and/or mutual corridors or disturbance areas to the extent practicable to minimize habitat disturbance and impacts on bald eagles, as well as their flight paths and foraging areas.

- Construct all overhead power lines per current recommendations of the Avian Power Line Interaction Committee (APLIC) to minimize risks of avian electrocution and collisions.

- Site header houses at or beyond the outer extent of nest and roost buffer areas where practicable.

  Position access doors and lighting on the far (opposite) side of the building from nests (i.e., create a visual buffer between structure and nest).

  Locate employee parking areas on far side of buildings.

- Use deep disposal wells instead of land application of treated wastewater, if sufficient capacity is available, to avoid potential impacts to prairie dogs (prey source).

- Drill deep disposal wells and Madison water supply well(s) during the non-breeding season, locate the well(s) outside nest buffer areas, and/or consolidate well site(s) with other infrastructure.

- Minimize the number, use, direction, and intensity of outdoor lighting in buffer areas.

- Monitor operating well fields remotely via instrumentation and data acquisition systems, reducing the need for regular disturbance near bald eagle nests and winter roost areas. Visits to well field header houses typically will be conducted by one individual and will generally occur twice daily, except in response to emergencies such as pipeline leaks, etc. Such emergencies may need to be addressed immediately, regardless of season or time of year to protect human health and safety, as well as natural resources (e.g., surface and ground water) in the immediate area.

- Schedule project activities within nest buffer areas to occur during the non-breeding season when practicable.

  Prioritize construction of ponds to be located within buffer areas to be completed during the non-breeding season and before other ponds located outside buffer areas.

  Begin work closest to nest and move away as nesting season approaches, when practicable.

- Park vehicles between nest or winter roost sites and foot traffic to create a visual buffer for activities (e.g., well fields, water monitoring, etc.).

- Minimize the risk of take by incrementally introducing the bald eagle pair to project-related operations to help them acclimate to regular disturbance. This incremental approach has proven successful with nesting golden eagles at nearby surface coal mines in similar habitats and with much greater levels of disturbance than will occur from the Dewey-Burdock Project; bald eagles in other regions of the country also have proven able to acclimate to regular disturbance. Specific details are included in the Avian Plan.

- Minimize scheduling of operations within buffer areas during the most vulnerable periods in the nesting and winter roosting seasons (e.g., nest building, egg-laying, early incubation, early brooding, severe weather events, etc.).

- Biologists will have "stop-work" authority to halt normal operations near active bald eagle nests and winter roost sites to further reduce potential impacts, except during emergencies. Stop-work authority means immediate cessation of activities and departure from current buffer zone by all personnel.

- Conduct annual monitoring for bald eagle nests and winter roost sites to identify new sites and/or determine activity at existing sites to help plan the current year's activities.

- Identify, develop, and modify screening techniques within nest and roost buffers.

- Design sediment ponds and any areas that could accumulate water to avoid wildlife entrapment.

- Use reclamation standards that, among other things, coincide with current recommendations to limit the expansion or dominance of invasive species (cheatgrass,

etc.); maintain or improve soil stability, hydrologic function, and biological integrity; and comply with vegetative cover and species diversity requirements in the large scale mine permit for reclaimed areas.

- Identify and map native habitats in and near the BE1 territory that could provide alternate nesting and/or roosting sites beyond designated disturbance buffers.

- Investigate and, if feasible, construct artificial nest structures beyond buffer areas to supplement bald eagle nesting options (though bald eagles may choose not to use such structures; no bald eagle nests will be removed or relocated from the permit area).

- Monitor prey populations annually through lagomorph surveys and mapping of active prairie dog colonies within the project area.

- Map the outer limits of active prairie dog colonies using a hand-held GPS receiver.

- Track prairie dog management efforts (poisoning, shooting, chemical applications, others) conducted by private landowners on their surface.

- Avoid use of Rozol for prairie dog control when bald eagles are present in the area and encourage landowners to minimize/avoid its use for prairie dog management (e.g., use zinc phosphide or other options).

- Consider landowner incentives to retain some level of prairie dogs in/near the permit area.

- If land application is used to dispose of treated wastewater, Powertech will sample prairie dogs annually and analyze samples for selenium and other constituents of concern according to a sampling and analysis plan approved by SD DENR and SDGFP.

Powertech shall revise the Avian Plan, including the measures listed above, to incorporate new information and operational changes (facility siting, procedures, etc.), as needed. Any such revisions will be made in collaboration and/or following communication with the SDGFP, SD DENR, and SD ESFO.

2. ***You must retain records relating to the activities conducted under your permit for at least 5 years from the date of expiration of the permit. Please provide the address where these records will be kept.***

Records relating to activities conducted under the permit will be retained for at least five years from the date of expiration of the permit at Powertech's corporate office at 5575 DTC Parkway, Suite 140, Greenwood Village, Colorado 80111.

3. ***Any permit issued as a result of this application is not valid unless you have any required State or tribal permits associated with the activity. Have you obtained all required State or tribal permits or approvals to conduct this activity?***

Powertech is working with SDGFP and SD DENR to obtain appropriate state-level authorizations to conduct ISR activities (refer to Form 3-200-71, Section E-3). Authorizations will be forwarded to the MBPO and SD ESFO when received.

Chris Pugsley

From: John Mays
Sent: Monday, November 03, 2014 3:32 PM
To: Jack Fritz; Chris Pugsley
Subject: FW: U.S. Fish and Wildlife Service, Region 6 additional information request for eagle take permit application for the Dewey-Burdock project

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From: Kevin Kritz <kevin_kritz@fws.gov>
Date: Friday, October 10, 2014 at 3:20 PM
To: John Mays <jmays@powertechuranium.com>
Cc: <escheinost@powertech.com>, <linda_downey@fws.gov>
Subject: U.S. Fish and Wildlife Service, Region 6 additional information request for eagle take permit application for the Dewey-Burdock project

Mr. Mays,

We have conducted a thorough review of Powertech's request for a U.S. Fish & Wildlife Service permit for Eagle Take That is Associated with, But Not the Purpose of, an Activity (per 50 CFR § 22.26) in relation to the Dewey Burdock Project, and determined that we are in need of additional information.

To assist us with the permitting process we request you address the information outlined below. Your responses can be submitted via email to Mrs. Linda Downey, Legal Instruments Examiner, Migratory Bird Permit Office at Linda_Downey@fws.gov.

ADDITIONAL INFORMATION NEEDED:

- BALD EAGLE NESTS BE1a AND BE1b

Nesting Activity – Although the location for each of these nests is provided in the application, it does not provide information regarding nesting activity at the nests within the last year. Please provide information (outlined below) for last year's nesting season, and if available, provide the same information for the previous 5 nesting seasons.

a) Whether or not the nests were active;
b) if any young were observed in the nest and how many; and
c) if any young fledged successfully from the nest and how many.

- INFRASTRUCTURE - Although the maps provided with the application are very detailed, and contain a lot of information, we are unable to determine which project infrastructure (buildings, power lines, etc.) is already present within the project area vs. new infrastructure you intend to build for the project (new construction). It is especially important for us to understand where the new infrastructure will be built in relation to nest BE1a and nest BE1b and the 1Ž2 mile buffers on each of these two Bald eagle nests.

The application describes how the infrastructure will be constructed in a manner to minimize disturbance to the

nesting Bald eagles. However, without a timetable and a map showing the location of this project infrastructure in relation to the eagle nests, we are unable to determine if the infrastructure will in fact be constructed in the manner you indicate to minimize disturbance to the nesting eagles. To assist us with this determination, please provide the information outlined below:

a) Provide a timetable, or projected timeline, outlining the major components of the project and when each of these will be constructed.
b) When Powertech anticipates the new project construction to begin;
c) when Powertech anticipates the new project construction to end;
d) provide a timeline for each major component of the project.

- AVIAN MONITORING AND MITIGATION PLAN (Avian Plan) – Please provide the status of the Avian Plan.

a) Has it been completed?
b) If not, is there still an opportunity for USFWS to provide input?

- BALD EAGLE WINTER ROOST SITES – From the USFWS perspective, an observation of a single Bald eagle seen roosting in a single tree would not be the basis to designate a site as a winter roost for Bald eagles. Before it can be determined whether disturbance take of wintering Bald eagles at a roost site would even occur, or the amount of disturbance take, we need to understand the basis used to designate winter roosts for this project.

Listed below are questions related to Bald eagle use of winter roosts in the project area and the requested amount of take for wintering Bald eagles at theses roosts.

a) The map included with the application documents 5 winter Bald eagle roost sites. Per Section E, paragraph 1b of the application, it indicates that up to 3 additional wintering Bald eagles could experience take. Please explain why the application only requests disturbance take for up to 3 wintering Bald eagles when there are 5 documented winter roost sites on the project map?
b) Define for us the criteria used to designate the 5 mapped winter roosts as Bald eagle winter roosts.
c) Were these 5 mapped sites designated as Bald eagle winter roosts because:
   i) There were repeated observations of multiple Bald eagles at these sites over the course of a winter season?
   ii) Or, was there documented evidence that multiple Bald eagles used these 5 sites over the course of multiple winter seasons?
d) Also, please provide all relevant data and explanations to assist us in understanding if these mapped sites are in fact winter roosts or not.

- BALD EAGLE FORAGING/FORAGING HABITAT- Do you have any data or documentation that the Bald eagles nesting in the project area are using, or are not using, the Black-tailed Prairie dog colony which overlaps the area where new project infrastructure will be constructed (per the map included with the application)? If so, please provide all relevant data or documentation relative to this question. We are trying to understand whether or not Bald eagles nesting in this area are foraging at this specific Prairie dog colony and whether or not there is potential for disturbance to eagle foraging activity.

If you have any questions regarding this request for additional information and would like to discuss them via a phone conversation, please contact Mrs. Downey at (303) 236-8171 to coordinate the date and time.

Linda Downey
Legal Instruments Examiner
Region 6
Migratory Bird Permit Office
(303) 236-8171
(303) 236-8017 (fax)

RICHARD E. BLUBAUGH
Vice President-Health, Safety
& Environmental Resources

October 7, 2014

Michael Fosha, State Archaeologist
South Dakota State Historical Society
Department of Tourism and State Development
2425 E. Saint Charles St.
P.O. Box 1257
Rapid City, SD 57709-1257

Re: Fifth Annual Report Pursuant to September 15, 2008 Memorandum of Agreement (MOA) Concerning the Dewey-Burdock Project Located in Fall River and Custer Counties

Dear Mr. Fosha:

This letter serves as the fifth annual report called for under Article IV of the September 15, 2008 Memorandum of Agreement (MOA) between Powertech (USA) Inc. (Powertech) and the South Dakota Archaeological Research Center (ARC). While this is the fifth annual report under the MOA, it actually covers the sixth year of the agreement as the first year was covered by four quarterly reports.

Schedule Changes

Powertech has not conducted any drilling or construction activities during the past year. The Nuclear Regulatory Commission (NRC) issued its record of decision (ROD), final license (No. SUA-1600) and Final Supplemental Environmental Impact Statement (FSEIS) for the Dewey-Burdock Project in April 2014.

Included with the FSEIS is a programmatic agreement (PA) that was signed by Powertech, the ACHP, NRC, BLM and the South Dakota SHPO. The execution of the PA completes the Section 106 process. The PA calls for a treatment plan that is currently being developed by the consulting parties. The treatment plan should be complete by or before the end of 2014.

The two intervener groups opposed to the project submitted some additional contentions to the Atomic Safety and Licensing Board (ASLB) after the FSEIS and license were issued. The ASLB conducted its hearing the week of August 18, 2014 in Rapid City. Due to the acquisition by Powertech of some additional geophysical and geological data from another uranium company, the ASLB has allowed some additional time for the interveners to review the data. Consequently, the ASLB's ruling may not be forthcoming until early 2015.

The Mining and Minerals staff of the SD Department of Environment and Natural Resources (DENR) issued their recommendation for issuance of a Large Scale Mine Permit in April 2013. The hearing before the Board of Minerals and Environment (BME) regarding this permit began September 23, 2013. The hearing was suspended pending acquisition of the required federal permits and will be resumed once the EPA and BLM issue their permits. It is anticipated that the Large Scale Mine Permit hearing will be resumed during 2015.

The Chief Engineer of SD DENR published a recommendation to issue two water rights back in November 2012, and the Water Quality group issued its recommendation to approve the Groundwater Discharge Plan. These permits must be authorized by the Water Management Board (WMB). The hearing for these permits was originally scheduled for the week of October 7, 2013 but, due to inclement weather, it was postponed to October 28, 2013. Powertech requested the WMB to discontinue the hearing until the federal permits are approved and issued. The hearing before the WMB is expected to resume in 2015.

In summary, Powertech has received the Source and Byproduct Material License No. SUA-1600 from the NRC and anticipates receiving the BLM and EPA permits late 2014 or early 2015, and is hopeful of commencing drilling and construction in late 2015 or early 2016.

Problems Encountered

Past reports noted that Powertech's NRC license application and NRC's Draft SEIS had received challenges from intervenors which include contentions pertaining to the Level III Cultural Resource study prepared by the Archeology Lab at Augustana College (ALAC). The NRC issued its license and FSEIS in April 2014. Contentions were heard by the ASLB in its August 2014 hearing. A ruling by the ASLB is expected around the end of the year.

No problems have been encountered regarding cultural and/or historic resources since the execution of the MOA.

Disputes and Objections

There have been no disputes or objections related to Powertech's activities as addressed by the MOA. However, as noted above, there are intervenors to the NRC licensing process that have questioned the adequacy of the protection being provided for cultural resources at the Dewey-Burdock Project. Additionally, cultural protection issues have been raised in the Large Scale Mine Permit hearing, which has been suspended. The approved PA addresses all issues that have been raised. The PA specifically calls for a treatment plan for all archeological and tribal sites that may be impacted by the project. The treatment plan is currently being developed by the consulting parties.

Please contact the undersigned at your convenience should you have any questions regarding this report. Your continuing cooperation in this matter is appreciated.

Respectfully yours,

Richard E. Blubaugh
Vice President –Health, Safety & Environmental Resources

cc: John Mays, COO

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium	)	
Recovery Facility)	)	November 21, 2014

WRITTEN SUPPLEMENTAL TESTIMONY OF DR. HANNAN LAGARRY

I, Dr. Hannan LaGarry, hereby declare as follows:

1. I am an expert in the above-captioned proceeding; my testimony, CV, and area of expertise are already in the record. To summarize, I am a stratigraphic mapper and full-time professor at Oglala Lakota College in Kyle, South Dakota. In preparing this declaration, I relied on the expertise gained through my training and experience in reviewing and interpreting borehole logs and other geologic data to create and review narratives, representations, and maps of subsurface geology and hydrogeology.

2. My testimony herein is based on my review of Powertech's recently disclosed borehole logs, maps, and other data. My testimony is also based on my review of the testimony and exhibits submitted by both NRC Staff and Powertech to the Nuclear Regulatory Commission Atomic Safety and Licensing Board, and my expert opinions offered before and during the hearing in Rapid City, South Dakota.

3. On November 12, 14, and 15, 2014 myself and 3 student assistants continued to review drillers' notes and borehole logs prepared by the Tennessee Valley Authority and recently disclosed by Powertech. This review was conducted at the Powertech offices in Edgemont, South Dakota.

   The available data consists of paper files contained in 28 bankers' boxes, 5 file cabinets, and 31 sets of mini logs (reduced to about 1/10th of the full-sized logs). Based on records I reviewed during my initial visit to the Powertech offices on September 14-16, 2014 these boxes, cabinets, and mini logs contain ***at least***:

   7515 total borehole logs
   7454 known borehole logs prior to acquisition of the recently described data
   3920 borehole logs owned prior to acquisition of the recently disclosed data
   3075 digitized data logs

These totals may underreport the number of logs made available, as I was not able to confirm whether my count was inclusive of all logs made available. Our understanding was that the newly disclosed borehole logs numbered over 4,000 data sets.

In total, my assistants and I were able to review drillers' notes from 4,177 boreholes (56% of the 7515 listed above) in 2.5 bankers' boxes, with at least 2.5 bankers' boxes of similar records remaining unexamined. We also examined 488 full-sized (in 3 boxes) and 1774 "mini" resistivity and gamma log pairs (30% of the 7515 listed above), with at least 6 bankers' boxes and 5 file cabinets of similar records remaining unexamined. The number of notes and logs examined was likely 5% fewer than the total number of records reviewed because some logs and notes were discovered to be moved or missing (see below). Also, there is overlap between the drillers' notes and the "mini" borehole logs reviewed. The "mini" logs, although briefly reviewed, did not contribute to the observations listed below.

My review confirmed my previous testimony that the raw data was not presented by modern modeling I would expect to find in such data compilations. Because of the limited time available and the lack of modelling, we did not attempt to reconstruct the geology of the proposed license area. Rather, we focused on the first-hand accounts of the geology of the site and the drilling conditions recorded by the geologists logging the wells. Based on our review of the data, we documented the following unique instances:

140	open, uncased holes
16	previously cased, redrilled open holes
4	records of artesian water
13	records of holes plugged with wooden fenceposts
6	records of holes plugged with broken steel
12	records of faults within or beside drilled holes
1	drawing of 2 faults and a sink hole within a drilled transect
7	notations "do not record this value on drill hole maps"
2	notations "do not return this to landowner"
63	redacted borehole logs

Many notes contained references to water at various levels and poor, muddy, or destroyed samples. We also found that, in the data sets we reviewed, blocks of records had been moved or were missing.

4. Based on the observations noted above, I offer the following expert opinions:

Sample size

We examined drillers' notes from 4,177 boreholes, which is at least 56% of the available data. In my expert opinion, while this sample likely underrepresents the total number of features listed above, it is sufficiently large to characterize the data and to reasonably reflect the geological conditions in the licensed area. In contrast, the NRC review of 34 boreholes

1,000,000 1,050,000 1,100,000 1,150,000

550,000 500,000 450,000 400,000 350,000

Limit of Precambrian rocks (from Darton and Paige, 1925)

Rocks of Cambrian to Mississippian age

Rocks of Precambrian age

X Harney Peak

Custer

Limit of Precambrian rocks

Rocks of Cambrian to Mississippian age

Pringle

Rocks of Permian to Jurassic age

Minnelusa Formation

Hot Springs

Edgemont

Inyan Kara Group

Dissolution Front

Photo A

Photo B

Photo G

Photo H

Photos C & D

Photos E & F

Jewel Cave SW

Proposed Powertech Dewey-Burdock Project Boundary

DEWEY TERRACE

EDGEMONT TERRACE

BLACK HILLS

FANNY PEAK SYNCLINE

MONOCLINE

WYOMING SOUTH DAKOTA

FAULT

BARKER DOME

LONG MOUNTAIN

STRUCTURAL ZONE

CANYON SPRINGS MONOCLINE

LIVINGSTON CANYON ANTICLINE

CHILSON ANTICLINE

SHEEP MOUNTAIN ANTICLINE

DUDLEY ANTICLINE

CASCADE SPRINGS ANTICLINE

COTTONWOOD CREEK ANTICLINE

Red Canyon

Craven Canyon

Jones Creek

CHEYENNE RIVER

Feet 0 6,000 12,000 18,000 24,000

Meters 0 2,000 4,000 6,000 8,000

EXPLANATION

- Contact
- Normal fault
- Possible thrust fault — *Sawteeth on upthrown side*
- Fault from photographs
- Concealed fault — *Showing probable direction of movement. Located by airborne magnetometer survey and by gravity survey*
- Lineament
- Anticline — *Showing crestline and direction of plunge*
- Syncline — *Showing troughline*
- Monocline — *Showing trace and direction of plunge. Dashed where indefinite*
- Breccia pipe or collapse structure in Inyan Kara Group or Morrison Formation
- Breccia pipe or collapse structure in Sundance Formation
- Breccia pipe or collapse structure in Spearfish Formation, Minnekahta Limestone, or Opeche Formation
- Breccia pipe or collapse structure in Minnelusa Formation
- Syncline — *Possibly formed in part by solution subsidence*
- Area containing structures of possible solution origin
- Topographic depression in Inyan Kara Group or younger rocks
- Topographic depression in Sundance Formation
- Topographic depression in Spearfish Formation or Minnekahta Limestone
- Paleostream of Tertiary and (or) Quaternary age — *Dashed where inferred*
- Uranium deposit — *Some undeveloped prospects in pre-Inyan Kara rocks also shown*
- Spring — *Showing locality number in table 9*
- Water well — *Showing locality number in table 11*

Crook County, Lawrence County, Pennington County, Rapid City, Weston County, Wyoming, South Dakota, Custer County, Niobrara County, Fall River County

N

Base map and legend shows scanned images taken from:

Stratigraphy of the Inyan Kara Group and Localization of Uranium Deposits, Southern Black Hills, South Dakota and Wyoming, Geological Survey Professional Paper 763, prepared by Garland B. Gott, Don E. Wolcott and C. Gilbert Bowles, US Government Printing Office, 1974, Plate 4, Map Showing Major Tectonic Elements, Minor Fault and Solution Collapse Structures, Springs, Paleostreams, and Uranium Deposits in the Southern Black Hills, South Dakota and Wyoming.

CONSULTANT

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

REF 978

CHECK SCALES — If this bar does not measure 1 inch this map is not at its original scale

Arch E 36" x 48"

POWERTECH (USA) INC.

Plate 2.6-15

Location of Breccia Pipes Proposed by USGS Professional Paper 763

Dewey-Burdock Project

PLOT DATE	26-Jun-2013	DATE	26-Jun-2013
DRAWN	S. Hetrick	PDF FILE	R978_BrecciaPipeUSGS763.pdf
CHECKED	James A. Bonner	CAD FILE	P:\Dewey-Burdock\Submittals\Technical Report (TR)\June 2013 Revisions\BrecciaPipeUSGS763.mxd
		COORDS	NAD 27, South Dakota State Plane South (feet)

POWERTECH (USA) INC.

TR RAI P&R-9
Clarify plugging and abandonment of all exploration holes.

Background: Section 5.7.1.3 of the Technical Report states "Effluent controls for preventing migration of recovery solutions to overlying and underlying aquifers consist of plugging and abandonment of all exploration holes...." NRC staff was unsure if this statement includes the former exploration holes that may not have been plugged or plugged properly.

Needed: Please clarify if the above-referenced quote refers to former exploration holes at or near production zones.

TR RAI P&R-9 Response

As with any other site proposed for ISR uranium recovery, historical exploration holes and wells are present within the project area. Powertech will use the best available information and best professional practices to locate boreholes or wells in the vicinity of potential well field areas, including historical records, use of color infrared imagery, field investigations, and potentiometric surface evaluation and pump testing conducted for each well field as part of the development of complete well field hydrogeologic packages. As with other ISR facilities, Powertech anticipates that some unplugged holes or wells may be encountered during well field design. Consistent with standard industry operating practices and experience, the following describes the procedures Powertech will implement to detect and mitigate any unplugged holes or wells that have the potential to impact the control and containment of well field solutions. This information will be incorporated into the revised TR.

Powertech commits to properly plugging and abandoning or mitigating any of the following should they pose the potential to impact the control and containment of well field solutions within the project area:

1) Historical wells and exploration holes
2) Holes drilled by Powertech for the purposes of delineation and exploration
3) Any wells failing mechanical integrity testing (MIT) including those installed by Powertech and those installed before Powertech

Powertech will attempt to locate with best professional practices any presently unknown boreholes or wells in the vicinity of every potential well field. Historical records will be used to determine the presence of previous boreholes and wells. Pump testing conducted as part of routine well field hydrogeologic package development will use an array of monitor wells designed to detect and locate any unknown boreholes or wells. The pump testing also will be designed to provide sufficient hydrogeologic data to demonstrate that the well field design and monitoring systems are sufficient to control and detect any potential excursions. Details of the pump testing program are provided in greater detail in the response to TR RAI 5.7.8-14.

Should any hole or well at or near potential well fields be suspected of being improperly plugged and abandoned, Powertech will use best professional practices to precisely locate and re-enter the suspected problem hole with a drill rig or tremmie pipe. Powertech will evaluate mitigation alternatives including plugging and abandoning the hole or well with grout as described below. Powertech may enter the well with logging equipment prior to plugging and abandoning the well to confirm that the well poses a potential problem.

It is not surprising that there is little evidence of unplugged drill holes in the project area, even though there is a long history of mineral exploration in this area and much of this occurred prior to enactment of modern laws and regulations governing plugging and abandoning drill holes. This is because of the well-known natural tendency of drill holes to seal themselves by collapsing, caving and swelling of the formations through which the holes are drilled. During exploration, drill holes must be logged promptly after drilling in order to minimize the risk of losing logging tools or losing the ability to access the full depth of the holes due to the processes described above. During the pump testing that will be done as part of the preparation of the hydrogeologic package for each well field, special attention will be paid to known or suspected locations of exploration holes to detect evidence of interaquifer communication that might be the result of unplugged drill holes.

Plugging and Abandonment Procedures

Powertech's standard operating procedures will include plugging and abandoning all boreholes completed during the process of exploration and delineation drilling. Any wells installed by Powertech which fail MIT and cannot be repaired also will be plugged and abandoned.

Powertech will plug all wells or exploration holes with bentonite or cement grout. The weight and composition of the cement will be sufficient to control artesian conditions and meet the well abandonment standards of the State of South Dakota, including Chapter 74:11:08 (Capping, Sealing, and Plugging Exploration Test Holes) and Section 74:29:11:18 (Requirements for Plugging Drill Holes and Repair, Conversion, and Plugging Wells) of the South Dakota Administrative Rules. Cementing will be completed from total depth to surface using a drill pipe. Records will be kept of each well or exploration hole cemented including at a minimum the following information:

- well or hole ID, total depth, and location
- driller, company, or person doing the cementing work
- total volume of cement placed down hole
- viscosity and density of the slurry used

Powertech will remove surface casing and set a cement plug to a depth 6 ft below the ground surface on each well or borehole plugged and abandoned.

Mitigation and Avoidance

Boreholes or wells which may potentially impact control of well field operations will be evaluated using pump test data and groundwater modeling. Should it be determined that it is not possible to mitigate potential adverse impacts from any unplugged borehole or well that is discovered, the affected well field will be designed to minimize any potential impacts. The monitoring system will be designed to demonstrate well field control. This may include monitor wells in addition to those provided for normal well field operations (refer to response to TR RAI 5.7.8-12). All of these details will be included in the well field hydrogeologic data package that will be prepared for each well field and reviewed by Powertech's SERP prior to operation of that well field.

TR RAI 5.7.8-14

NRC staff notes that Section 3.1 of the TR and Section 3.0 of the TR Supplement provides limited information concerning wellfield test procedures. NUREG-1569, Section 5.7.8.3 states, "The applicant establishes wellfield test procedures. Once a wellfield is installed, it should be tested to establish that the production and injection wells are hydraulically connected to the perimeter horizontal excursion monitor wells and are hydraulically isolated from the vertical excursion monitor wells. Such testing will serve to confirm the performance of the monitoring system and will verify the validity of the site conceptual model reviewed in Section 2 of this standard review plan. The reviewer should verify that well field test approaches have sound technical bases. Test approaches typically consist of a pumping test that subjects the well field to a sustained maximum withdrawal rate while monitoring the perimeter and vertical excursion wells for drawdown. The test should continue until the effects of pumping can be clearly seen via drawdown in the perimeter monitor wells. Typically, about 0.3 m [1 ft] of drawdown in the perimeter monitor wells will verify hydraulic connection, but the amount may vary because of the distance from the pumping wells, pumping rates, and hydraulic conductivity. To investigate vertical confinement or hydraulic isolation between the production zone and upper and lower aquifers, water levels in upper or lower aquifers may also be monitored during the pumping tests." Consistent with NUREG 1569, Section 5.7.8.3, please further describe wellfield test procedures that will be used.

TR RAI 5.7.8-14 Response

The following pump testing procedures will be used to establish that the production and injection wells are hydraulically connected to the perimeter production zone monitor wells, that the production and injection wells are hydraulically isolated from non-production zone vertical monitor wells, and to detect potentially improperly plugged wells or exploration holes. The following information will be included in the revised TR.

Pump Testing Design

An extensive pump test program will be designed and implemented prior to operation of each well field to evaluate the hydrogeology and assess the ability to operate the well field. Prior to pump testing several important well field development steps will be completed:

1) Delineation drilling at a spacing approximately equivalent to well field pattern size. As standard procedure, all delineation holes will be plugged and abandoned after drilling.
2) Detailed mapping of the ore bodies targeted for ISR operations and the lithology of overlying and underlying sand units and aquitards.
3) Revision of the conceptual geology and hydrogeology including definition of aquitards and sand units to be produced or monitored.
4) Design of the production and injection wells including well locations and screened intervals.
5) Design of the monitor well system based on production and injection well locations and refined conceptual geology and hydrogeology.
6) Specification of all monitor well locations and screened intervals.

7) Installation of all monitor wells and production wells used during pump testing.
8) Plugging and abandoning all water supply wells within ¼ mile of the well field or that have been determined through preliminary evaluation to be potentially impacted by ISR operations or to impact ISR operations.

Pump Testing Procedures

The entire monitoring system for the well field will be monitored during the pumping test, including but not necessarily limited to the following wells:

1) Pumping wells,
2) Monitor wells within the production zone (at a minimum density of 1 per 4 acres),
3) Perimeter production zone monitor wells,
4) Monitor wells in the immediately overlying non-production zone sand unit (at a minimum density of 1 per 4 acres),
5) Monitor wells in each subsequently overlying non-production zone sand unit (at a minimum density of 1 per 8 acres),
6) Monitor wells in the alluvium, if present (at a minimum density of 1 per 8 acres),
7) Monitor wells in the immediately underlying non-production zone sand unit, if the production zone does not occur immediately above the Morrison Formation (at a minimum density of 1 per 4 acres),
8) Any additional wells installed for investigating other hydrogeologic features, and
9) Any other wells within proximity to the well field that have been identified as having the potential to impact or be impacted by ISR operations.

All monitoring system wells will be monitored using downhole data logging pressure transducers, which will be corrected for variations in barometric pressure.

Prior to testing, static potentiometric water levels will be measured in every well in the monitoring system. These data will be used to map the preoperational potentiometric surface for each unit including alluvium, where present. Because of the high density of wells and artesian conditions at the site, any leakage across aquitards due to improperly plugged boreholes or wells will typically become apparent while preparing potentiometric surface maps. Four water samples will be collected from each monitor well and analyzed for the parameters in Table 6.1-1. The water quality will be evaluated to identify any potential areas of leakage across aquitards due to improperly plugged boreholes or wells.

Pump testing will involve inducing stress on the production zone sand unit by operating pumping wells. The goal of the test will be to cause drawdown in the production zone extending to all perimeter monitor wells. More than one pumping well may be required to create drawdown in all perimeter monitor wells. Pump testing will create a cone of depression across the well field area to test the

confinement between the production zone and the overlying and underlying sand units and alluvium, if present. The presence or lack of response in vertical monitor wells will be used for evaluation of confinement between these units and for identification of leakage due to anomalies such as improperly plugged boreholes. If leakage is present, the relative responses in the overlying, underlying, and/or alluvial monitor wells will indicate the proximity and direction towards the source of leakage.

If saturated alluvium is present within the well field, alluvial monitor wells will be installed and monitored above the production zone and within an appropriate distance from the well field. The water level in the alluvium will be mapped prior to testing and monitored during pump testing. If the potentiometric surface of the production zone unit rises above the base of the alluvium, pump testing will create sufficient drawdown to lower the production zone unit potentiometric surface below the lowest elevation of the alluvium in the well field. If there are anomalous conditions that cause communication between the production zone and alluvium such as an improperly plugged borehole, these conditions will be identified through responses in the alluvial monitor wells.

The pumping test duration will be sufficient to create a suitable response in the perimeter monitor wells. Typically, this will be a minimum drawdown of 1 foot in each perimeter monitor well. If hydrogeologic conditions dictate, less response may be justified.

The flow rate of the pumping test will be greater than or equal to the maximum well field bleed or the maximum expected flow rate of a single production well, whichever is greater.

Measurements during pump testing will include instantaneous and totalized flow, continuous pressure transducer measurements, barometric pressure, and time. A step rate test will be performed initially. There will be an initial stabilization phase with no flow, a stress period of constant flow, and a recovery period with no flow. During the entire test downhole pressure transducers will collect data in each monitor well.

Pump Test Evaluation

Evaluation of pump test data will address the following:

- Demonstration of hydraulic connection across the production zone and between the production and injection wells and all perimeter monitor wells.
- Confirmation that all monitor wells can suitably detect an excursion.
- Verification of the geologic conceptual model for the well field.
- Evaluation of the vertical confinement and hydraulic isolation between the production zone and overlying and underlying units.
- Demonstration that solutions can be controlled with a typical well field bleed.

- Calculation of the hydraulic conductivity, storativity, and transmissivity of the production zone sand unit.
- Evaluation of anisotropy within the production zone sand unit.
- Calculation of anticipated drawdown during ISR operation at typical bleed rates.
- Detection of potentially improperly plugged wells or exploration boreholes.

Well Field Hydrogeologic Data Packages

Pumping test data and results will be included in the Well Field Hydrogeologic Data Packages. Upon completion of field data collection and laboratory analysis, the Well Field Hydrogeologic Data Package will be assembled and submitted for review by the Safety and Environmental Review Panel (SERP) for evaluation. The SERP evaluation will determine whether the results of the hydrologic testing and the planned ISR operations are consistent with standard operating procedures and technical requirements stated in the source and byproduct material license. The evaluation will include review of the potential impacts to human health and environment. If anomalous conditions are present or the SERP evaluation indicates potential to impact human health or the environment, the Well Field Hydrogeologic Data Package will be submitted to NRC for review and approval. Otherwise, the Well Field Hydrogeologic Data Package and written SERP evaluation will be maintained at the site and available for NRC review.

A Well Field Hydrogeologic Data Package will contain the following:

1) A description of the proposed well field (location, extent, etc.).
2) Map(s) showing the proposed production and injection well patterns and locations of all monitor wells.
3) Geologic cross sections and cross section location maps.
4) Isopach maps of the production zone sand and overlying and underlying confining units.
5) Discussion of how pump testing was performed, including well completion reports.
6) Discussion of the results and conclusions of the pump testing, including pump testing raw data, drawdown match curves, potentiometric surface maps, water level graphs, drawdown maps and, when appropriate, directional transmissivity data and graphs.
7) Sufficient information to show that wells in the monitor well ring are in adequate communication with the production patterns.
8) Baseline water quality information including proposed UCLs for monitor wells and target restoration goals (TRGs).
9) Any other information pertinent to the proposed well field area tested will be included and discussed.

June 20, 2014

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

NRC STAFF'S INITIAL TESTIMONY

Introduction

Q1: Please state your name, position, and employer, and briefly describe your role in reviewing Powertech's application for a license related to the Dewey-Burdock Project.

A1a: My name is Haimanot Yilma. I am Environmental Project Manager in the NRC's Office of Federal and State Materials and Environmental Management Programs. Ex. NRC-003 provides a statement of my professional qualifications. I served as the Project Manager for the Staff's environmental review of the Dewey-Burdock application. In this capacity I was responsible for overseeing the development of the Final Supplement Environmental Impact Statement for the Dewey-Burdock Project. I was also responsible for carrying out NHPA-related activities, such as consulting with interested American Indian tribes.

A1b: My name is Kellee Jamerson. I am an Environmental Scientist in the NRC's Office of Federal and State Materials and Environmental Management Programs. Ex. NRC-004 provides a statement of my professional qualifications. For the Dewey-Burdock

application, I served as the alternate Project Manager for the Staff's environmental review. Along with Ms. Yilma, I shared responsibility for overseeing the preparation of the Final Supplement Environmental Impact Statement.

A1c: My name is Thomas Lancaster. I am a Hydrogeologist with the Uranium Recovery Licensing Branch in the NRC's Office of Federal, State and Materials and Environmental Management programs. Ex. NRC-005 provides a statement of my professional qualifications. I was the Hydrogeologist and alternate Project Manager for the Staff's safety review of the Dewey-Burdock application. Although I did not contribute directly to the FSEIS, I reviewed the FSEIS to ensure consistency with the Staff's technical findings in its Safety Evaluation Report. I am therefore familiar with the FSEIS, particularly with the FSEIS sections addressing baseline groundwater quality, hydrogeology, and groundwater consumption.

A1d: My name is James Prikyl. I am a Senior Research Scientist in the Geosciences and Engineering Division of the Southwest Research Institute. Ex. NRC-006 provides a statement of my professional qualifications. For the Dewey-Burdock application, the Southwest Research Institute provided contract support to the NRC Staff in its preparation of the FSISE. I was lead reviewer on the Staff analyses of land use, noise, visual and scenic impacts, cost/benefit analysis, and cumulative impacts. I helped prepare FSEIS sections addressing geology and soils, water resources, socioeconomics, cultural and historic resources, and environmental monitoring measures.

A1fe: My name is Amy Hester. I am a Research Scientist in the Geosciences and Engineering Division of the Southwest Research Institute. Ex. NRC-006 provides a statement of my professional qualifications. I was directly involved in preparing the Dewey-Burdock FSEIS. I was the primary author of the ecology section in the FSEIS, and I contributed to the socioeconomics section of the FSEIS.

Q2: Are you familiar with the admitted contentions in this hearing, which were filed by the Consolidated Intervenors and the Oglala Sioux Tribe?

A2: Yes. We have reviewed the Consolidated Intervenors' and the Oglala Sioux Tribe's contentions challenging both the FSEIS and the Draft Supplemental Environmental Impact Statement (DSEIS) issued by the NRC Staff. We have also reviewed the contentions the Consolidated Intervenors and the Oglala Sioux Tribe filed with their hearing requests. In addition, we have reviewed all documents cited by the Consolidated Intervenors or the Oglala Sioux Tribe that pertain to the contentions on which we will be testifying.

Q3: What are the contentions on which you will be testifying?

A3a: (H. Yilma) I will be testifying on Contentions 1 (Cultural Resources), 6 (Mitigation Measures), 9 (Related Licensing Actions), and 14 (Wildlife).

A3b: (K. Jamerson) I will be testifying on Contentions 1 (Cultural Resources), 6 (Mitigation Measures), and 9 (Related Licensing Actions).

A3c: (T. Lancaster) I will be testifying on Contentions 2 (Baseline Groundwater Quality), 3 (Hydrogeology), and 4 (Groundwater Consumption).

A3d: (J. Prikryl) I will be testifying on Contentions 2 (Baseline Groundwater Quality), 3 (Hydrogeology), 4 (Groundwater Consumption), and 9 (Mitigation Measures).

A3e: (A. Hester) I will be testifying on Contention 14 (Wildlife).

Contention 1A: The Staff Evaluated Impacts to Historic Properties as Required under NEPA and the NHPA

Q1.1: In Contention 1A, the Intervenors argue that the Staff failed to comply with laws governing the protection of historic and cultural properties. Can you address this claim?

Table 3.5-4. All of these wells are within 2 km [1.25 mi] of proposed wellfields. Powertech's approach for defining preoperational baseline water quality is consistent with NRC Regulatory Guide 4.14 (Ex. NRC-074). NRC Regulatory Guide 4.14 recommends that groundwater samples ~~-be~~ collected quarterly from each well within two kilometers of the tailings area that is or could be used for drinking water, water for livestock, or crop irrigation." The staff developed this guidance because conventional mill ~~-t~~ailings areas" have the potential to be a source of contamination to groundwater. The use of the two-kilometer guideline was validated in NUREG/CR-6705, ~~-H~~istorical Case Analysis of Uranium Plume Attenuation" (Ex. NRC-076). This report examined radiological plume dispersion from mill tailings disposal areas at Uranium Mill Tailings Remedial Action (UMTRA) sites in the United States. The report concluded that the average radiological plume dispersion at UMTRA sites is less than 2 km [1.2 mi] for the 10-20 ppb uranium plume contour, which includes upgradient and downgradient dispersion. Moreover, NUREG/CR-6705 demonstrated that the dispersion of non-radiological contaminants mimics that of radiological contaminants, with a shorter dispersion range that occurs due to the production of relatively insoluble compounds.

The 2 km [1.2 mi] guideline applied to licensed ISR facilities assumes each wellfield is a ~~-t~~emporary source area" of groundwater contamination during production and restoration phases. The temporary nature of groundwater disturbance at an ISR wellfield does not represent the same threat to groundwater as the continuing source of contamination at a mill tailings disposal area. Specifically, during the extraction and restoration phases at an ISR wellfield, the wellfield makes use of a bleed to create and inward gradient that prevents the movement of contamination outside the wellfield. Furthermore, the radius of 2 km [1.2 mi] from an ISR wellfield has been shown to be sufficient based on historical and current monitoring data from NRC licensed sites. There are no reported instances of contamination of any monitored private wells within

or beyond 2 km of an ISR wellfield at any sites historically or currently licensed by the NRC (Ex. NRC-075). For this reason, and based on the other considerations discussed above, the 2 km [1.2 mi] radius provides adequate protection of water in wells for domestic uses and livestock watering. With regard to NEPA, use of this radius allows the Staff to assess the reasonably foreseeable impacts of the Dewey-Burdock Project on water quality.

Q2.13 In paragraph 75 of his Supplemental Declaration, Dr. Moran argues that the DSEIS confusingly and incorrectly uses the terms —background" and —baseline" as having the same meaning. As an example, he cites DSEIS Table 7.3-1 and the discussion on DSEIS pages 7-8 through 7-11. Can you address his statements?

A2.13: (J. Prikryl, T. Lancaster) NRC recognizes that there is a distinction between the terms ~~b~~background" and ~~b~~baseline." In the FSEIS, the Staff uses ~~b~~baseline" consistently to describe the environmental conditions defined by preoperational monitoring and sampling programs. For example, as described in FSEIS Section 3.12.1, ~~B~~Baseline Radiological Conditions," the results of Powertech's preoperational baseline radiological monitoring program provide data on radiological conditions that will be used to evaluate future impacts on facility operations or accidental or unplanned releases (Ex. NRC-008-A at p. 3-104). Likewise the results of Powertech's preoperational or baseline groundwater quality sampling program provide data on project-wide groundwater conditions that will be used to evaluate future impacts on facility operations or accidental or unplanned releases.

On the other hand, the Staff uses ~~b~~background" consistently in the FSEIS to describe the establishment of Commission-approved background water quality prior to commencing operations in individual wellfields. For example, in FSEIS Section 7.3.1 the Staff describes the wellfield groundwater monitoring program Powertech will implement at the Dewey-Burdock site. In FSEIS Section 7.3.1, the Staff further

use of a bleed to create an inward gradient that prevents the movement of contamination outside the wellfield. Furthermore, the radius of 2 km [1.2 mi] from an ISR wellfield has been shown to be sufficient based on historical and current monitoring data from NRC licensed sites. There are no reported instances of contamination of any monitored private wells within or beyond 2 km of an ISR wellfield at any site historically or currently licensed by the NRC (Ex. NRC-075). For this reason, and based on other considerations discussed previously, the 2 km [1.2 mi] radius provides adequate protection of water in wells for domestic uses and livestock watering. From a NEPA standpoint, this distance is also sufficient to assess the reasonably foreseeable impacts of an ISR project.

(4) The Staff acknowledges that, as part of its project-wide groundwater monitoring program, Powertech proposes to collect annual groundwater samples. Although Dr. Moran argues that annual sampling is inadequate to note changes in water quality, he provides no support for his claim. In fact, any changes in groundwater quality are most likely to be detected in monitoring wells surrounding and within the active wellfields at the Dewey-Burdock site. As the Staff explains in FSEIS Section 7.3.1.2, ~~–~~Excursion Monitoring," Powertech proposes to sample monitoring wells surrounding and within active wellfields at the Dewey-Burdock site at approximately 2-week intervals, with samples at least 10 days apart (Ex. APP-040-C). In brief, Powertech's proposed monitoring is sufficient to capture any reasonably foreseeable changes in water quality.

Q2.16: In paragraph 94 of his Supplemental Declaration, Dr. Moran argues that the DSEIS fails to show that Powertech ever performed a detailed inventory of all wells at least 2 miles outside the proposed Dewey-Burdock boundary. He argues that such an inventory is needed to evaluate present and future impacts as part of any acceptable EIS. Do you agree?

A2.16: (J. Prikryl, T. Lancaster) In FSEIS Section 4.5.2.1.1.2.2 (p. 4-60), the Staff presents a summary of all wells within 2 km [1.2 mi] of the Dewey-Burdock site. The Staff based this inventory on the historical records and field investigations presented in Powertech's Environmental Report and Technical Report RAI Responses (Exs. APP-040-A, APP-016-B). The Staff cites these documents in FSEIS Section 4.5.2.1.1.2.2. Powertech's Technical Report RAI Responses provide detailed information on the well inventory, including locations plotted on maps, well use, and aquifer that the well is screened. (See the response in TR RAI P&R-10 at pages 34-43). This inventory of wells within 2 km [1.2 mi] of the Dewey-Burdock site is adequate to evaluate present and future environmental impacts of the proposed project. As we explain in A2.3 and A2.12 above, using a 2 km distance is consistent with Regulatory Guide 4.14 (Ex. NRC-074), which the NRC developed in part to help it assess the environmental impacts of uranium mills. Also as explained above, the use of the 2 km distance has proven sufficient for these purposes, and it is in fact a conservative distance for assessing impacts related to ISR projects, as opposed to uranium mills.

Q2.17: In paragraph 95 of his Supplemental Declaration, Dr. Moran points out that on page 7-8 of the DSEIS the Staff states that selected wells completed within the mineralized zones will be used to evaluate —baseline" water quality, after which they will be converted to injection and production wells. He suggests this is an admission that the DSEIS contained inadequate information on baseline quality. Is he correct?

A2.17: (J. Prikryl, T. Lancaster) After the Staff issued the DSEIS, it recognized that the term ~~b~~aseline" was used in Section 7.3.1.1 to describe groundwater sampling that would be conducted to establish Commission-approved background in wellfields before beginning wellfield operations. The Staff acknowledges that the term ~~b~~aseline" should not have been used in this context; rather, the term ~~b~~ackground" should have been

Dewey-Burdock ISR Project (Docket No. 040-9075)
Section 106/ Tribal Outreach Efforts Timeline

Last Updated: 04/08/14

Date	Accession No.	Summary of Action
2/25/2009	ML091200014	Powertech submitted its initial application for proposed DB ISR Project
6/19/2009	ML091890924	Powertech withdraws license application with plans to resubmit with additional information
8/10/2009	ML092870160	Powertech resubmitted their license application for review
10/2/2009	ML092610201	NRC completed acceptance review and found the license application acceptable to commence the technical and environmental reviews
11/17/2009	ML102380609	The NRC staff offered to meet with Oglala Sioux in South Dakota during the NRC site visit scheduled for December 3 2009. The NRC was advised by an Oglala Sioux tribal representative that Tribal leadership was in transition and would not be available to meet with the NRC in December 2009
12/2/2009	--	The NRC staff visited the State Historic Preservation Officer (SHPO) to gather information on known historical sites within the project boundary as well as request a list of tribes that are known to have an interest in becoming a consulting party for the proposed project. The SHPO provided the staff with a list of tribes (17 in total) that has historical ties to the proposed project boundary
1/8/2010	--	NRC sent an email to tribes informing of the issuance of the Notice of Opportunity for Hearing in the federal register (75 FR 467) for the proposed Dewey-Burdock project

Date	Accession No.	Summary of Action
1/12/2010	ML093080531	NRC submitted the Notice of Intent to prepare an SEIS (published in the Federal Register on 1/20/2010)
3/19/2010	ML100331999	NRC sent initial Section 106 invitation letters to 17 tribes requesting their input on the proposed action
5/3 thru 5/15/2010	--	NRC staff made follow-up calls to ensure tribes had received the March 2010 letter
9/8/2010	ML102450647 (similar letter sent to all Tribes)	NRC sent follow-up letters to tribes since the staff did not receive any responses to the March 19 letter
10/28 thru 11/22/2010		NRC staff made follow-up calls to ensure tribes had received the September 2010 letter
11/22/2010	--	The applicant sent a copy of the class III archeological survey to the SHPO at the request of the NRC staff. The SHPO received the complete report including associated appendixes.
12/3/2010	ML11030430	Yankton Sioux tribe requested a face-to-face meeting to discuss past and current project as well as request for TCP survey. Sisseton Wahpeton and Fort Peck tribes also asked for face-to-face meeting via phone
12/15/2010	ML103270171	NRC sent a letter to ACHP notifying them of the NRC's intent to develop a SEIS and use the NEPA process to satisfy the Section 106 requirements as allowed by 36 CFR 800.

Date	Accession No.	Summary of Action
2/2011	--	NRC staff started contacting all consulting tribes to coordinate a face-to-face meeting for some time in April, May, or June 2011
2/8/2011	--	NRC received a revised list of interested tribes from SD SHPO with three additional tribes (e-mail)
3/04/2011	 ML110550372 ML110550172 ML110550535	NRC sent Initial Section 106 consultation letters to three tribes omitted from the original list: Ponca Tribe of Nebraska Santee Sioux Tribe of Nebraska Crow Tribe
3/10/2011	ML110690166	NRC staff received e-mail from Crow Tribe in response to March 4, 2011 letter, expressing their interest in becoming a consulting party.
5/12/2011	ML111320251 ML111320256 pkg (similar letters sent to all tribes)	NRC sent formal invitation letters to convey date and location of face-to-face information gathering meeting/site visit. The letter also enclosed a map of the proposed project boundary and digital copies of the Class III Archaeological Survey.
5/12-5/25/2011	--	NRC staff made follow-up calls to ensure tribes had received the May 2011 invitation letter for the June face-to-face meeting
5/27/2012	--	NRC staff sent reminder email to all consulting tribes for the June 8 face-to-face meeting
6/8-10/2011	ML111870622 pkg	NRC held an informal information gathering meeting in Pine Ridge, SD – Section 106 Consultation Regarding the Dewey-Burdock Project. Tribes requested to conduct a TCP survey of the proposed project boundary

Date	Accession No.	Summary of Action
	ML111721938	June 8, 2011 transcript
8/12/2011	ML112170237	NRC sent letter to Powertech requesting plans to conduct TCP survey on the proposed project area
8/31/2011	ML112700464	NRC received a letter from Powertech in response to the Aug 12, 2011 request for NHPA Section 106 info. This letter enclosed a proposal which outlined a phased approach to collect information about properties of religious and cultural significance to tribes.
10/20/2011	ML112440115 (similar letter sent to all Tribes)	NRC provided copies of the 6/8/2011 meeting transcripts to all the Tribes
10/28/2011	ML112980559 (similar letter sent to all Tribes)	NRC sent a letter to Tribes stating that the staff requested for the applicant to provide more info re TCP survey based on feedback received during the June 2011 meeting
11/04/2011	--	SRI foundation (applicant's consultant) sent out information about the proposed project including maps of the area to all consulting tribes and followed up with a call. During the call, many tribes requested a second face-to-face meeting to discuss ways of conducting TCP survey
12/21/2011	--	SRI Foundation followed up with an email providing three different date options (2 in January, 1 in February) to hold the second face-to-face meeting.
1/19/2012	ML12031A280 (similar letter sent to all Tribes)	NRC sent invitation letters to all THPOs for a planned Feb 2012 meeting to discuss how best to conduct the TCP survey
2/01/2012	ML120320436 (meeting agenda)	

Date	Accession No.	Summary of Action
2/2012	--	NRC staff made follow-up calls to ensure the tribes had received the invitation letter for the Feb 2012 face-to-face meeting
2/10/2012	--	NRC staff sent a reminder email for the Feb 14-15, 2012 face-to-face meeting
2/14-15/2012	-- ML120590330 (Feb 14) ML120590341 (Feb 15)	NRC held a face-to-face meeting in Rapid City, SD to discuss how best to conduct the TCP survey. 13 Tribal representatives were in attendance. Feb 14-15, 2012 transcripts
3/7/2012	ML120870197	Powertech/SRIF submitted to the NRC a Draft SOW to identify traditional and cultural properties on the proposed project area
3/9/2012	ML120730509 (letter)	NRC forwarded the applicant's Draft SOW to all Tribal representatives
3/19/2012	ML120600178 (similar letter/package sent to all Tribes)	NRC sent letters to Tribal Chairs enclosing the letter to THPOs (dated 3/6/2012) pertaining to ongoing Section 106 consultation for the Dewey-Burdock Project
3/28/2012	ML120670319 letter (similar letter sent to all Tribes) ML120670349 package (non-publicly available contents in pkg)	NRC sent letters to all Tribes transmitting the transcripts and attendance list from the Feb. 14-15, 2012 meeting in Rapid City, SD
4/20/2012	ML121180264 (same e-mail sent to all Tribes)	NRC sent e-mail to all Tribal representatives reminding them of the April 24, 2012 teleconference.
4/24/2012	--	NRC staff held a teleconference with EPA Region 8, BLM,

Date	Accession No.	Summary of Action
		Powertech, Cameco, SRIF, SD SHPO, and 8 Tribal representatives (Northern Cheyenne, Oglala Sioux, Rosebud Sioux, Northern Arapaho, Sisseton-Wahpeton, Standing Rock Sioux, Yankton Sioux, and Cheyenne and Arapaho). The purpose of the call was to solicit feedback from the Tribes on the SOW submitted by the applicant, which outlined how to conduct TCP studies.
4/26/2012	--	NRC staff met with ACHP to discuss the status on the Dewey-Burdock and Crow Butte Projects.
05/7/2012	ML121250102	NRC transmitted the Applicant's Statement of Work to all consulting parties
5/23/2012	ML120930125	NRC issued a periodic status report to all Tribes, which outlined the environmental review schedule and status of Section 106 for Dewey-Burdock
5/23/2012	ML12143A185	NRC staff transmitted a letter to Tribal chairs echoing the letter sent to THPOs inviting them to attend the 4/24/12 teleconference. The intent was to keep the Tribal Chairs informed about the ongoing Section 106 activities related to the Dewey-Burdock Project.
6/20/2012	ML12172A178	NRC staff provided Tribes with additional evaluative testing reports and associated maps submitted by the applicant.
6/27/2012	ML12177A109 (similar letter sent to all Tribes)	NRC staff transmitted letter with enclosed transcript of the April 24, 2012 teleconference to all Tribal representatives.
6/29/2012	ML121180357, ML12181A154 (similar letter sent to all Tribes) ML12181A158 – package containing	NRC transmitted e-mail correspondence pertaining to the April 24, 2012 teleconference to Tribal Chairs. The intent was to keep the Tribal Chairs informed about the ongoing Section 106 activities related to the Dewey-Burdock Project.

Date	Accession No.	Summary of Action
	correspondence pertaining to 4/24/12 teleconference (non-publicly available contents in pkg)	
7/5/2012	ML12171A342 (non-publicly available)	April 24, 2012 transcript of teleconference regarding Crow Butte and Dewey-Burdock projects
7/16/2012	ML12198A339 (e-mail) ML12198A358 (Draft SOW) non-publicly available	NRC staff received an e-mail from Terry Clouthier of Standing Rock Sioux, transmitting a Draft SOW from Tribes
7/30/2012	ML12261A333	NRC received a revised SOW from the applicant based on discussion from the April 24 teleconference
8/2/2012	--	NRC met with ACHP via telephone to discuss the status of Section 106 for the DB project and the difficulties incurred while trying to engage the tribes in consultation. Path forward and contingency plans were also discussed.
8/7/2012	ML12261A375 (e-mail) ML12261A359 pkg (non-publicly available contents in pkg)	NRC forwarded the revised SOW from the applicant via e-mail to the Tribes and requested to meet with them via teleconference on 8/9/2012.
8/9/2012	ML12261A429	NRC staff sent an e-mail to Tribes to remind them of the scheduled August 9, 2012 teleconference
8/9/2012	--	NRC held a teleconference with all consulting parties including Tribes (Oglala Sioux, Cheyenne River Sioux, Crow Creek Sioux, Northern Arapaho, Northern Cheyenne, Rosebud Sioux, Santee Sioux, Sisseton-Wahpeton Oyate, Standing Rock Sioux, and Yankton Sioux), SD SHPO, BLM, EPA Region 8, Powertech, SRIF, Cameco, and NRC's Contractor. During the call, the tribes requested more time to review the revised SOW and caucus amongst themselves before agreeing to the terms

Date	Accession No.	Summary of Action
		of the revised SOW. All consulting parties agreed to another teleconference to be held 2 weeks later.
	ML12248A204 (non-publicly available)	Transcript for the 8/9/12 teleconference
8/15-16/2012	--	Calls were made to Sisseton-Wahpeton Oyate, Fort Peck, Northern Cheyenne, Oglala Sioux, and Yankton Sioux to confirm their availability for the August 21 teleconference.
8/20/2012	ML12261A463 (e-mail) ML12261A462 (non-publicly available contents in pkg)	NRC staff sent an e-mail to Tribal representatives, enclosing the proposed agenda for the August 21, 2012 teleconference
8/21/2012	ML12261A454 ML12261A463 (agenda)	NRC staff sent an e-mail to Tribes to remind them of the scheduled August 21, 2012 teleconference
8/21/2012	--	NRC staff held another teleconference with all consulting parties to discuss how to move the Section 106 identification phase forward. Representatives from Oglala Sioux, Cheyenne River Sioux, Northern Cheyenne, Rosebud Sioux, Santee Sioux, Sisseton-Wahpeton Oyate, Standing Rock Sioux, and Yankton Sioux Tribes participated on the call. Tribes agreed for NRC to meet with Terry Clouthier (SRST) and Ben Rhodd (Rosebud) in Bismarck, ND on Sept 5-6 to revise the previous SOW prepared by tribes.
	ML12264A599 (non-publicly available)	Transcript for the 8/21/12 teleconference
8/29-31/2012	--	Calls were made to Terry Clouthier (SRST) and Ben Rhodd (RST) to coordinate a meeting with tribes on Sept 5-6

Date	Accession No.	Summary of Action
8/29/2012	ML12243A158	NRC received a letter from Powertech indicating their inability to provide information on potential properties of religious and cultural significance that may be affected by the proposed DB project. (Per NRC's 8/12/2011 request)
8/30/2012	ML12261A470	NRC transmitted an e-mail to Tribes (and other consulting parties) reiterating the need to complete the identification phase and requested pertinent components of the SOW that were still deficient (e.g. coverage rate, start date, duration, cost, etc.)
9/3/2012	ML12262A381	Tribes provided a revised draft SOW to NRC in advance of the 9/5/2012 scheduled meeting in Bismarck, ND.
9/5-6/2012	--	NRC staff (J. Trefethen) and NRC contractor (R. Withrow) met with tribal representatives from Crow Nation, Oglala Sioux Tribe, Northern Cheyenne Tribe, Rosebud Sioux Tribe, Sisseton-Wahpeton Oyate, Standing Rock Sioux Tribe, and Yankton Sioux Tribe in an effort for a "working group" to develop a revised SOW for completion of a field survey in Fall 2012.
9/18/2012	ML12264A594 (package no ML12283A100)	NRC sent letter to Tribes addressing concerns raised at the 9/5/12 meeting, and requesting a proposal with cost estimate be submitted.
9/24/2012	--	Called Terry Clouthier (SRST) to confirm receipt of NRC's Sept 18 letter. Tribes agreed to have Tim Mentz, Sr. prepare a cost proposal to implement the SOW prepared by the tribes.
9/27/2012	ML12278A189 (non-public)	NRC received a proposal with cost estimate from Makoche Wowapi / Mentz-Wilson Consultants, LLP

Date	Accession No.	Summary of Action
10/1/2012	--	Called SRST to ask that they confirm with Makoche Wowapi if any part of the submitted proposal should be withheld from distribution to other consulting parties. It was determined that the full proposal should be shared only with Powertech and the cost details *should not* be circulated to other consulting parties.
10/4/2012	ML12278A185	NRC sent the full proposal with cost estimate to Powertech
10/9/2012	ML12285A425	NRC received a letter from Powertech in response to the Oct 4 letter transmitting the proposal
10/12/2012	ML12286A310 (ltr only) ML12286A318 pkg (non-public contents in package)	NRC shared the Makoche Wowapi / Mentz-Wilson proposal with all consulting parties and requested alternative methods for identification
10/17/2012	ML12298A142	Letter from Standing Rock Sioux Tribe in response to NRC letter dated 12 Oct 2012
10/19/2012	ML12298A148	Letter from Sisseton Wahpeton Oyate in response to NRC letter dated 12 Oct 2012
10/19/2012	ML12326A597 (non-public)	NRC received proposal from Kadrmas Lee Jackson (KLJ), Turtle Mountain Band of Chippewa, and Three Affiliated Tribes in response to NRC letter dated 12 Oct 2012
10/20/2012	ML12324A336	NRC staff received an email from Yankton Sioux (Lana Gravatt) in response to the NRC's Oct 12 request for alternative methods.
10/22-26/2012	--	Called Jennifer Harty/Kade Ferris of KLJ to ask if there were any concerns with NRC sharing their Oct 19 survey proposal with other consulting parties. KLJ confirmed that an abridged version absent the proprietary information would be provided for distribution to other consulting parties.

Date	Accession No.	Summary of Action
10/22/2012	ML12298A155	Letter from Rosebud Sioux Tribe in response to NRC letter dated 12 Oct 2012
10/26/2012	ML12292A090 (similar letter sent to all Tribes)	NRC transmitted (via letter) to all consulting parties the transcripts from the August 9 and August 21 teleconferences
10/31/2012	--	Calls to Jennifer Harty/Kade Ferris of KLJ to inquire if they were aware that SRST had passed a resolution barring work with their firm. KLJ later confirmed that they were aware of the SRST resolution against their firm and that it stemmed from an incident on the Keystone Pipeline project and another unrelated incident. It was noted that members of Oglala Sioux, Flandreau Sioux, and Crow Creek Tribes had expressed interest in participating in the survey.
10/31/2012	ML12306A195 (letter) (similar letters sent to all Tribes) ML12325A876 (pkg)	NRC sent a letter to all tribes enclosing an abridged survey proposal for the proposed DB project provided by KLJ et al.
11/01/2012		NRC staff was copied on an email from Terry Clouthier (Standing Rock Sioux) to Bruce Nadeau (Turtle Mountain)
11/01/2012	--	Placed call to Jennifer Turnbow of KLJ to confirm and clarify that KLJ would be contracting directly with Powertech for the survey work. KLJ confirmed that they understood the contracting arrangements.
11/02/2012	ML12324A369	NRC staff received an email from Standing Rock Sioux Tribe (Terry Clouthier) in response to the survey proposal transmitted on 10/31/12
11/06/2012	ML12324A349	NRC staff received an email from Sisseton-Wahpeton (Dianne

Date	Accession No.	Summary of Action
		Desrosiers) in response to the Oct 31 letter
11/08-12/2012	--	Placed calls to Kade Ferris, Jennifer Turnbow, and Elgin Crows Breast to inquire about KLJ's decision to withdraw their TCP survey proposal.
11/13/2012	--	Called tribes to discuss TCP survey for DB project. Received suggestions from tribes to include ACHP in further project discussions.
11/15/2012	--	DB PM and Co-PM held a teleconference with John Eddins of ACHP, informing him of the status of Section 106 for the Dewey-Burdock Project.
11/16/2012	--	NRC staff met with John Eddins of ACHP to provide an overall project status update with respect to Section 106 for the DB, Crow Butte, and Ross Projects.
11/16/12	ML12324A154 (package) (similar letters sent to all Tribes)	NRC staff sent letters to all consulting tribes, Noticing the Issuance of the draft SEIS and request for comment. Staff also asked for concurrence on the preliminary assessment of the cultural resources impact findings.
12/03/2012	--	Placed call to Jennifer Turnbow (KLJ) to follow up regarding the status of the tribal survey. Left a message.
12/14/2012	ML12335A175	NRC issued letter to all tribes in response to the written comments received from NRC Oct 31, 2012 letter. In the letter, NRC proposes to postpone the tribal survey until Spring 2013 and requested input from tribes on content of the proposed programmatic agreement.
12/17/2012	ML13045A765	Received an email from KLJ stating that they are formally withdrawing their TCP survey proposal.

Date	Accession No.	Summary of Action
1/25/2013	--	Placed calls to tribes to confirm receipt of the Dec 14, 2012 letter.
02/08/2013	ML13039A366 (similar letter sent to all Tribes)	NRC staff sent letter to THPOs extending an invitation to participate in a field survey in spring 2013.
02/20/2013	ML13053A110 pkg ML13053A134 ltr	NRC staff received a letter from Terry Clouthier of Standing Rock Sioux Tribe in response to the Feb 8, 2013 NRC letter, which offered comments regarding the Section 106 process being conducted for the proposed DB project.
03/12/2013	ML13071A653 (similar letter sent to all Tribes)	NRC staff sent out invitation letter for Government to Government meeting for UR projects.
3/22/2013	ML13141A362	NRC staff received a letter from Oglala Sioux formally withdrawing their acceptance of the field survey noting not enough time to have the Tribal Administration be informed of this proposal.
04/24/2013	ML13037A411	NRC staff sent a letter to ACHP detailing NRC's section 106 efforts and inviting ACHP to become a consulting party for the Dewey-Burdock project.
06/03/2013	ML13155A015	NRC received letter from Powertech confirming the completion of the Section 106 TCP identification component (open field survey)
8/30/2013	ML13267A221	NRC staff sent e-mail correspondence to all THPOs requesting their availability to Discuss Development of a PA for the Dewey-Burdock ISR Project
9/12/2013	ML13267A377	NRC staff sent a revised e-mail correspondence requesting availability to Discuss Development of a PA for the Dewey-Burdock ISR Project

Date	Accession No.	Summary of Action
9/27/2013	ML13273A474	NRC staff sent e-mail correspondence to all consulting parties inviting them to participate in a teleconference on Oct. 1, 2013 to discuss development of a draft PA
10/01/2013	ML13302A511	As a result of the Federal Government Shutdown, the teleconference scheduled for Oct. 1, 2013 was canceled. NRC staff sent e-mail correspondence notifying all consulting parties.
10/10/2013	ML13290A318	NRC received comments from Powertech (R. Blubaugh) on the draft PA
10/28/2013	ML13304A940	NRC received letter from ACHP indicating that ACHP will participate in consultation to develop a programmatic agreement for the Proposed Dewey-Burdock ISR Project
11/01/2013	ML13322B656	NRC staff sent e-mail correspondence to all consulting parties informing them that the teleconference to discuss development of the draft PA was rescheduled for Nov. 15, 2013
11/6/2013	ML13308A667 (letter sent to all consulting tribes)	NRC staff sent a letter to the Crow Creek Sioux Tribe re: Notification of Intention to Separate NHPA Section 106 Process from NEPA Review for Dewey-Burdock ISR Project
11/8/2013	ML13322B655	NRC staff sent a reminder e-mail to all consulting parties, enclosing the draft PA outline for discussion during the teleconference
11/12/2013	ML13322B654	Email from Fort Peck Tribe (C. Youpee) in response to the Nov. 8 message
11/12/2013	ML13322B657 ML13322B659	Email correspondence between NRC staff and Standing Rock Sioux Tribe (T. Clouthier) in response to the Nov. 8 message

Date	Accession No.	Summary of Action
11/13/2013	ML13311B184	NRC staff sent a letter to J. Fowler of ACHP re: Notification of Intention to Separate NHPA Section 106 Process from NEPA Review for Dewey-Burdock ISR Project
11/14/2013	ML13322B658	NRC staff sent a second reminder e-mail to all consulting parties, enclosing the meeting agenda, draft PA outline, and schedule
11/22/2013	ML13329A420	NRC staff distributed a working copy of the draft PA for consulting parties to review and comment in advance of the next teleconference scheduled for Dec. 13, 2013
	ML13329A466	Draft Programmatic Agreement for Dewey-Burdock Project
	ML13329A468	Draft Appendix A for Dewey-Burdock Project PA
	ML13329A470	Table 1.0 – NRC NRHP Determinations for Draft PA for Dewey-Burdock
12/12/2013	ML13354B936	NRC staff sent an e-mail reminder to all consulting parties regarding the draft PA teleconference on Dec. 13, 2013
12/16/2013	ML13290A679	NRC staff sent a letter to South Dakota SHPO Transmitting the TCP Survey Summary Report
12/16/2013	ML13354B925	NRC staff sent e-mail correspondence informing all consulting parties that an additional teleconference to discuss development of the draft PA for the Dewey-Burdock Project was scheduled for Dec. 17, 2013
12/20/2013	ML14008A317 pkg	NRC staff distributed draft PA and appendices to all consulting parties for a 45-day review and comment period
12/23/2013	ML13357A206 (letter sent to all consulting tribes)	NRC staff sent a letter to the Northern Arapaho Tribe Transmitting the TCP Survey Summary Report

Date	Accession No.	Summary of Action
	ML13343A142	Enclosure 1 – Summary Report Regarding the Tribal Cultural Surveys Completed for the Dewey-Burdock Uranium ISR Project
	ML13342A155	Enclosure 2 – NRC's Overall Determinations of Eligibility and Assessment of Effects
01/14/2014	ML14050A410	SD SHPO's concurrence on Eligibility Recommendation on BLM Administered Land
01/29/2014	ML14029A693 (letter sent to all consulting tribes)	Letter re: Notification of Issuance of Final SEIS for the Dewey-Burdock ISR Project
01/30/2014	ML14055A538	NRC response to C. Youpee's concerns regarding Section 106/G2G consultation
02/04/2014	ML14055A513	Standing Rock Sioux Tribe (SRST) Submittal of Comments on Draft PA for Dewey-Burdock ISR Project
	ML14055A537	NRC Acknowledgement of Comments on Draft PA
02/05/2014	ML14077A002	Oglala Sioux Tribe Submittal of Comments on Draft PA for Dewey-Burdock ISR Project
02/11/2014	ML10455A505 (distributed to all consulting parties)	Email reminder from NRC – Webinar to Discuss Development of PA Scheduled for Friday, Feb. 14, 2014
02/13/2014	ML14055A504 (distributed to all consulting parties)	Email reminder from NRC – 2/14/14 Webinar to review comments and finalize the PA
02/14/2014	ML14055A503	Email from NRC – Invitation extended to tribes unable to participate on 2/14/14 for an additional webinar/teleconference on 2/21/14
2/20/2014	ML10455A491	Letter from SRST re: Comments on Determination of Eligibility

Date	Accession No.	Summary of Action
2/20/2014	ML14055A487	Letter from SRST THPO re: Comments on Draft PA for the Dewey-Burdock Project
	ML14059A199	SRST Comments on Draft PA
2/20/2014	ML14055A496	NRC attached via email the Draft PA Appendix which incorporated editorial changes and additions from comments received from consulting parties
02/24/2014	ML10477A535	SRST Comments on the Draft PA Appendix
02/24/2014	ML14077A533	Oglala Sioux THPO Concurs with SRST Comments on PA Appendix
02/27/2014	--	NRC meeting with SRST archeologist to discuss his comments on the draft PA submitted on Feb 5 and Feb 20, 2014. ACHP and SD SHPO also participated in the call. Oglala Sioux Tribe was invited but could not attend.
03/12/2014	ML14077A531	Letter from ACHP to SRST THPO re: Dewey-Burdock Project (NRC on distribution)
03/19/2014	ML14080A093 (letter sent to all consulting tribes)	Letter enclosing the Final PA signed by the NRC
	ML14066A347	Enclosure 1 – Final PA
	ML14066A350	Enclosure 2 – Final PA Appendix

Oglala Sioux Tribe
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February 5, 2014

Haimanot Yilma
Project Manager
FSME/DWMEP/EPPAD/ERB
U.S Nuclear Regulatory Commission
Mail Stop: T8F05
(via email)

RE: Submittal of comments on draft Programmatic Agreement for the proposed Dewey-Burdock ISR uranium mining project

Dear Ms. Yilma,

This is in response to the NRC's request for comment on the draft Programmatic Agreement (PA) for the proposed Powertech Dewey-Burdock in situ leach (ISL) uranium mine. As you know, the Oglala Sioux Tribe has attempted to maintain a high level of involvement in the National Historic Preservation Act (NPHA) Section 106 consultation process through our Tribal Historic Preservation Office (OSTHPO), as well as the preparation of the National Environmental Policy Act (NEPA) environmental impact statement. Unfortunately, these processes have not been conducted in a manner that complies with the letter or spirit of either the NHPA or NEPA, resulting in the effective exclusion of several of the most impacted Tribes to which ascribe this proposed project area as traditional homelands. As such, the Oglala Sioux Tribe, as part of the Great Sioux Nation, continues to have serious unresolved concerns with the proposed project, and cannot concur in the Programmatic Agreement as drafted.

We request that NRC revisit its NEPA and NHPA compliance on this proposed project in order to fulfill its prior commitments, and legal obligations, to provide meaningful opportunities for the OSTHPO participation within both the NHPA consultation and NEPA review. Principal among the Tribe's concerns are those raised previously regarding the lack of a credible cultural resources survey that includes the entire project area of 10,580 acres. As repeatedly communicated in prior correspondence by the Oglala Sioux Tribe and others, while the Tribe remains willing and able to participate in such a process, it must be done in a credible manner, using proper methodologies and expertise. In addition, it states on page 3 of the draft PA indicates that the Tribe has "participated in the preparation of this PA", which is incorrect. On the contrary, representatives of the Tribe were merely on a November 15, 2013 webinar

hosted by NRC for interested parties to review the draft PA prepared by the NRC, not with the OST. This is very misleading to anyone who reads this PA.

To date these cultural resources surveys, as well as the ones completed prior by archaeologists are not complete and the NRC and Powertech efforts to date have not provided sufficient resources nor incorporated sufficient THPO involvement to result in a credible product. The PA's repeated strong reliance on a prior "Class III" cultural survey is misleading at best, as that survey was conducted by Powertech consultants in 2008 and has been repeatedly criticized by the Tribe as incomplete, and even recognized by NRC Staff as insufficient. As the Staff explained when it issued the DSEIS, "it is working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment." NRC Staff's Answer to Contentions on Draft Supplemental Environmental Impact Statement, at 13. Indicative of the process thus far, this supplement to the draft SEIS never occurred. Instead, NRC Staff simply published a Final SEIS, with a selection of a proposed action and a purportedly complete cultural resource impact analysis, without providing the promised draft analysis in a NEPA context. It is a poor excuse for NRC to provide the Tribes and public an after-the-fact opportunity to comment on any cultural reviews outside of the NEPA process. NRC should rescind its statements in the PA that all effect determinations are considered "final" until all necessary information is collected and meaningfully reviewed within both the NEPA and NHPA processes.

In addition, the cultural resources survey findings conducted by the seven (7) participating Tribes have not been afforded to our Tribe for review. As we are to understand, only three (3) Tribes (Northern Arapaho Tribe, Northern Cheyenne Tribe, Cheyenne and Arapaho Tribes of Oklahoma) submitted their findings; however we have not seen those results for review. Additionally, there is a "Table. 1 Summary of Tribal Cultural Survey Activity and Participation during April-May 2013" received as an attachment that the field survey participating Tribes "examined approximately 95 percent of the entire project area within the license boundary". This brings to question how that claim can be true when only certain days were surveyed by those Tribes, and some for only three (3) days for the entire 10,580 acres.

Further compounding these problems is the PA's reliance on future analysis of the project area for cultural resources impacts and potential mitigation measures. Indeed, even the methodologies to be used for these future surveys and mitigation measure development are left without any specificity or clarification. Unspecified promises for Powertech to "provide funding to tribal representatives" to participate in future surveys is precisely the type of tactic that is partly to blame for the current problems with NRC's NHPA and NEPA processes. While some NHPA processes may be staged under certain circumstances, there is no compelling need to do so here, where proper surveys and analyses could be conducted and completed, albeit probably not on the applicant's preferred accelerated schedule. The applicant's preferred timeline for license approval should not supplant the need to ensure all data collection and analysis at the earliest possible time, as contemplated and required by both NEPA and the NHPA. The PA should not be finalized absent agreement with the Tribe on the methods and practices to be employed, and only those matters that truly cannot be accomplished beforehand should be left for the staged, future study and analysis.

We also remind you that there are two pending applications to the Environmental Protection Agency for underground injection control and plan for disposal of treated ISR processed fluids. Overall, the PA is not a document that the Tribe is comfortable signing at this stage. It fails to take account of the lack of a complete cultural resource survey to date and improperly and needlessly leaves significant data collection and analysis to future unspecified efforts, outside of the NEPA process. We continue to express our interest in fully engaging in the cultural resource analysis and protection processes related to this Project, and ask that NRC Staff abandon its current approach of prematurely finalizing its NEPA and NHPA documents until the proper steps can be taken to ensure a competent cultural resource impact review, as well as consideration for environmental concerns are met.

Sincerely,

Bryan V. Brewer/mrb

Bryan V. Brewer
President, Oglala Sioux Tribe

From:	Waste"Win Young
To:	Caverly, Jill; Yilma, Haimanot; Moore, Johari; Hsueh, Kevin; Goodman, Nathan; Melissa.Ryan@nrc.gove; Magwood, William; Mark.Sartorius@nrc.gov; Jamerson, Kellee; hluhman@louisberger.gov
Cc:	Russell Eagle Bear (reaglebear@yahoo.com); Ben Rhodd (brhodd1@yahoo.com); oglalathpo@goldenwest.net; Joyce Whiting (ostnrrapro@gwtc.net); Dennis Yellow Thunder (ostnrrafd@gwtc.net); Bryan@oglala.org; Steve Vance (stevev.crstpres@outlook.com); dianned@swo-nsn.gov; James Whitted (jmswhitted@yahoo.com); Tamara St John (tamara_stjohn@yahoo.com); jeddins@achp.gov; vhauser@achp.gov; Terence Clouthier
Subject:	SRST Comments
Date:	Thursday, February 20, 2014 12:27:38 PM
Attachments:	Final draft PA Dewey-Burdock SRST-THPO comments.doc

Good Morning,

It has come to my attention reading through the proposed programmatic agreements for Ross and Dewey Burdock how much tribal information, suggestions and critical issues raised by the tribes are purposefully being ignored and omitted. Initially, I did not want to bother you guys again because you are all aware of my sentiments but the gnawing disappointment of how you all have handled the Section 106 process under the NHPA is too overwhelming. (On another note, I seen a job opening for a Native American specialist to assist the NRC with Section 106 NHPA. That's such great news! I mean… In the meantime, 3 areas of historical, cultural and spiritual significance to our tribe will have been destroyed by NRC projects, but hey! At least you guys will get some guidance:)

I have attached comments for the proposed Dewey-Burdock PA to this email.

I am cautious to submit these knowing full well that the NRC has repeatedly ignored tribes who have historic, cultural and spiritual properties in proposed project areas.

Yesterday our office was told by Haimanot that other tribes are too scared to speak up in meetings or feel that their voice is not heard when Sioux tribes are present. I do not know which Sioux tribes she is referring to but I work for the Standing Rock Sioux Tribe—THPO. We will continue to hold federal agencies and call them out—including other tribes who attempt to bypass the federal regulations and smooth things over with false promises. For us, this is not about a ten thousand dollar pay check for three, five or ten days of work as what overwhelmingly happened on Dewey Burdock.

Another troubling incident is that the SD SHPO already received the letter to *concur* on eligibility determinations for Dewy Burdock in December 2013. In the meantime, tribes were sent a letter seeking comments on eligibility

determination at that same time and tribal comments were due January 7, 2014. The SD SHPO issued their concurrence on Jan 14 2014. This was all done without tribe's knowledge. When SD state legislators hosted a meeting in Rapid City two weeks ago staff from the Oglala Sioux Tribe said that tribes were still involved in the Section 106 process. A SD legislator said that SD had already signed off on it, tribal concerns were fixed and that the NRC was issuing their permit for Dewey Burdock shortly.

This timeline was confirmed yesterday with the SD SHPO via telephone. If Section 106 is a federal process between agencies and tribes—why was the SD SHPO given a concurrence letter on eligibility determinations the same date that tribes were asked for comments on those determinations? Why would the NRC issue a permit for an incomplete process based on incomplete Section 106 identification results? Why would it base those results off of 3 reports issued from tribes out of 23 the NRC claims to consult with—although only 7 tribes went out? This is not majority rules. It does not take an environmental or cultural resource manager to see that this is wrong. This also needs to be clarified in the PA.

Yesterday Haimanot told our staff that there will be no new identification efforts for Dewey Burdock—which is contrary to what Commissioner Bill Magwood told the Oglala Sioux Tribe and the SRST last summer in Kyle, SD. [I have the exact date. Our legal department and a Tribal councilperson was present].

The PA for Dewey Burdock needs to be accurate. It needs to document tribal concerns. It needs to detail the unbalanced, unfair process that the tribes were up against. It needs to detail the incestuous relationship between the NRC and applicant Powertech. Powertech is calling the shots and because the NRC does not know how to implement Section 106 or has no clue how to work with tribes, it is responsible for the destruction of this spiritual, cultural and historical landscape.

It has been made very clear to us that the NRC wants these projects over and done with. They will continue to operate haphazardly to accomplish this.

YOUR PA NEEDS TO TELL THE TRUTH. The NRC did not consult with 23 tribes. That is like me saying that I sat down and met with the 500 NRC employees in Rockville last January when actually I sat in a room with 7 of

you. Why would you willfully lie?

Just to make your PA and efforts look good and faithful? Dewey Burdock is an incomplete catastrophe that has an incomplete Section 106 process. Your sentiments are, " Why are you guys the only tribe speaking up?" We have a spiritual, cultural and historical tie to this area. We are not one to take the money and move onto the next project. The SRST THPO tried to meet with the NRC in good faith and offer our comments. Yet you decided to listen to the applicant and offer $10,000.00 per tribe because the applicant didn't like the idea of paying over $100,00.00 for the tribal identification survey. Our suggestions were ignored and instead, we were given pacifying promises of future collaboration.

The SRST is not your trustee. The tribal THPO's are the Section 106 experts, more so than the applicants and their cultural resource contractors who are hired to write documents that you think fulfills your regulatory responsibility.

If you think we were going to take your $10,000.00 for an inept survey tantamount to a payoff and not fight for what is right and what is ours then I guess what you have heard from other tribes is true. We are overbearing when it comes to protecting our future generations' land and water.

Thank you for your invitation to the Standing Rock Sioux Tribe inviting us to participate in Section 106 Consultation under the NHPA for Reno Creek. Due to the complete lack of confidence, bad faith and ill will that the Nuclear Regulatory Commission has shown towards the SRST as well as other tribes we will have to decline to participate in this consultation.

Please see our attached comments for the Dewey Burdock PA.

Waštė Wiŋ Young
Standing Rock Sioux Tribe
Tribal Historic Preservation Officer
(701)-854-8645 work
(701)-854-2138 fax

Final DRAFT

PROGRAMMATIC AGREEMENT
AMONG
U.S. NUCLEAR REGULATORY COMMISSION
U.S. BUREAU OF LAND MANAGEMENT
SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE
POWERTECH (USA), INC.
AND
ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE
DEWEY-BURDOCK IN SITU RECOVERY PROJECT
LOCATED IN CUSTER AND FALL RIVER COUNTIES
SOUTH DAKOTA

Date 02-14-14

WHEREAS, the U.S. Nuclear Regulatory Commission (NRC) received an application from Powertech (USA), Inc. (Powertech or applicant) for a new radioactive source materials license to develop and operate the Dewey-Burdock Project (the undertaking) located near Edgemont, South Dakota in Fall River and Custer counties (Project) pursuant to the NRC licensing authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.*; and

WHEREAS, NRC is considering issuance of a license for the Dewey-Burdock In Situ Recovery [ISR] Project pursuant to its authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.* which makes the project an undertaking requiring compliance by NRC with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, and its implementing regulations (36 CFR § 800 (2004)); and

WHEREAS, if licensed, the proposed project will use an In Situ Recovery (ISR) methodology to extract uranium and process it into yellowcake at the Dewey-Burdock site; and

WHEREAS, the proposed project area consists of approximately 10,580 acres (4,282 ha) located on both sides of Dewey Road (County Road 6463) and includes portions of Sections 1-5, 10-12, 14, and 15, in Township 7 South, Range 1 East and portions of Sections 20, 21, 27, 28, 29, and 30-35 in Township 6 South, Range 1 East, Black Hill Meridian, (see Appendix A and Figure 1.0, for fuller description and a map of the project area); and

WHEREAS, under the terms of the General Mining Act of 1872 Powertech has filed Federal Lode mining claims and secured mineral rights on 240 acres [97 ha] of public lands open to mineral entry and administered by the U.S. Department of the Interior, Bureau of Land Management (BLM), and has the right to develop the mining claims as long as this can be accomplished without causing unnecessary or undue degradation to public lands and in accordance with pertinent laws and regulations under 43 CFR Subpart 3809; and

WHEREAS, review and approval of a Plan of Operations (POO) for the project that meets the requirements of 43 CFR Subpart 3809 by the BLM-South Dakota Field Office makes the project an undertaking requiring compliance by BLM with Sectioo 106 of the NHPA, 16 U.S.C. § 470 and 36 CFR Part 800; and

Comment [TC1]: This "project area" conflicts with statements made throughout the consultation process that the project area would be confined to the area of direct impacts (2k acres). The tribes were specifically told they could not survey the license boundary (10k acres) during meetings between June 2011 and August 2012 even though this was what the tribes felt was the proper area of potential effects (APE). Why is the project area now suddenly the entire license boundary when that was a major stumbling block during consultation for over one year? The NRC switched gears at the last moment and allowed for the tribes to access the entire 10,000+ acres with the caveat that they only had 10k dollars to work with and a restricted timeline of 1 month. There is no way a proper tribal survey could be conducted with those caveats but this is the ultimatum that was forced upon the tribes.

Final DRAFT

WHEREAS, the BLM, by letter dated April 7, 2011, has designated the NRC as the lead agency for compliance with requirements of Section 106 of the NHPA regarding the Dewey-Burdock Project (ADAMS Accession No. ML11116A091) pursuant to 36 CFR § 800.2(a)(2) of the Section 106 regulations; and

WHEREAS, under the terms of the Safe Drinking Water Act, Powertech has submitted to the Environmental Protection Agency (EPA) two Underground Injection Control (UIC) Permit Applications for ISR uranium recovery and the disposal of treated ISR process fluids at the Dewey-Burdock site; the EPA will issue draft permit decisions that meet the requirements of UIC regulations found at 40 CFR Parts 124, 144, 146 and 147; and

WHEREAS, the NRC determined a phased process for compliance with Section 106 of the NHPA is appropriate for this undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of historic properties, determinations of effect on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this Programmatic Agreement (PA) (see Appendix A for details); and

WHEREAS, the area of potential effects (APE) for the undertaking is the area at the Dewey-Burdock Project site and its immediate environs, which may be directly or indirectly impacted by construction and operation activities associated with the proposed project, as described in Appendix A; and

WHEREAS, Project activities may occur on lands outside the license boundary for the installation of electrical transmission lines, and will be addressed in accordance with Stipulations 3 and 4 of this PA; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1)(i)(C), the NRC, by letter dated April 24, 2013, notified the Advisory Council on Historic Preservation (ACHP) of the potential for adverse effects to historic properties from the undertaking and invited the ACHP to participate in Section 106 consultation and in the preparation of this PA; and

WHEREAS, the ACHP, by letter, dated October 28, 2013, formally entered the consultation; and

WHEREAS, the NRC initiated consultation with the South Dakota State Historic Preservation Officer (SD SHPO) on December 2, 2009 during a face-to-face meeting held in Pierre, South Dakota; and

WHEREAS, the NRC invited Powertech to participate in Section 106 consultation and preparation of this PA; and

WHEREAS, by letters dated March 19, 2010 (ML100331999) and September 8, 2010 (ML102450647), the NRC invited 23 federally-recognized Indian Tribes who may ascribe religious and cultural significance to historic properties that may be affected by the undertaking, including the Cheyenne and Arapaho Tribes of Oklahoma, the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboine and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebnd Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe (collectively referred to as Tribes), to each be a consulting party in the Section 106 process; and

Comment [HXV12]: EPA to revise this Whereas clasue later.

Comment [TC3]: Has the disposal method been determined? This was also a matter of contention in determining the APE for this project based on only surveying the direct effects.

Comment [TC4]: 36CFR800.14 (a) (1) requires the federal agency to consult with the public in the development of alternate procedures for Section 106 compliance. This allows for the public to have their input into the development of alternate procedures. Where is the documentation that this was ever conducted? 36CFR800.4 (2) also requires the federal agency to take into account the views of the tribes for a phased approach. The SRST-THPO has disagreed with the actions of the NRC since September of 2012. We disagree with the determinations of non-eligibility (TABLE 1) for any sites containing stone features. How is the NRC accounting for this in this PA and in their phased approach?

Comment [TC5]: Appendix A is not attached to any email for this PA. The SRST-THPO would like copies off all appendixes for this PA. It is impossible to make fully informed comments without the proper information being given to the tribes.

Comment [TC6]: This conflicts with the project area being licensed as pointed out in TC1 comment. Why is the NRC not considering the entire license boundary as the APE?

Comment [TC7]: A proper survey of the entire license boundary as the APE would have eliminated the need to develop this PA. The tribes pushed for this throughout 2011 and 2012 and were denied. The identification effort that was forced upon the tribes to accept could in no way properly document the sites given the time and money that was forced upon the tribe.

WHEREAS, the following 23 Tribes participated in consultation at varying levels with the NRC and BLM regarding the proposed Dewey-Burdock Project: the Cheyenne and Arapaho Tribes of Oklahoma, the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboine and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebud Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe; and

WHEREAS, the NRC worked with consulting Tribes between November 2011 and October 2012 to develop an approach for identifying historic properties of cultural and religious significance to Tribes; the NRC conducted a face-to-face consultation focused on the identification of these properties in February 2012. Although several work plans for a Tribal survey were prepared and discussed by the consulting parties throughout 2012, the parties were unable to reach agreement on the scope and the cost of the Tribal survey (see Appendix B for details); and

WHEREAS, in October 2012, the NRC requested alternative approaches to conduct a field survey by a group representing all consulting Tribes and subsequently proposed opening the project area to all interested Tribes to complete the survey according to needs and interests, and with payments made to participating Tribes (see Appendix B for details); and

WHEREAS, the NRC offered all 23 cousulting Tribes the opportunity to participate in a tribal field survey to identify properties of religious and cultural significance to them for the proposed Dewey-Burdock project ISR facility by letter dated February 8, 2013; and

WHEREAS, the following seven Tribes participated in the tribal field survey: the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, the Crow Nation, the Santee Sioux Tribe, the Crow Creek Sioux Tribe, and the Turtle Mountain Band of Chippewa Indians as discussed in details in Appendix A; and

WHEREAS, surveys to identify historic properties have been completed for the project including Class III Archeological Surveys and tribal surveys to identify properties of religious and cultural significance; and

WHEREAS, the NRC received tribal survey reports with eligibility recommendations from the Northern Arapaho Tribe, the Northern Cheyenne Tribe, and the Cheyenne and Arapaho Tribes of Oklahoma, as well as field notes from the Crow Nation as discussed in Appendix A; and

WHEREAS, the NRC staff has reviewed and evaluated the results of the applicant's Class III archaeological surveys and tribal surveys in the development of its initial recommendations concerning eligibility of properties identified within the APE for the undertaking for inclusion on the National Register of Historic Places (NRHP) as presented in Appendix B; and

WHEREAS, the NRC has received concurrence from the SD SHPO on these eligibility determinations as discussed in Appendix B, eligibility determinations were also sent to the Tribes and requested a 30-day review and comment period; and

WHEREAS, the NRC invited each of the 23 consulting Tribes to participate in the development of this PA; and

Comment [TC8]: The applicant and their third-party consultant decided not to continue the discussions with the tribes by stating that further discussions would not be fruitful in an erroneous attempt to "move the project forward" in the 106 process. The applicant was unwilling to fund the project to a level that would have been acceptable to the tribes for proper identification efforts yet they funded all of the archaeological survey and evaluative testing with apparently no complaints. One of the main stumbling blocks was the definition of the APE between the tribes and federal agency and applicant.

Comment [TC9]: This request only came to the tribes due to the tribes not being intimidated by the NRC and their ultimatums. The NRC stated in September that if the tribes did not respond by a specified date that they would just move the process forward – echoing the words of the applicant and their third party consultant. The tribes pointed out that there is no provision for this within the regulation during the identification phase and that precipitated the "alternative approach" comments.

Comment [TC10]: The tribes were offered an ultimatum to either accept the proposal that would in no way properly identify sites of significance to them or be left out of the identification process. This is not a good faith effort to identify sites of significance to tribes. The proposal ignored the information gathered under 36CFR800.4 as to what is actually required to identify and instead the proposal amounted to just saying go drive around (... [1]

Comment [TC11]: This statement alone indicates that the identification process is incomplete for this project. The SRST-THPO objected to the approach adopted by the NRC as it in no way would properly document the sites in the license boundary in a manner consistent with Section 106.

Comment [TC12]: The SRST-THPO and other tribes have never been given the opportunity to identify sites of significance for their tribes in a manner consistent with their tribal identification efforts.

Comment [TC13]: 4 tribes providing comments on survey work somehow meets the standards of good faith effort? Almost three times that many were actively consulting since 2011 and their concerns for their sites are continuing to be ignored.

Comment [TC14]: The SRST-THPO disagrees with the recommendations made for the sites listed in Table 1. How will the NRC address our concerns as they are currently being ignored.

Comment [TC15]: The SRST-THPO is aware that the NRC submitted their eligibility determinations to the SD SHPO for concurrence on the same day that the tribes were asked to provide comments on eligibility in the 30 day window. How can the NRC imply that this was conducted in good faith? The SD SHPO issued their concurrence on Jan 14th, 2014.The ... [2]

WHEREAS, the following Tribes participated at varying levels in webinars and/or provided written comments during the preparation of this PA: Northern Cheyenne, Cheyenne River Sioux, Oglala Sioux, Standing Rock Sioux, Fort Peck Assiniboine and Sioux, and Cheyenne and Arapaho Tribes; (see Appendix B for list of participants) [TBD-include other tribes as necessary]; and

WHEREAS, each of the 23 consulting tribes will be invited to sign the PA as a Concurring Party; and

WHEREAS, the BLM, as a federal agency with a federal action related to this undertaking has participated in the Section 106 consultation and development of this agreement and will be a signatory; and

WHEREAS, the EPA has participated in discussions of this agreement; and

WHEREAS, the PA will be entered as a condition on the NRC license, if granted; and

WHEREAS, the PA will be entered as a condition of Powertech Inc.'s POO, if approved by the BLM; and

WHEREAS, Powertech, as the applicant for federal approvals has been invited to execute this agreement as an invited signatory in recognition of the responsibilities assigned to the applicant under the terms of this agreement;

NOW, THEREFORE, the NRC, BLM, SD SHPO, Powertech, and the ACHP agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

STIPULATIONS:

NRC shall ensure that the following measures are carried out:

1) **Conditions for Federal Approval:**

~~i.~~a) The NRC will require that Powertech comply with all applicable stipulations and provisions of this PA, as a condition of the Powertech license for the Project.

~~ii.~~b) The BLM will ensure that a Record of Decision on an acceptable POO will not be signed until this PA has been executed by all required signatories.

~~iii.~~c) The NRC shall not grant a license to Powertech until all required signatories have executed this PA. Upon receipt of a fully executed PA, the NRC will issue the license provided that all other requirements for the license have been met.

2) **Identification and Evaluation of Historic Properties within the License Boundary:**

a) Appendix B provides information on the archaeological and Tribal cultural resource surveys and describes the historic properties identified within and adjacent to the boundary of the 10,580 acre project site. More than 300 cultural resources were identified.

Comment [TC16]: Why are the tribes not signatory parties?

Comment [TC17]: Please provide the non-acronym definition.

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Comment [TC18]: This whole PA appears to be developed for this entire purpose. The NRC is well beyond its stated timelines for issuance of the Dewey-Burdock license. This is documented by the fact that they stripped their Section 106 compliance out of their NEPA process due to not being able to conduct both within their stated timelines.

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Comment [TC19]: The SRST-THPO has not been provided with this information. Once again, the definition of the APE has changed from the direct effects to the licensed boundary.

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b) In consultation with SD SHPO and the Tribes, the NRC and BLM determined approximately 14 percent of identified sites are eligible for listing on the National Register of Historic Places (NRHP), 58 percent are not eligible, and 26 percent remain unevaluated.

*move oldstipulation 3(Future identification of Cultural Resources for Transmission Lines) to after Stipulation 6

3) Protection and Evaluation of Unevaluated Properties within the APE

a) Powertech will protect all unevaluated properties until an NHPA-eligibility determination is completed, in accordance with 36 CFR § 800.4(c)

b) If changes in the design or operation of the Project, including wellfield configurations, result in ground disturbance that could affect unevaluated properties, Powertech shall sponsor necessary supplemental research and/or field investigations prior to commencing any ground-disturbance activities. The additional studies will provide information to enable NRC, BLM, consulting Tribes, and the SD SHPO to make NRHP-eligibility determinations for unevaluated historic properties.

c) Powertech must provide a written plan of its investigation methodology at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.

d) The NRC will distribute the proposed investigation plan to the 23 consulting Tribes soon after it is received from Powertech.

e) Upon receipt of the Powertech investigation plan, the NRC, the BLM, consulting Tribes and the SD SHPO will have 30 days to review the proposed plan. If revisions to the plan are necessary, Powertech will circulate the revised investigation plan to the NRC, the BLM, consulting Tribes and the SD SHPO.

f) Upon approval of the investigation plan, Powertech will conduct supplemental research and/or field investigations to evaluate determine NRHP-eligibility of unevaluated cultural resources for NRC consideration. Testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11

g) After the completion of any additional studies, the NRC will submit the findings of NRHP-eligibility evaluation to BLM, SD SHPO, and consulting Tribes, with a 45 day period of review and comment.

h) The NRC may request revisions to the reports or additional investigations after consideration of comments received from BLM, SD SHPO, and consulting Tribes. The NRC will provide revisions to BLM, SD SHPO, and consulting Tribes, with a 30 day period for a second review and comments.

i) The NRC will submit final determinations of NRHP-eligibility and effects to SD SHPO for review and coocurrence; this review will be completed by the SD SHPO within 30 days.

Comment [TC20]: Which tribes were consulted?

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Comment [TC21]: How will Powertech be conducting this? Who will be conducting this evaluation. In particular, if the site is a site of significance to the tribes what assurances do the tribes have that they will be consulted for their expertise on their sites? The SRST-THPO is unagreeable with a private entity protecting our sites.

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Comment [TC22]: Who exactly will participate in this additional survey work? Will it just be the seven tribes who accepted the NRC forced identification requirements while ignoring the other 16 tribes who disagreed with this process.

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Comment [TC23]: This PA will take the tribes completely out of the consultation process according to this statement. Tribes have a right to comment on identification efforts per 36CFR800.2 yet this PA will take that right out of the tribes hands and put it squarely in the applicants hands. This was attempted by the applicant in the initial identification effort in August of 2011 when the NRC asked them to develop a plan for identification. That plan was unanimously disagreed to by every tribe … [3]

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Comment [TC24]: This didn't work the last time this was planned and once again it is being proposed. It resulted in the NRC dividing … [6]

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Comment [TC25]: The SRST-THPO is opposed to any testing of our sites of significance. We have stated this multiple … [8]

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j) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. Avoidance measures may include, but are not limited to the relocation of pipelines, roads, facilities, monitoring wells, and other disturbances. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

k) If the NRC, BLM, and SD SHPO make the determination that identified historic properties are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

l) When the NRC and the SD SHPO disagree on NRHP-eligibility for a cultural resource, the cultural resource cannot be avoided, or the disagreement is not resolved by further consultation, the NRC will refer the issue to the Keeper of the National Register (Keeper) and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper.

4) **Assessment of Effects:**

a) As part of its consideration of the effects of construction and operations on the landscape, the NRC conducted a line-of-sight analysis to assess the potential for adverse visual effects on all known historic properties located within three miles of the tallest buildings on both the Dewey and Burdock facilities.

b) The NRC and BLM consulted with SD SHPO and consulting Tribes in making its determination that eligible or unevaluated archaeological sites and properties of religious and cultural significance will be adversely affected by the undertaking. The effects determination is presented in Appendix B Table 1.

c) The NRC and BLM will consult with signatories to this agreement and consulting Tribes to develop proposals to resolve these adverse effects (as summarized in Appendix B Table 2) in accordance with the process set forth in Stipulation 6.

5) **Resolution of Adverse Effects:**

a) The NRC will solicit suggestions from consulting parties concerning potential measures to avoid, minimize, or mitigate adverse effects on historic properties described in Appendix B after the PA is executed.

b) The NRC and BLM, in consultation with consulting parties, will determine what treatment measures are appropriate to each adversely affected historic property.

c) Treatment measures can include, but are not limited to the following:

i. For archaeological historic properties that are significant for their research data potential (Eligibility Criterion D, National Register of Historic Places), the treatment measures may follow standard mitigation through data recovery. Treatment plan(s) for data recovery shall include, at a minimum, a research design with provisions for data recovery and recordation, analysis, reporting, and curation of resulting collection and records, and shall be consistent with the *Secretary of Interior's Standards and Guidelines* (48 FR 44734-44737). Treatment plan(s) must be consistent with easement and permit requirements of other agencies, when applicable. To the extent

Comment [TC26]: Include "in consultation with the tribes" as the SRST-THPO currently disagrees with the eligibility determinations made thus far and since the PA is made to supplant the requirements of Section B of 36CFR800.

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Comment [TC27]: Include "in consultation with the tribes" as the SRST-THPO currently disagrees with the eligibility determinations made thus far and since the PA is made to supplant the requirements of Section B of 36CFR800.

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Comment [TC28]: What provisions exist within this document if the tribes disagree with the determinations? This is never addressed throughout the entire document and since the PA will fulfil the NRC responsibilities for Section 106 compliance, the SRST-THPO would like this explained further.

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Comment [TC29]: Please provide the details of how this will be conducted. The tribes … [12]

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Comment [TC30]: Please provide the documentation for this statement.

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Comment [TC31]: This will require an amendment to the PA. The SRST-THPO … [17]

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Comment [TC32]: This should be developed currently within this PA and not at some … [19]

Comment [TC33]: These treatment plans do not take into account any specialized ex … [21]

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possible, treatment plan(s) should group related sites and areas, so related resources can be considered in context, and to minimize the burden of review and approval by agencies.

ii. Treatment plan(s) for properties eligible under Criteria A, B and C, or significant for values other than their potential research value, if warranted, shall specify approaches for treatment or mitigation of the property in accordance with the principles, standards, and guidelines appropriate to the resource. This may include, but not be limited to, use of such approaches as relocating the historic property, re-landscaping to reduce effects, public interpretation, ethnographic recordation, oral history, archival research, or prescribing use of a component or activity of this undertaking in such a way as to minimize effects to historic properties. Methods of recordation and documentation described in the treatment plan(s) shall conform to the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* (48 FR 44730-44734) or other standards specified by NRC.

iii. In lieu of standard mitigation approaches described above, treatment plan(s) may adopt other alternative approaches to avoid, minimize or mitigate effects to historic properties, including, but not limited to, assisting in the development of Tribal historic preservation plans, developing detailed historic contexts for the region, developing educational materials, purchasing properties containing historic resources, or developing historic property management plans.

d) Following the development of potential treatment measures by consulting parties, to avoid, minimize, or mitigate adverse effects, Powertech shall prepare a treatment plan for each affected historic property.

e) In conjunction with the submission of their Plan of Activities, which detail construction and operations activities, for each year, Powertech will submit one or more draft treatment plans. A draft plan will identify properties that will be affected that year and measures that will be taken to avoid, minimize, or mitigate those effects. A draft treatment plan will be submitted for NRC and BLM review and approval four months prior to construction, so the NRC and BLM can appropriately allocate staff resources to the extent possible; additional time may be necessary in the event that NRC and BLM staff resources are limited due to conditions beyond the staff's control.

i. The treatment plan shall contain a description of the effects on each adversely affected historic property and a description of the proposed treatment for each of those historic properties.

ii. If any of the affected properties are unevaluated for NRHP eligibility, the treatment plan shall include provisions for evaluation, consistent with Stipulation 4.

iii. If monitoring by a qualified archaeologist and/or Tribal monitor is part of the strategy for resolving or preventing adverse effects, the treatment plan shall include a Monitoring Plan. The objective of monitoring is to protect known sites from construction impacts, identify at the time of discovery any archaeological materials exposed during ground disturbance, and protect such resources from damage until the procedures for discoveries per Stipulation 9 are implemented.

iv. If data recovery is part of the strategy for resolving adverse effects, the treatment plan shall specify all details of the research design, field and laboratory work methodology

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Comment [TC34]: Why is Powertech developing this for the Federal agency? This was attempted before and it failed to address tribal concerns. Why does the NRC keep relying on applicants to fulfil their Section 106 responsibilities?

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Comment [TC35]: This statement contradicts the statements concerning avoidance previously in the document. It doesn't sound like avoidance is the preferred option with such a statement.

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Comment [TC36]: Who decides when a tribal monitor is necessary? Powertech does according to this document. Once again the NRC is letting the applicant call the shots for Section 106 compliance for this project.

Comment [TC37]: The SRST-THPO will reiterate that testing should not occur on any stone feature site.

(including mapping, geomorphological or other specialized studies, controlled scientific excavation methods, analyses of data recovered, and photographic documentation as appropriate), and report preparation.

f) Upon receipt of a draft treatment plan, the NRC will submit the draft treatment plan to all signatories and consulting Tribes for a 45 day review and comment period. The NRC will consider any comments received in writing from consulting parties within the specified review period.

g) The NRC may ask Powertech to revise the draft treatment plan based on comments received from the consulting parties. The NRC will forward revisions to the draft treatment plan with a request for a second review by all signatories and consulting Tribes within a 30 day period.

h) The NRC will then distribute the final treatment plan to SD SHPO for a 30 day review period, and copies of the plan will be distributed to consulting parties.

i) Upon concurrence by the SD SHPO, or if the SD SHPO does not respond in writing within 30 days, the NRC shall direct Powertech to implement the treatment plan.

j) If, after consultation, the NRC and the SD SHPO cannot agree on appropriate terms for the treatment plan, the NRC will refer the matter to the ACHP for comment pursuant to Stipulation 14. The NRC will consider ACHP comments in making its final decision on measures to resolve the adverse effects.

6) **Future Identification of Cultural Resources for Installation of Power Transmission Lines in Areas to be Determined:**

a) Powertech will notify the NRC and BLM in writing, if it determines that ground-disturbing activities will be required for the installation of electrical transmission lines outside the license boundary. Powertech must provide written notification at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.

b) Powertech must provide the NRC, the BLM, and the SD SHPO a proposed work plan for an archaeological survey as part of the written notification. The plan will include methods for identification of all kinds of cultural properties within the transmission line corridor, including identification of properties of religious and cultural significance with the involvement of the Tribes. The proposed plan should also include report preparation requirements and schedules for the identification efforts.

c) The NRC will distribute the proposed work plan to the 23 consulting Tribes soon after it is received from Powertech.

d) Upon receipt of the Powertech work plan, the NRC, the BLM, consulting Tribes and the SD SHPO will review and provide comments on the plan within 30 days. If necessary, Powertech will revise work plan according to the instructions of the consulting parties.

e) Upon NRC approval of the work plan, Powertech will conduct surveys to identify cultural resources along the transmission corridor within an appropriate APE. Powertech will also

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Comment [TC38]: The SRST-THPO has submitted numerous comments to the NRC that were subsequently ignored. Other tribes have also submitted comments that were ignored by the federal agency. The fact that only 7 of 23 tribes participated in the NRC ultimatum for identification is proof of this. What assurances do the tribes have that their comments w ... [23]

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Comment [TC39]: These surveys should be conducted now so that a federal tie is maintained to the project. The SRST-THPO is more than a little concerned that the app ... [24]

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Comment [TC40]: The tribes did not accept the Powertech proposal for the initial survey at Dewey-Burdock yet this PA puts the onus on them again to develop this portion of it. ... [25]

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undertake necessary testing to determine NRHP-eligibility of newly identified properties for NRC consideration. Survey and testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11.

f) Powertech shall offer to provide financial compensation to Tribal Representatives for the work on the identification of properties of religious and cultural significance. The identification of properties of religious and cultural significance will occur at the same time or prior to identification of archaeological properties.

g) The NRC will consult with the 23 consulting Tribes on identification of properties of religious and cultural significance. This consultation could include using an open site approach to identify and evaluate places of religious and cultural significance to the Tribes.

h) Upon receipt of Powertech's completed survey report, the NRC will submit the findings to the BLM, SD SHPO, and the Tribes for a review and comment period of 45 days.

i) The NRC may request revisions to survey reports or additional investigations, after consideration of comments made by BLM, SD SHPO, and Tribes. The NRC will provide revised documents to BLM, SD SHPO, and Tribes. A second review period of 30 days may be requested.

j) The NRC will submit final determinations of NRHP-eligibility and effects to the SD SHPO for review and concurrence; this review will be completed within 30 days of the SD SHPO receiving complete information. The NRC will circulate copies of this correspondence to the other consulting parties. NRC will consider any comments received within the 30 day time period.

k) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

l) If the NRC, BLM, and SD SHPO make the determination that identified historic properties are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

m) When the NRC and the SD SHPO disagree on NRHP-eligibility of cultural resource and the cultural resource cannot be avoided, and the disagreement cannot not be resolved by further consultation, the NRC will refer the issue to the Keeper of the National Register (Keeper) and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper. The decision of the Keeper is final.

7) **Coordination with Other Federal Reviews:**

In the event that the Powertech applies for additional approvals or other assistance from federal agencies for the undertaking and the undertaking remains unchanged, the approving agency may comply with Section 106 by agreeing in writing to the terms of this PA and notifying and consulting with SHPO and ACHP. Any necessary modifications to this PA will be in accordance with the amendment process in Stipulation 15

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Comment [TC41]: The SRST-THPO and other tribes opposed this approach and continue to do so. It should not be acceptable as the preferred option as will be the case. It has been demonstrated by the NRC that they will use it regardless of the protestations by the tribes furthering the disharmony among the tribes and the federal agency. The NRC used this approach for the Crow Butte facility without consulting the tribes for their feedback on such an approach. The disharmony created by the NRC in dividing the tribes continues to be felt accross the Indian Country today but the NRC does not care about the results of their actions as long as they can issue their permit ar ... [26]

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Comment [TC42]: Will the process be the same flawed process that involved submitting the eligibility for sites for concurrence to the SD SHPO on the same day as the request f ... [27]

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Comment [TC43]: What provisions will be in place if the tribes disagree on the eligibility?

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Comment [TC44]: This is highly subjective as the impacts from a new federal undertaking might be taken. A blanket statement such as this is inappropriate.

8) Confidentiality:

The NRC, BLM, and other parties to this agreement acknowledge the need for confidentiality concerning tribal spiritual and cultural information, which was or may be provided to the NRC and BLM during the consultation process. Information provided by consulted tribal representatives, which has been identified as sensitive and was accompanied by a request for confidentiality, will remain confidential to the extent permitted by state and federal laws.

All consulting parties shall restrict disclosure of information concerning the location or other characteristics of historic properties, including properties of religious and cultural significance to Tribes, to the fullest extent permitted by law in conformance with Section 304 of the NHPA, South Dakota Codified Laws (SDCL), § 1-20-21.2, Section 9 of the ARPA, and Executive Order on Indian Sacred Sites 13007 (61 FR 26771; May 29, 1996).

9) Unanticipated Discoveries:

In the event a previously unknown cultural resource is discovered during the implementation of the Dewey-Burdock Project, all ground disturbance activities shall halt within 150 feet of the area of discovery to avoid or minimize impacts until the property is evaluated for listing on the NRHP by qualified personnel. The following additional steps shall be taken:

a) Powertech will notify the NRC, the BLM (if the site is on BLM land), and the SD SHPO of the discovery within 48 hours. Unanticipated discoveries may include artifacts, bone, features, or concentrations of these materials outside previously identified sites or in and adjacent to previously identified eligible and not eligible sites. Discoveries may also include stones and groups of stones that are out of place in their sedimentary contexts and may be parts of stone features. A "discovery" may also include changes in soil color and texture, or content suspected to be man-made, such as burned soil, ash, or charcoal fragments.

b) The NRC and BLM (as appropriate) will contact the THPO and/or the Tribal Cultural Resource Office to notify them of an unanticipated discovery soon after notification from Powertech is received.

c) Powertech will have the discovery evaluated for NRHP eligibility by a professional who meets the Secretary of the Interior's Professional Qualifications Standards in Archaeology (36 CFR § 61).

d) Powertech will provide results of evaluation and initial eligibility recommendation to the NRC and BLM within ten business days of the discovery.

e) The NRC and/or BLM, in consultation with signatories and consulting Tribes, shall evaluate the cultural resources to determine whether they meet the NRHP criteria and request concurrence of the SD SHPO. Evaluation will be carried out as expeditiously as possible in accordance with 36 CFR § 800.13(b).

f) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

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Comment [TC45]: Include" but are not limited to,"

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Comment [TC46]: What provisions will be included in this evaluation for sites of significance to tribes? The SRST-THPO has repeatedly commented about not testing sites of significance to the tribes.

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Comment [TC47]: What provisions will be put in place for the tribes to properly identify these properties that might have significance to the them to ensure that we can make informed decisions regarding the properties eligibility? Currently this PA process cuts the tribes from the process which has been the intent of the NRC and the applicant since September of 2012.

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Comment [TC48]: The statement is redundant. Change the first avoidance to property or change unavoidable to not an option. The SRST-THPO believes that sites will not be avoided as the preferred option as the applicant is once again calling the shots as it were for the federal agency.

g) If the NRC, BLM, and SD SHPO make the determination that identified cultural resources are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

h) Human remains identified during ground disturbance activities will be treated in accordance with Stipulation 10 and Appendix D.

i) In the event of unanticipated discovery, Powertech may continue to work in other areas of the site; however, ground disturbance activities shall not resume in the area of discovery until the NRC and BLM have issued a written notice to proceed.

10) Human Remains:

a) The NRC, BLM, and Powertech recognize human remains, funerary objects, sacred objects, and items of cultural patrimony encountered during ground disturbance activities should be treated with dignity and respect.

b) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on BLM land will be handled according to Section 3 of the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR §10). BLM will be responsible for compliance with the provisions of NAGPRA on Federal land.

c) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on state or private land will be handled in accordance with applicable law as described in Appendix D – Treatment of Human Remains.

d) Non-Native American human remains found on federal, state, or private land will also be treated in accordance with applicable state law.

11) Disposition of Archaeological Collections:

a) BLM will curate artifacts, materials or records resulting from archaeological identification and mitigation conducted on BLM land at the Billings Curation Center, in accordance with the Billings Curation Center Packaging Requirements in accordance with 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections." BLM will consult with Indian Tribes as required in 36 CFR § 79.

b) Where testing or excavation is conducted on private land, any recovered artifacts remain the property of the landowner. Powertech will return the artifacts to landowners. Powertech will encourage landowners to donate the artifacts to the SD Archaeological Research Center or a Tribal entity, in coordination with the NRC, SHPO, and participating Tribes. Where a property owner declines to accept responsibility for the artifacts and agrees to transfer ownership of the artifacts to SD Archaeological Research Center or Tribal entity, Powertech will assume the cost for curating the artifacts in a facility meeting the requirements of 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections."

Comment [TC49]: Include "in consultation with the tribes" as we are being ignored throughout this PA.

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Comment [TC50]: What provisions will be in place if the tribes disagree with the agencies and SHPO determinations? None currently.

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Comment [TC51]: Please forward this appendix to the SRST-THPO. This document should not be signed until such time as all appendixes are attached.

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Comment [TC52]: Who will be making the determination that remains are non-native? All remains should be considered to be Native American until such time as they are proven otherwise.

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12) Qualifications:

All historic property identification, evaluation, and mitigation carried out pursuant to this PA shall be performed by or under the direct supervision of qualified individuals in the appropriate historic preservation discipline meeting, at a minimum, the appropriate standards set forth in 36 CFR § 61.

In recognition of the special expertise Tribal experts have concerning properties of religious and cultural significance, the standards of 36 CFR § 61 will not apply to knowledgeable, designated tribal representatives carrying out identification and evaluation efforts for properties of religious and cultural significance to Tribes.

13) Compliance Monitoring:

NRC affirms avoidance of adverse effects to historic properties remains the preferred course of action.

a) Powertech will ensure employees and/or contractors involved in all phases of the Project are aware of and comply with the requirements of the PA. Powertech may use measures such as initial orientation training, as well as pre-job briefings to inform employees and contractors of their responsibilities under the PA. Compliance with this PA is a condition of the NRC license and a condition of the BLM POO.

b) Prior to initiating construction activities, Powertech will develop a Monitoring Plan specific to the project, identifying specific areas, activities, and if appropriate, historic properties that require monitoring during development of the Project, ensuring the requirements of this PA and the treatment plans developed under the provisions of Stipulation 6 are met. The monitoring plan will include provisions for annual reporting of the results of the monitoring program to the signatories and the consulting Tribes to this PA.

i) Powertech will provide the Monitoring Plan to the NRC, which will distribute it to the signatories and consulting Tribes to this agreement for a 30 day review and comment period.

ii) The NRC will request that Powertech make any necessary revisions to the plan, and the revised Monitoring Plan will remain in effect for all covered ground-disturbing activities during the license period.

c) Powertech will engage the services of a Monitor with specific responsibilities to coordinate the requirements of the monitoring plan, the treatment plans, and this agreement during project construction.

i) The Monitor will meet the Secretary of the Interior's Professioonal Qualifications for Archaeology. Preference will be given to individuals meeting those qualifications who are employed by tribal enterprises, especially during phases of the monitoring program where sites with religious and cultural significance to the Tribes might be affected. In the case of an unanticipated discovery or imminent threat to an avoided historic property, the Monitor shall have authority to stop certain construction activities.

ii) The Monitor will coordinate with Powertech and its contractors during the construction phases of the Project.

d) Powertech will provide periodic updates to all consulting parties on the status of the monitoring program as specified in Appendix C.

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Comment [TC53]: Include "and eligibility determinations"

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Comment [TC54]: The plans developed thus far by Powertech have not been acceptable to the consulting tribes. Why does the NRC allow them to essentially make their decisions for them? This further enforces the widely held belief that Powertech is deciding the 106 process and not the federal agency.

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Comment [TC55]: This statement allows for the applicant to decide which areas need monitoring for the tribes. I'm unaware of any action from our chairman which allows Powertech to decide for the Standing Rock Sioux Tribe which sites we require monitoring on. Please provide this documentation to the SRST-THPO so that we may discuss the issue with our chairman. This statement alone demonstrates the lack of good faith consultation which the NRC has embarked upon with this and all of their projects. The SRST-THPO and all tribes should be involved in this process as our concerns for our sites are certainly different than that of an applicant who refused to negotiate with the tribes after August of 2012.

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Comment [TC56]: So Powertech is once again deciding who can monitor sites of significance to the Standing Rock Sioux Tribe. By tribal resolution that decision rests s ... [30]

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Comment [TC57]: Currently, there are very few archaeologists in the Great Plains who would meet those criteria and short of Powertech hiring Ben Rhodd there is no ... [32]

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14) Dispute Resolution: *formatting

Should any signatory to this PA object in writing to any actions proposed or to the manner in which terms of the PA are implemented, the NRC shall consult with the party to resolve the objection. When the NRC determines an objection cannot be resolved, the NRC will:

a) Forward all documentation relevant to the dispute, including the NRC proposed resolution, to the ACHP and send a copy to all other consulting parties. The ACHP shall provide NRC with its advice on the resolution of the objection within 30 days of receiving adequate documentation.

b) Within 30 days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:

i. Advise the NRC that the ACHP concurs in the NRC proposed final decision, whereupon the NRC shall respond accordingly;

ii. Provide the NRC with recommendations, which the NRC will consider in reaching a final decision on the objection;

iii. Notify the NRC that the objection will be referred to the ACHP membership for formal comment and refer the objection to the ACHP membership for comment within 30 days. The NRC will consider comments in accordance with 36 CFR §800.7(c)(4);

iv. Should the ACHP not exercise one of the above options within 30 days after receipt of all pertinent documentation, the NRC may proceed with its proposed response.

c) Prior to making a final decision on the dispute, the NRC will prepare a written response that addresses timely comments from signatories and consulting Tribes to the PA. The NRC will provide signatories, consulting Tribes, and the ACHP with a copy of its written response. The NRC may implement its final decision.

d) The NRC will consider recommendations and comments made by the ACHP that are related to the objection. NRC responsibilities under this Agreement, which are not the subject of the objection, shall remain unchanged

15) Amendment:

A signatory to this agreement may request that it be amended, whereupon the signatory parties will consult to reach a consensus on the proposed amendment. Concurring parties will be provided an opportunity to consult and comment on the proposed amendment. An amendment will be effective on the date the amended PA is signed by all of the signatories to this PA. If a required signatory does not sign the amended PA, the amendment will be void. The amendment shall be appended to this PA as an Appendix.

Any federal agency, including the EPA, may in the future decide to rely on this agreement in connection with satisfying its Section 106 responsibilities and, may join the agreement by adding its signature and circulating the amended agreement to the appropriate parties.

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Comment [TC58]: Will this be the same timely comments that were utilized in the eligibility determinations in which the tribes were given the information on the sites on the same day that the SD SHPO was asked to concur on the eligibility determination by the NRC?

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Comment [TC59]: Will the NRC be considering any comments made by the tribes in any disputes according to section 14?

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Comment [TC60]: So basically, if one signatory decides the amendment does not fit into their plans they can refuse to sign it and the amendment is voided. Who wrote this statement? This greatly favors the applicant in all amendment decisions. If they disagree with a proposed amendment that would impact … [35]

Comment [TC61]: The SRST-THPO opposes this statement being included as each undertaking must follow through its own Section 106 process and not adopt the incorrect … [36]

Final DRAFT

16) Termination:

a) Any Signatory to this PA may initiate termination by providing written notice to the other signatories of their intent. After notification by the signatory initiating termination, the remaining signatories shall have 30 days to consult to seek agreement on amendments or other actions that could address objections and avoid termination. If consultation fails, the termination will be effective after 30 days, unless all signatories agree to a longer period.

b) In the event the PA is terminated, the signatories will comply with any applicable requirements of 36 CFR § 800.4 through 800.7 with regard to the original undertaking covered by this PA.

17) Duration:

Implementation of the stipulations in this agreement must begin within five years from the date of its execution. During that time, the NRC may consult with the signatories and concurring parties to amend the agreement in accordance with Stipulation 16. The agreement will be in place until ten years from the day of execution or the termination of the license.

18) Anti-Deficiency Act:

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (Pub.L. 97–258, 96 Stat. 923; 31 U.S.C. §1341, Limitations on expending and obligating amounts). If compliance with the Anti-Deficiency Act alters or impairs the ability of the NRC to implement this Agreement, the NRC will consult in accordance with the amendment and termination procedures in this Agreement.

Execution of this PA by the NRC, BLM, SD SHPO, ACHP, and Powertech and the implementation of its terms is evidence the NRC and BLM have taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

Signatories:

United States Nuclear Regulatory Commission

By:_____ Date:_____
Title: Larry W. Camper, Director
Division of Waste Management and Environmental Protection

United States Bureau of Land Management

By:_____ Date:_____
Title: Marian M. Atkins, South Dakota Field Manager

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Comment [TC62]: These sections were not followed in the original undertaking. What provisions will be in place to ensure that the same bad policies initiated by the NRC which resulted in division amongst the tribes which continues to this day will not just continue?

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Comment [TC63]: So what exactly will be followed during the intervening 5 years? There is no mention of what stipulation will be issued between the time the NRC licensed this project which will be the very same day they get this PA signed and 5 years from now when it must be enforced. Once again who wrote this section? It heavily leans in the favor of the applicant.

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Comment [TC64]: This statement is an outright fallacy and insulting to all of the tribes who participated in consultation with this project. In particular, with the tribes who objected to the ultimatum enforced identification effort endorsed by the NRC at the urging of third party consultants. The tribes who did not accept the forced ultimatum approach have never been afforded the opportunity to address our sites of significance within the license boundary in a manner consistent with the needs of our acceptable identification efforts even though Commissioner Magwood assured the SRST-THPO officer that they would be. PA's should not be used to circumvent responsibilities within the Section 106 process as they are being used in this project. It is extremely premature of the NRC and the ACHP to embark upon execution of a PA when there are still so many questions surrounding the original identification effort and eligibility determinations. The NRC has and continues to ignore the tribes by stating they will not reopen identification under any circumstances. We had our chance according to them. That chance would not have resulted in a meaningful identification process being employed. The consulting tribes sent their objections to the NRC. The NRC chose to adopt it as the only solution anyway further enforcing the view that this project is run by the ap… [37]

Final DRAFT

South Dakota State Historic Preservation Office

By:_____ Date:_____
Title: Jay Vogt, State Historic Preservation Officer

Advisory Council on Historic Preservation

By:__ _____ Date:_____
Title: John Fowler, Executive Director

Invited Signatories:

Powertech USA, Inc.

By:_____ Date:_____
Title:

Concurring Parties:

Cheyenne and Arapaho Tribes

By:_____ Date:_____
Title:

Cheyenne River Sioux Tribe

By: _____ Date:_____
Title:

Apsaalooke (Crow) Nation

By:_____ Date:_____
Title:

Crow Creek Sioux Tribe

By: _____ Date:_____
Title:

Final DRAFT

Eastern Shoshone Tribe

By:_____ Date:_____
Title:

Flandreau-Santee Sioux Tribe

By: _____ Date:_____
Title:

Fort Peck Assiniboine/Sioux

By:_____ Date:_____
Title:

Lower Brule Sioux Tribe

By:_____ Date:_____
Title:

Lower Sioux Tribe

By:_____ Date:_____
Title:

Northern Arapaho Tribe

By: _____ Date:_____
Title:

Northern Cheyenne Tribe

By:_____ Date:_____
Title:

Oglala Sioux Tribe

By: _____ Date:_____
Title:

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Omaha Tribe of Nebraska

By:_____ Date:_____
Title:

Pawnee Nation of Oklahoma

By: _____ Date:_____
Title:

Ponca Tribe of Nebraska

By:_____ Date:_____
Title:

Rosebud Sioux Tribe

By: _____ Date:_____
Title:

Santee Sioux Tribe of Nebraska

By:_____ Date:_____
Title:

Sisseton-Wahpeton Oyate Tribes

By: _____ Date:_____
Title:

Spirit Lake Tribe

By:_____ Date:_____
Title:

Standing Rock Sioux Tribe

By: _____ Date:_____
Title:

Final DRAFT

Mandan, Hidatsa & Arikara Nation
Three Affiliated Tribes

By:_____ Date:_____
Title:

Turtle Mountain Band of Chippewa

By: _____ Date:_____
Title:

Yankton Sioux Tribe

By:_____ Date:_____
Title:

Page 3: [1] Comment [TC10] **Terence Clouthier** **02/19/2014 12:37:00 PM**

The tribes were offered an ultimatum to either accept the proposal that would in no way properly identify sites of significance to them or be left out of the identification process. This is not a good faith effort to identify sites of significance to tribes. The proposal ignored the information gathered under 36CFR800.4 as to what is actually required to identify and instead the proposal amounted to just saying go drive around where you want – stay for up to one month or leave after three days. That was essentially the proposal put before the tribes.

Page 3: [2] Comment [TC15] **Terence Clouthier** **02/19/2014 4:16:00 PM**

The SRST-THPO is aware that the NRC submitted their eligibility determinations to the SD SHPO for concurrence on the same day that the tribes were asked to provide comments on eligibility in the 30 day window. How can the NRC imply that this was conducted in good faith? The SD SHPO issued their concurrence on Jan 14th, 2014.The SRST-THPO did not even receive the documents until January 7th, 2014 and the comment review period was barely a week old. This rush to complete the PA and SEIS to issue a licence is not being conducted in good faith. The SRST-THPO has no confidence that our concerns would have been addressed by the NRC as they did not even wait to recieve any comments from tribes before asking for concurrence from SD SHPO. This amounts to token checkmarks by the federal agency and not good faith consultation. The SRST-THPO would require field visits to the sites to propoerly assess their eligibility per our tribal expertise.

Page 5: [3] Comment [TC23] **Terence Clouthier** **02/20/2014 11:07:00 AM**

This PA will take the tribes completely out of the consultation process according to this statement. Tribes have a right to comment on identification efforts per 36CFR800.2 yet this PA will take that right out of the tribes hands and put it squarely in the applicants hands. This was attempted by the applicant in the initial identification effort in August of 2011 when the NRC asked them to develop a plan for identification. That plan was unanimously disagreed to by every tribe who was consulting at that time for this project. Yet, the NRC is once again trying to limit the participation of tribes.

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Page 5: [6] Comment [TC24] **Terence Clouthier** **02/18/2014 3:39:00 PM**

This didn't work the last time this was planned and once again it is being proposed. It resulted in the NRC dividing the tribes against each other and this will be the case again for this project. The NRC attempted to mislead some tribes into accepting their proposal by misconstruing the participation level of other tribes. There has been no good faith effort for identification on this project for the tribes who did not accept the powertech handout forced upon them by the NRC. An ultimatum is not good faith.

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Page 5: [8] Comment [TC25] **Terence Clouthier** **02/18/2014 3:42:00 PM**

The SRST-THPO is opposed to any testing of our sites of significance. We have stated this multiple times in consultation yet our expertise for evaluating our sites is being ignored by this PA.

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Page 6: [12] Comment [TC29] **Terence Clouthier** **02/19/2014 4:27:00 PM**

Please provide the details of how this will be conducted. The tribes might have concerns not addressed by non-tribal personnel.

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Page 6: [17] Comment [TC31] **Terence Clouthier** **02/18/2014 3:51:00 PM**

This will require an amendment to the PA. The SRST-THPO is concerned that an agreement is not binding if it is not included in this PA. The NRC should resubmit the PA with the proposals included so that no additional ammendments or agreements are neccessary. This further enforces the view that this PA is not a good faith effort but is rather a rush to issue the license.

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Page 6: [19] Comment [TC32] **Terence Clouthier** **02/20/2014 11:09:00 AM**

This should be developed currently within this PA and not at some future date. Concerns for this are outlined in TC 27.

Page 6: [20] Formatted **hxy1** **02/14/2014 6:26:00 PM**

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Page 6: [21] Comment [TC33] **Terence Clouthier** **02/19/2014 12:23:00 PM**

These treatment plans do not take into account any specialized expertise of the tribes for evaluating our sites of significance which can also be eligible under Criteria A-D. The SRST-THPO objects to this treatment plan as currently planned as it over emphasizes the use of archaeologists and not tribal expertise.

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Page 8: [23] Comment [TC38] **Terence Clouthier** **02/18/2014 4:02:00 PM**

The SRST-THPO has submitted numerous comments to the NRC that were subsequently ignored. Other tribes have also submitted comments that were ignored by the federal agency. The fact that only 7 of 23

tribes participated in the NRC ultimatum for identification is proof of this. What assurances do the tribes have that their comments won't just be used to document " good faith " consultation without addressing them as is currently the case with the NRC for all of their projects

Page 8: [24] Comment [TC39] **Terence Clouthier** **02/20/2014 10:38:00 AM**

These surveys should be conducted now so that a federal tie is maintained to the project. The SRST-THPO is more than a little concerned that the applicant will argue against having to involve the federal agency if their is no demonstrable tie to the transmission lines for the issuance of the NRC permit or no BLM involved land and therefore no tribal involvement due to no Section 106 tie. Keystone XL utilized this same mauneuver. This represents a complete lack of understanding of the definition of APE according to the 36CFR800.16 (d) and was a huge stumbling block in the scope of work process throughout 2011 and 2012. The NRC's own failures at properly defining the APE helped to create the impasse so that they would attempt to move the process forward in their own words.

Page 8: [25] Comment [TC40] **Terence Clouthier** **02/20/2014 11:13:00 AM**

The tribes did not accept the Powertech proposal for the initial survey at Dewey-Burdock yet this PA puts the onus on them again to develop this portion of it. This will result in the same failures occuring once again with the vast majority of the tribes unable to participate in the identification efforts because it will not meet our required standards for identification efforts. Should a PA really be used to circumvent the 106 process with a flawed methodology that did not already work and enforce it? The SRST-THPO submits that it should not.

Page 9: [26] Comment [TC41] **Terence Clouthier** **02/20/2014 11:14:00 AM**

The SRST-THPO and other tribes opposed this approach and continue to do so. It should not be acceptable as the preferred option as will be the case. It has been demonstrated by the NRC that they will use it regardless of the protestations by the tribes furthering the disharmony among the tribes and the federal agency. The NRC used this approach for the Crow Butte facility without consulting the tribes for their feedback on such an approach. The disharmony created by the NRC in dividing the tribes continues to be felt accross the Indian Country today but the NRC does not care about the results of their actions as long as they can issue their permit and be done with the tribes they are happy to create this disharmony. Other federal agencies have followed this practice as well now that the NRC has created it.

Page 9: [27] Comment [TC42] **Terence Clouthier** **02/19/2014 4:32:00 PM**

Will the process be the same flawed process that involved submitting the eligibility for sites for concurrence to the SD SHPO on the same day as the request for comments on eligibility determinations to the tribes?

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Page 12: [30] Comment [TC56] **Terence Clouthier** **02/20/2014 11:17:00 AM**

So Powertech is once again deciding who can monitor sites of significance to the Standing Rock Sioux Tribe. By tribal resolution that decision rests solely with the SRST-THPO office and not with an outside agency or entity. We can provide this resolution.

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Page 12: [32] Comment [TC57] **Terence Clouthier** **02/20/2014 11:18:00 AM**

Currently, there are very few archaeologists in the Great Plains who would meet those criteria and short of Powertech hiring Ben Rhodd there is not a single one that can properly address Standing Rock Sioux Tribe concerns for our sites of significance. The SRST-THPO would have no confidence in any other

archaeologist currently working on the Great Plains. Tribal monitors utilizing our specialized expertise must be employed in addition to any Secretary of the Interior Standards qualified personnel. We will accept monitors from the following tribes to address our concerns in addition to our own: Oglala Sioux Tribe, Cheyenne River, Rosebud Sioux Tribe, and Sisseton Wahpeton Oyate.

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Page 13: [35] Comment [TC60] **Terence Clouthier** **02/20/2014 9:51:00 AM**

So basically, if one signatory decides the amendment does not fit into their plans they can refuse to sign it and the amendment is voided. Who wrote this statement? This greatly favors the applicant in all amendment decisions. If they disagree with a proposed amendment that would impact their practices all they have to do is not sign it and it doesn't pass. This does not surprise the SRST-THPO as the NRC has been favoring the applicant and their timeleine since the inception of this project

Page 13: [36] Comment [TC61] **Terence Clouthier** **02/20/2014 10:26:00 AM**

The SRST-THPO opposes this statement being included as each undertaking must follow through its own Section 106 process and not adopt the incorrect and consitently terrible policies of the NRC to complete their Section 106 process. I'm surprised the ACHP would even consider this!

Page 14: [37] Comment [TC64] **Terence Clouthier** **02/20/2014 11:24:00 AM**

This statement is an outright fallacy and insulting to all of the tribes who participated in consultation with this project. In particular, with the tribes who objected to the ultimatum enforced identification effort endorsed by the NRC at the urging of third party consultants. The tribes who did not accept the forced ultimatum approach have never been afforded the opportunity to address our sites of significance within the license boundary in a manner consistent with the needs of our acceptable identification efforts even though Commissioner Magwood assured the SRST-THPO officer that they would be. PA's should not be used to circumvent responsibilities within the Section 106 process as they are being used in this project. It is extremely premature of the NRC and the ACHP to embark upon execution of a PA when there are still so many questions surrounding the original identification effort and eligibility determinations. The NRC has and continues to ignore the tribes by stating they will not reopen identification under any circumstances. We had our chance according to them. That chance would not have resulted in a meaningful identification process being employed. The consulting tribes sent their objections to the NRC. The NRC chose to adopt it as the only solution anyway further enforcing the view that this project is run by the applicants timeline and not any meaningful good faith effort. By endorsing this PA ; the ACHP is agreeing that a process whereby 4 tribes totalling 8 people were given two weeks to survey over 10,000 acres is a process that is acceptable under Section 106. This is unacceptable and unconscionable of the ACHP to agree to the execution of this PA knowing full well the issues that the tribes continue to have for this project and its identification and eligibility determination process.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
(Dewey-Burdock In Situ Recovery Facility	)	
Source Materials License Application)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **Email of the Standing Rock Sioux Tribe Sent to Commissioner William Magwood and Others** have been served upon the following persons by Electronic Information Exchange, and by electronic mail as indicated by an asterisk*****.

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DOCKET NO. 40-9075-MLA
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[Original signed by Clara Sola]
Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 28th day of February 2014.

PROGRAMMATIC AGREEMENT
AMONG
U.S. NUCLEAR REGULATORY COMMISSION
U.S. BUREAU OF LAND MANAGEMENT
SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE
POWERTECH (USA), INC.
AND
ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE
DEWEY-BURDOCK IN SITU RECOVERY PROJECT
LOCATED IN CUSTER AND FALL RIVER COUNTIES
SOUTH DAKOTA

Date 03-19-14

WHEREAS, the U.S. Nuclear Regulatory Commission (NRC) received an application from Powertech (USA), Inc. (Powertech or applicant) for a new radioactive source materials license to develop and operate the Dewey-Burdock Project (the undertaking) located near Edgemont, South Dakota in Fall River and Custer counties (Project) pursuant to the NRC licensing authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.*; and

WHEREAS, NRC is considering issuance of a license for the Dewey-Burdock In Situ Recovery [ISR] Project pursuant to its authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.* which makes the project an undertaking requiring compliance by NRC with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, and its implementing regulations (36 CFR § 800 (2004)); and

WHEREAS, if licensed, the proposed project will use an In Situ Recovery (ISR) methodology to extract uranium and process it into yellowcake at the Dewey-Burdock site; and

WHEREAS, the proposed project area consists of approximately 10,580 acres (4,282 ha) located on both sides of Dewey Road (County Road 6463) and includes portions of Sections 1-5, 10-12, 14, and 15, in Township 7 South, Range 1 East and portions of Sections 20, 21, 27, 28, 29, and 30-35 in Township 6 South, Range 1 East, Black Hill Meridian, (see Appendix A and Figure 1.0 for fuller description and a map of the project area); and

WHEREAS, under the terms of the General Mining Act of 1872 Powertech has filed Federal Lode mining claims and secured mineral rights on 240 acres [97 ha] of public lands open to mineral entry and administered by the U.S. Department of the Interior, Bureau of Land Management (BLM), and has the right to develop the mining claims as long as this can be accomplished without causing unnecessary or undue degradation to public lands and in accordance with pertinent laws and regulations under 43 CFR Subpart 3809; and

WHEREAS, review and approval of a Plan of Operations for the project that meets the requirements of 43 CFR Subpart 3809 by the BLM-South Dakota Field Office makes the project an undertaking requiring compliance by BLM with Section 106 of the NHPA, 16 U.S.C. § 470 and 36 CFR Part 800; and

WHEREAS, the BLM, by letter dated April 7, 2011, has designated the NRC as the lead agency for compliance with requirements of Section 106 of the NHPA regarding the Dewey-Burdock Project

(ADAMS Accession No. ML11116A091) pursuant to 36 CFR § 800.2(a)(2) of the Section 106 regulations; and

WHEREAS, under the terms of the Safe Drinking Water Act, Powertech has submitted to the Environmental Protection Agency (EPA) two Underground Injection Control (UIC) Permit Applications for ISR uranium recovery and the disposal of treated ISR process fluids at the Dewey-Burdock site; the EPA will issue draft permit decisions that meet the requirements of UIC regulations found at 40 CFR Parts 124, 144, 146 and 147; and

WHEREAS, the NRC determined a phased process for compliance with Section 106 of the NHPA is appropriate for this undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of and determinations of effects on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this Programmatic Agreement (PA) (see Appendix A for details); and

WHEREAS, the area of potential effects (APE) for the undertaking is the area at the Dewey-Burdock Project site and its immediate environs, which may be directly or indirectly impacted by construction and operation activities associated with the proposed project, as described in Appendix A; and

WHEREAS, Project activities may occur on lands outside the license boundary for the installation of electrical transmission lines, and will be addressed in accordance with Stipulations 3 and 4 of this PA; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1)(i)(C), the NRC, by letter dated April 24, 2013, notified the Advisory Council on Historic Preservation (ACHP) of the potential for adverse effects to historic properties from the undertaking and invited the ACHP to participate in Section 106 consultation and in the preparation of this PA; and

WHEREAS, the ACHP, by letter, dated October 28, 2013, formally entered the consultation; and

WHEREAS, the NRC initiated consultation with the South Dakota State Historic Preservation Officer (SD SHPO) on December 2, 2009, during a face-to-face meeting held in Pierre, South Dakota; and

WHEREAS, the NRC invited Powertech to participate in Section 106 consultation and preparation of this PA; and

WHEREAS, by letters dated March 19, 2010 (ML100331999) and September 8, 2010 (ML102450647), the NRC invited 23 federally-recognized Indian Tribes who may ascribe religious and cultural significance to historic properties that may be affected by the undertaking, including the Cheyenne and Arapaho Tribes of Oklahoma, the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboine and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebud Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe (collectively referred to as Tribes), to each be a consulting party in the Section 106 process; and

WHEREAS, the following 23 Tribes participated in consultation at varying levels with the NRC and BLM regarding the proposed Dewey-Burdock Project: the Cheyenne and Arapaho Tribes of Oklahoma,

the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboine and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebud Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe; and

WHEREAS, the NRC worked with consulting Tribes between November 2011 and October 2012 to develop an approach for identifying historic properties of cultural and religious significance to Tribes; the NRC conducted a face-to-face consultation focused on the identification of these properties in February 2012. Although several work plans for a tribal field survey were prepared and discussed by the consulting parties throughout 2012, the parties were unable to reach agreement on the scope and the cost of the Tribal survey (see Appendix B for details); and

WHEREAS, in October 2012, the NRC requested alternative approaches to conduct a tribal field survey and subsequently proposed opening the project area to all interested Tribes to complete the survey according to their needs and interests, with payments to be made to participating Tribes (see Appendix B for details); and

WHEREAS, the NRC offered all 23 consulting Tribes the opportunity to participate in a tribal field survey to identify properties of religious and cultural significance to them for the proposed Dewey-Burdock project ISR facility by letter dated February 8, 2013; and

WHEREAS, the following seven Tribes participated in the tribal field survey: the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, the Crow Nation, the Santee Sioux Tribe, the Crow Creek Sioux Tribe, and the Turtle Mountain Band of Chippewa Indians as discussed in details in Appendix A; and

WHEREAS, surveys to identify historic properties have been completed for the project including Class III archaeological surveys and tribal surveys to identify properties of religious and cultural significance; and

WHEREAS, the NRC received tribal survey reports with eligibility recommendations from the Northern Arapaho Tribe, the Northern Cheyenne Tribe, and the Cheyenne and Arapaho Tribes of Oklahoma, as well as field notes from the Crow Nation as discussed in Appendix A; and

WHEREAS, the NRC staff has reviewed and evaluated the results of the applicant's Class III archaeological surveys and tribal surveys in the development of its initial recommendations concerning eligibility of properties identified within the APE for the undertaking for inclusion on the National Register of Historic Places (NRHP) as presented in Appendix B; and

WHEREAS, the NRC has received concurrence from the SD SHPO on these eligibility determinations as discussed in Appendix B, eligibility determinations were also sent to the Tribes with a 30-day review and comment period; and

WHEREAS, the NRC invited each of the 23 consulting Tribes to participate in the development of this PA; and

WHEREAS, the following Tribes participated at varying levels in webinars and/or provided written comments during the preparation of this PA: Northern Cheyenne, Cheyenne River Sioux, Oglala Sioux, Standing Rock Sioux, Fort Peck Assiniboine and Sioux, and Cheyenne and Arapaho Tribes; (see Appendix B for list of participants); and

WHEREAS, each of the 23 consulting tribes will be invited to sign the PA as a Concurring Party; and

WHEREAS, the BLM, as a federal agency with a federal action related to this undertaking has participated in the Section 106 consultation and development of this agreement and will be a signatory; and

WHEREAS, the EPA has participated in discussions of this agreement; and

WHEREAS, the PA will be entered as a condition on the NRC license, if granted; and

WHEREAS, the PA will be entered as a condition of Powertech Inc.'s Plan of Operation, if approved by the BLM; and

WHEREAS, Powertech, as the applicant for federal approvals has been invited to execute this agreement as an invited signatory in recognition of the responsibilities assigned to the applicant under the terms of this agreement;

NOW, THEREFORE, the NRC, BLM, SD SHPO, Powertech, and the ACHP agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

STIPULATIONS:

NRC (or BLM on BLM-administered land) shall ensure that the following measures are carried out within its regulatory authority:

1) Conditions for Federal Approval:

a) The NRC will require that Powertech comply with all applicable stipulations and provisions of this PA, as a condition of the Powertech license for the Project.

b) The BLM will ensure that a Record of Decision on an acceptable Plan of Operation will not be signed until all required signatories have executed this PA.

c) The NRC shall not grant a license to Powertech until all required signatories have executed this PA. Upon receipt of a fully executed PA, the NRC will issue the license when all other requirements for the license have been met.

d) If a license amendment is required due to a change in the design or operation of the Project, and if that change would involve ground disturbing activities outside the currently identified disturbance areas, NRC will reconsider the eligibility determinations (in accordance with Stipulation 3) of any archaeological sites with tribally defined features and any tribally identified sites previously found not eligible that may be affected by the new ground disturbance.

2) Identification and Evaluation of Historic Properties within the License Boundary:

a) Appendix B provides information on the archaeological and tribal filed surveys and describes the cultural resources identified within and adjacent to the boundary of the 10,580-acre project site. More than 300 cultural resources were identified.

b) In consultation with SD SHPO and the Tribes, the NRC and BLM have proposed eligibility determinations for 69 percent of the properties identified. Approximately 14 percent of identified sites have been determined eligible for listing on the NRHP, 55 percent have been determined not eligible, and 31 percent remain unevaluated.

3) Protection and Evaluation of Unevaluated Properties within the APE:

a) Powertech will protect all unevaluated properties until an NRHP-eligibility determination is completed, in accordance with 36 CFR § 800.4(c).

b) If changes in the design or operation of the Project, including wellfield configurations, result in ground disturbance that could affect unevaluated properties, Powertech shall sponsor necessary supplemental research and/or field investigations prior to commencing any ground-disturbance activities. Powertech will provide opportunities for consulting Tribes to help develop a draft investigation methodology for archaeological sites with tribal features and sites identified by the Tribes. The additional studies will provide information to enable NRC and/or BLM, in consultation with consulting Tribes, and the SD SHPO, to make NRHP-eligibility determinations for unevaluated cultural resources.

c) Powertech must provide a written plan of its investigation methodology (investigation plan) at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.

d) The NRC will distribute the proposed investigation plan to the 23 consulting Tribes soon after it is received from Powertech.

e) Upon receipt of the Powertech investigation plan, the NRC, the BLM, consulting Tribes and the SD SHPO will have 30 days to review the proposed plan. The NRC will consider any comments received in writing from consulting parties within the specified review period. If revisions to the plan are necessary, Powertech will revise the plan accordingly and circulate the revised investigation plan to the NRC (or BLM on BLM-administered land). The NRC will forward the revised plan to all consulting parties. A second review period of 30 days may be requested.

f) Upon approval of the investigation plan by the NRC (or BLM on BLM-administered land), Powertech will conduct supplemental research and/or field investigations and provide recommendations concerning NRHP-eligibility of previously unevaluated cultural resources for NRC consideration. If appropriate, testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11.

g) After the completion of any additional studies, the NRC will submit the findings of NRHP-eligibility evaluation to BLM, SD SHPO, and consulting Tribes, with a 45-day period of review and comment.

h) The NRC may request revisions to the reports or additional investigations after consideration of comments received from BLM, SD SHPO, and consulting Tribes. The NRC will provide revisions to BLM, SD SHPO, and consulting Tribes, with a 30-day period for a second review and comments.

i) The NRC will submit final determinations of NRHP-eligibility and effects to SD SHPO for review and concurrence; this review will be completed by the SD SHPO within 30 days.

j) When the NRC, BLM, and SD SHPO, in consultation with the Tribes, agree on NRHP-eligibility, avoidance will be the preferred option. Avoidance measures may include, but are not limited to, the relocation of pipelines, roads, facilities, monitoring wells, and other disturbances. When avoidance is not possible, adverse effects will be resolved in accordance with Stipulation 5—Resolution of Adverse Effects.

k) If the NRC, BLM, and SD SHPO, in consultation with the Tribes, make the determination that identified cultural resources are not NRHP-eligible, no further review or consideration of the properties will be required under this PA.

l) When the NRC (or BLM on BLM-administered land) and the SD SHPO disagree on NRHP-eligibility and the disagreement is not resolved through further consultation and the resource cannot be avoided, the NRC will refer the issue to the Keeper of the National Register (Keeper) and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper.

m) If a consulting Tribe that attaches religious and cultural significance to a property disagrees with an NRC (or BLM on BLM-administered land) eligibility determination, it may ask the ACHP to request the NRC or BLM to obtain a determination of eligibility from the Keeper in accordance with 36 § 800.4(c)(2).

4) Assessment of Effects:

a) As part of its consideration of the effects of construction and operations on the landscape, the NRC conducted a line-of-sight analysis to assess the potential for adverse visual effects on all known historic properties located within three miles of the tallest buildings on both the Dewey and Burdock facilities.

b) The NRC and BLM consulted with SD SHPO and consulting Tribes in making its determination that eligible or unevaluated archaeological sites and properties of religious and cultural significance will be adversely affected by the undertaking. The effects determination is presented in Appendix B Table 1:0.

c) The NRC and BLM will consult with all consulting parties to develop proposals to resolve these adverse effects (as summarized in Appendix B Table 2:0) in accordance with the process set forth in Stipulation 5—Resolution of Adverse Effects.

5) Resolution of Adverse Effects:

a) The NRC will solicit suggestions from consulting parties concerning potential measures to avoid, minimize, or mitigate adverse effects on historic properties described in Appendix B after the PA is executed.

b) The NRC and BLM, in consultation with consulting parties, will determine what treatment measures are appropriate to each adversely affected historic property.

c) Treatment measures can include, but are not limited to the following:

i. For archaeological properties that are significant for their research data potential (Eligibility Criterion D, National Register of Historic Places), the treatment measures may follow standard mitigation through data recovery. Treatment plan(s) for data recovery shall include, at a minimum, a research design with provisions for data recovery and recordation, analysis, reporting, and curation of resulting collection and records, and shall be consistent with the *Secretary of Interior's Standards and Guidelines* (48 FR 44734-44737). Treatment plan(s) must be consistent with easement and permit requirements of other agencies, when applicable. To the extent possible, treatment plan(s) should group related sites and areas, so related resources can be considered in context, and to minimize the burden of review and approval by agencies.

ii. Treatment plan(s) for properties eligible under Criteria A, B and C, or significant for values other than their potential research potential shall specify approaches for treatment or mitigation of the property in accordance with the principles, standards, and guidelines appropriate to the resource, if warranted. This may include, but not be limited to, use of such approaches as relocating the historic property, landscaping to reduce visual effects, public interpretation, ethnographic recordation, oral history, archival research, or prescribing use of a component or activity of this undertaking in such a way as to minimize effects to historic properties. Methods of recordation and documentation described in the treatment plan(s) shall conform to the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* (48 FR 44730-44734) or other standards specified by NRC.

iii. In lieu of standard mitigation approaches described above, treatment plan(s) may adopt other alternative approaches to avoid, minimize, or mitigate effects to historic properties, including, but not limited to, assisting in the development of Tribal historic preservation plans, developing detailed historic contexts for the region, developing educational materials, purchasing properties containing historic resources, or developing historic property management plans.

d) Powertech shall prepare a treatment plan for each affected historic property, following the potential treatment measures developed through consultation with all consulting parties,

e) In conjunction with the submission of their Plan of Activities, which detail construction and operations activities for each year, Powertech will submit one or more draft treatment plans based on input provided by all consulting parities. A draft plan will identify properties that will be affected that year and measures that will be taken to avoid, minimize, or mitigate those effects. A draft treatment plan will be submitted for NRC and BLM review and approval four months prior to construction, so the NRC and BLM can appropriately allocate staff resources to the extent possible; additional time may be necessary in the event that NRC and BLM staff resources are limited due to conditions beyond the staff's control.

i. The treatment plan shall contain a description of the effects on each adversely affected historic property and a description of the proposed treatment for each of those historic properties.

ii. If monitoring by a qualified archaeologist and/or Tribal monitor is part of the strategy for resolving or preventing adverse effects, the treatment plan shall include a Monitoring Plan. The objective of monitoring is to protect known sites from construction impacts, identify at the time of discovery any archaeological materials exposed during ground disturbance, and protect such resources from damage until the procedures for discoveries per Stipulation 9—Unanticipated Discoveries are implemented.

iii. If data recovery is determined to be an appropriate treatment and part of the strategy for resolving adverse effects, the treatment plan shall specify all details of the research design, field and laboratory work methodology (including mapping, geomorphological or other specialized studies, controlled scientific excavation methods, analyses of data recovered, and photographic documentation as appropriate), and report preparation.

f) Upon receipt of a draft treatment plan, the NRC will submit the draft treatment plan to all signatories and consulting Tribes for a 45-day review and comment period. The NRC will consider any comments received in writing from consulting parties within the specified review period.

g) The NRC may ask Powertech to revise the draft treatment plan based on comments received from the consulting parties. The NRC will forward revisions to the draft treatment plan and request for a second review by all signatories and consulting Tribes within a 30-day period.

h) The NRC will then distribute the final treatment plan to SD SHPO for a 30-day review period, and copies of the plan will be distributed to consulting parties.

i) Upon concurrence by the SD SHPO, or if the SD SHPO does not respond in writing within 30 days, the NRC shall direct Powertech to implement the treatment plan.

j) If, after consultation, the NRC and the SD SHPO cannot agree on appropriate terms for the treatment plan, the NRC will refer the matter to the ACHP for comment pursuant to Stipulation 14—Dispute Resolution. The NRC will consider ACHP comments in making its final decision on measures to resolve the adverse effects.

6) Future Identification of Cultural Resources for Installation of Power Transmission Lines in Areas to be Determined:

a) Powertech will notify the NRC and BLM in writing, if it determines that ground-disturbing activities will be required for the installation of electrical transmission lines outside the license boundary. Powertech must provide written notification at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.

b) Powertech must provide the NRC, the BLM, and the SD SHPO a proposed work plan for a survey to inventory historic properties within the APE for each transmission line as part of the written notification. The plan will include methods for identification of all kinds of cultural properties within the transmission line corridor, including identification of properties of religious

and cultural significance with the involvement of the Tribes. The proposed plan should also include report preparation requirements and schedules for the identification efforts.

c) The NRC will distribute the proposed work plan to the 23 consulting Tribes soon after it is received from Powertech.

d) Upon receipt of the proposed Powertech work plan, the NRC, the BLM, consulting Tribes and the SD SHPO will review and provide comments on the plan within 30 days. The NRC will consider any comments received in writing from consulting parties within the specified review period. The NRC may ask Powertech to revise the draft work plan based on comments received from the consulting parties. The NRC will forward the revised plan to all consulting parties. A second review period of 30 days may be requested.

e) Upon NRC approval of the work plan, Powertech will conduct surveys to identify historic properties along the transmission corridor within an appropriate APE. Powertech will also undertake necessary testing in order to propose NRHP-eligibility of any newly identified properties for NRC consideration. Survey and testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11.

f) Powertech shall offer to provide appropriate financial compensation to Tribal Representatives for the work on the identification of properties of religious and cultural significance. The identification of properties of religious and cultural significance will occur at the same time or prior to identification of archaeological properties.

g) The NRC will consult with the 23 consulting Tribes on identification of properties of religious and cultural significance. This consultation could include various approaches such as an open site survey opportunity to identify and evaluate places of religious and cultural significance to the Tribes.

h) Upon receipt of Powertech's completed survey report, the NRC will submit the findings to the BLM, SD SHPO, ACHP, and the consulting Tribes for a review and comment period of 45 days.

i) The NRC may request revisions to survey reports or additional investigations, after consideration of timely comments made by BLM, SD SHPO, ACHP, and consulting Tribes. The NRC will provide revised documents to BLM, SD SHPO, and Tribes. A second review period of 30 days may be requested.

j) The NRC will submit final determinations of NRHP-eligibility and effects to the SD SHPO for review and concurrence; this review will be completed within 30 days of the SD SHPO receiving complete information. The NRC will circulate copies of this correspondence to the other consulting parties. The NRC will consider any comments received within the 30-day period.

k) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is not possible and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 5—Resolution of Adverse Effects.

l) If the NRC, BLM, and SD SHPO make the determination that identified cultural resources are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

m) When the NRC (or BLM on BLM-administered land) and the SD SHPO disagree on NRHP-eligibility and the disagreement cannot not be resolved through further consultation and avoidance is not an option, the NRC will refer the issue to the Keeper and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper. The decision of the Keeper will be final.

n) If a consulting Tribe that attaches religious and cultural significance to a property disagrees with an NRC (or BLM on BLM-administered land) eligibility determination, it may ask the ACHP to request the NRC or BLM to obtain a determination of eligibility from the Keeper in accordance with 36 § 800.4(c)(2).

7) Coordination with Other Federal Reviews:

Any federal agency that will provide approvals or assistance for the undertaking as presently proposed may comply with its Section 106 responsibilities for the undertaking by agreeing to the terms of this PA in writing and sending copies of such written agreement to all the signatories and consulting parties of this PA. Such agreement to the terms of this PA will not necessitate an amendment to the PA.

8) Confidentiality:

The NRC, BLM, and other parties to this agreement acknowledge the need for confidentiality concerning tribal spiritual and cultural information, which was or may be provided to the NRC and BLM during the consultation process. Information provided by consulting tribal representatives, which has been identified as sensitive and was accompanied by a request for confidentiality, will remain confidential to the extent permitted by state and federal laws.

All consulting parties shall restrict disclosure of information concerning the location or other characteristics of historic properties, as well as properties of religious and cultural significance to Tribes, to the fullest extent permitted by law in conformance with Section 304 of the NHPA, South Dakota Codified Laws (SDCL), § 1-20-21.2, Section 9 of the ARPA, and Executive Order on Indian Sacred Sites 13007 (61 FR 26771; May 29, 1996).

9) Unanticipated Discoveries:

In the event a previously unknown cultural resource is discovered during the implementation of the Dewey-Burdock Project, all ground disturbance activities shall halt within 150 feet of the area of discovery to avoid or minimize impacts until the property is evaluated for listing on the NRHP by qualified personnel. The following additional steps shall be taken:

a) Powertech will notify the NRC, the BLM (if the site is on BLM land), and the SD SHPO of the discovery within 48 hours. Unanticipated discoveries may include artifacts, bone, features, or concentrations of these materials outside previously identified sites, or in and adjacent to previously identified eligible and not eligible sites. Discoveries may also include stones and groups of stones that are out of place in their sedimentary contexts and may be parts of stone features. A “discovery” may also include changes in soil color and texture, or content suspected to be man-made, such as burned soil, ash, or charcoal fragments.

b) The NRC and BLM (as appropriate) will contact the THPO and/or the Tribal Cultural Resource Office(s) to notify them of an unanticipated discovery soon after notification from Powertech is received.

c) Powertech will have the discovery evaluated for NRHP eligibility by a professional who meets the Secretary of the Interior's Professional Qualifications Standards in Archaeology (36 CFR § 61).

d) Powertech will provide results of evaluation and initial eligibility recommendation to the NRC and BLM within ten business days of the discovery. If Tribes want to participate in the evaluation efforts, they should contact Powertech within the specified review period.

e) The NRC and/or BLM, in consultation with Tribes and other consulting parties, shall evaluate the cultural resources to determine whether they meet the NRHP criteria and request concurrence of the SD SHPO. Evaluation will be carried out as expeditiously as possible, not to exceed 5 business days.

f) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is not possible and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 5—Resolution of Adverse Effects.

g) If the NRC, BLM, and SD SHPO, in consultation with the Tribes, make the determination that identified cultural resources are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

h) Human remains identified during ground disturbance activities will be treated in accordance with Stipulation 10—Human Remains and Appendix D—Treatment of Human Remains on State, Private, and BLM Land.

i) In the event of unanticipated discovery, Powertech may continue to work in other areas of the site; however, ground disturbance activities shall not resume in the area of discovery until the NRC and BLM have issued a written notice to proceed.

10) Human Remains:

a) The NRC, BLM, and Powertech recognize human remains, funerary objects, sacred objects, and items of cultural patrimony encountered during ground disturbance activities should be treated with dignity and respect.

b) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on BLM land will be handled according to Section 3 of the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR § 10). BLM will be responsible for compliance with the provisions of NAGPRA on Federal land.

c) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on state or private land will be handled in accordance with applicable law as described in Appendix D – Treatment of Human Remains on State, Private, and BLM Land.

d) Non-Native American human remains found on federal, state, or private land will also be treated in accordance with applicable state law.

11) Disposition of Archaeological Collections:

a) BLM will curate artifacts, materials or records resulting from archaeological identification and mitigation conducted on BLM land at the Billings Curation Center, in accordance with the Billings Curation Center Packaging Requirements in accordance with 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections." BLM will consult with Tribes as required by 36 CFR § 79.

b) Where testing or excavation is conducted on private land, any recovered artifacts remain the property of the landowner. Powertech will return the artifacts to landowners. Powertech will encourage landowners to donate the artifacts to the SD Archaeological Research Center or a Tribal entity, in coordination with the NRC, SHPO, and participating Tribes. Where a property owner declines to accept responsibility for the artifacts and agrees to transfer ownership of the artifacts to SD Archaeological Research Center or Tribal entity, Powertech will assume the cost for curating the artifacts in a facility meeting the requirements of 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections."

12) Qualifications:

The identification, evaluation, and mitigation of historic properties carried out pursuant to this PA shall be performed by or under the direct supervision of qualified individuals in the appropriate historic preservation discipline meeting, at a minimum, the appropriate standards set forth in 36 CFR § 61.

In recognition of the special expertise Tribal experts have concerning properties of religious and cultural significance, the standards of 36 CFR § 61 will not apply to knowledgeable, designated tribal representatives carrying out identification and evaluation efforts for properties of religious and cultural significance to Tribes.

13) Compliance Monitoring:

NRC affirms avoidance of adverse effects to historic properties remains the preferred course of action.

a) Powertech will ensure employees and/or contractors involved in all phases of the Project are aware of and comply with the requirements of the PA. Powertech may use measures such as initial orientation training, as well as pre-job briefings to inform employees and contractors of their responsibilities under the PA. Compliance with this PA is a condition of the NRC license and a condition of the BLM Plan of Operations.

b) Prior to initiating construction activities, Powertech will develop a Monitoring Plan specific to the project, identifying specific areas, activities, and if appropriate, historic properties that require monitoring during development of the Project, ensuring the requirements of this PA and the treatment plans developed under the provisions of Stipulation 5—Resolution of Adverse Effects are met. The monitoring plan will include provisions for annual reporting of the results of the monitoring program to the signatories and the consulting Tribes to this PA.

i. Powertech will provide the Monitoring Plan to the NRC, which will distribute it to the signatories and consulting Tribes to this agreement for a 30-day review and comment period.

ii. The NRC will request that Powertech make any necessary revisions to the plan, and the revised Monitoring Plan will remain in effect for all covered ground-disturbing activities during the license period.

c) Powertech will engage the services of a Monitor with specific responsibilities to coordinate the requirements of the monitoring plan, the treatment plans, and this agreement during project construction.

i. The Monitor will meet the Secretary of the Interior's Professional Qualifications for Archaeology. Preference will be given to individuals meeting those qualifications who are employed by tribal enterprises, especially during phases of the monitoring program where sites with religious and cultural significance to the Tribes might be affected. In the case of an unanticipated discovery or imminent threat to a historic property (for which avoidance had been planned), the Monitor shall have authority to stop certain construction activities.

ii. The Monitor will coordinate with Powertech and its contractors during the construction phases of the Project.

d) Powertech will provide periodic updates to all consulting parties on the status of the monitoring program as specified in Appendix C.

14) Dispute Resolution:

Should any signatory to this PA object in writing to any actions proposed or to the manner in which terms of the PA are implemented, the NRC shall consult with the party to resolve the objection. If the NRC determines the objection cannot be resolved, the NRC will:

a) Forward all documentation relevant to the dispute, including the NRC proposed resolution, to the ACHP and send a copy to all other consulting parties. The ACHP shall provide NRC with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, NRC shall prepare a written response that takes into account timely advice or comments regarding the dispute from the ACHP, signatories, concurring parties, and consulting parties, and provide a copy of this written response to them. NRC will then proceed according to its final decision.

b) If the ACHP does not provide its advice regarding the dispute within the 30-day period, the NRC may make a final decision on the dispute and proceed accordingly. Prior to reaching a final decision, NRC shall prepare a written response that takes into account timely comments regarding the dispute from the signatories, concurring parties, and consulting parties, and provide them and the ACHP with a copy of such written response.

c) NRC responsibilities under this Agreement, which are not the subject of the dispute, shall remain unchanged.

15) Amendment:

This PA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

Concurring parties will be provided an opportunity to consult and comment on the proposed amendment. An amendment will be effective on the date the amended PA is signed by all of the signatories to this PA. If a required signatory does not sign the amended PA, the amendment will be void. The amendment shall be appended to this PA as an Appendix.

16) Termination:

a) If any signatory to this PA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment to the PA pursuant to Stipulation 15—Amendment. If within 30-days (or another period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the PA upon written notification to the other signatories.

b) If this PA is terminated the NRC shall either (i) execute a new PA pursuant to 36 CFR § 800.6(c)(8) with signatories as defined in Section 800.6 (c)(1) of Title 36 or, (ii) the NRC shall request comments, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7(c)(4). NRC shall notify the signatories as to the course of action it will pursue.

c) After the termination of this PA and until the NRC completes consultation and a new PA is executed or the NRC has requested, taken into account, and responded to the comments of the ACHP under 36 CFR § 800.7(c)(4), Powertech is required to follow the terms and conditions of this PA for current ground-disturbing activities and is not permitted to begin any such activities in new areas.

d) If the terms of this PA are satisfied prior to its expiration date, NRC shall provide written notification to the other signatories and consulting parties to close out this agreement.

17) Duration:

This PA shall remain in effect for 10 years from its date of execution (last date of signature), or until completion of the work stipulated, whichever comes first, unless extended by agreement among the signatories. During the effective period and prior to the expiration of the PA, the NRC may consult with the signatories and concurring parties to amend this stipulation to extend the duration of the PA, in accordance with Stipulation 15—Amendment.

18) Anti-Deficiency Act:

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (Pub.L. 97–258, 96 Stat. 923; 31 U.S.C. §1341, Limitations on expending and obligating amounts). If compliance with the Anti-Deficiency Act alters or impairs the ability of the NRC to implement this Agreement, the NRC will consult in accordance with the amendment and termination procedures in this Agreement.

Execution of this PA by the NRC, BLM, SD SHPO, ACHP, and Powertech and the implementation of its terms is evidence the NRC and BLM have taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

This PA may be executed in counterparts, each of which shall constitute an original, and all of which shall constitute one and the same agreement.

Preserving America's Heritage

April 7, 2014

Mr. Kevin Hsueh
Chief, Environmental Review Branch
Division of Waste Management
and Environmental Protection
Office of Federal and State Minerals
And Environmental Management Programs
Nuclear Regulatory Commission
Washington, DC 20555-0001

REF: Dewey-Burdock In-Situ Uranium Recovery Project
Fall River and Custer Counties, South Dakota

Dear Mr. Hsueh:

Enclosed is a copy of our signature page from the Programmatic Agreement (PA) for the referenced project. Our signature completes the requirements of Section 106 of the National Historic Preservation Act (NHPA) and the Advisory Council on Historic Preservation's (ACHP's) regulations at 36 CFR Part 800. By carrying out the terms of the PA, the Nuclear Regulatory Commission (NRC) will fulfill its responsibilities under Section 106 of the NHPA and the regulations of ACHP. We will retain a copy of the PA on file at our office. We recommend you provide a copy of the PA to the South Dakota State Historic Preservation Officer (SHPO) and the other signatories for their records.

As part of the Section 106 consultation for this project, the NRC has had to balance a range of issues and concerns raised by consulting parties and other stakeholders. The effort to identify historic properties of religious and cultural significance to tribes and the nature of tribal participation in that effort was particularly challenging. We know that NRC worked with the consulting tribes and the project proponent, Powertech, in an attempt to come to agreement on an appropriate scope of work for a tribal survey. When it was evident that they could not achieve consensus, NRC utilized an alternative open site survey approach which a number of the consulting tribes chose to participate in.

This PA incorporates a path forward to continue working with consulting tribes to conclude the identification and evaluation process. In addition, the PA sets forth a process for addressing adverse effects to historic properties that can't be avoided as the project is implemented. Consulting tribes will review and comment on all determinations of eligibility and effect and in the development of treatment plans for adverse effects. NRC's agreement to this protocol, and its willingness to continue to collaborate with the consulting tribes and other consulting parties as Dewey-Burdock is implemented, is the appropriate next step. Accordingly, we have signed the PA to conclude the Section 106 review process. We appreciated the efforts of NRC staff to negotiate an outcome that balances project goals and historic preservation concerns.

If we may be of further assistance as the PA is implemented, please contact John Eddins, PhD, at (202) 606-8553, or via e-mail at jeddins@achp.gov.

Sincerely,

for Reid Nelson
Director
Office of Federal Agency Programs

Enclosure

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 25, 1980

Regulatory Guide 4.14
Revision 1

REGULATORY GUIDE DISTRIBUTION LIST (DIVISION 4)

SUBJECT: Regulatory Guide 4.14, Revision 1, "Radiological Effluent and Environmental Monitoring at Uranium Mills"

Regulatory Guide 4.14 was originally issued for public comment in 1977. That version has now been revised as appropriate in response to public comments. In addition, the scope of the guide has been expanded to include offsite environmental monitoring. The environmental monitoring programs described in this revision were previously included in NRC publication NUREG-0511, "Draft Generic Environmental Impact Statement on Uranium Milling," published for comment in April 1979.

The NRC staff developed the regulatory positions in this Revision 1 of Regulatory Guide 4.14 over a long period of time, taking into account public input as described above. The positions are already being used by the NRC staff in the licensing process. However, this revision represents the first opportunity for public review of the staff position as a consolidated document. For this reason, it is being provided to all addressees on the Division 4 distribution list. Comments on regulatory guides are encouraged at all times, and comments on this guide will be particularly helpful to the NRC staff in evaluating the need for another revision to this guide. Comments will be most useful if they are submitted within two months of the publication of the guide.

Robert B. Minogue

Robert B. Minogue, Director
Office of Standards Development

Revision 1 *
April 1980

U.S. NUCLEAR REGULATORY COMMISSION

REGULATORY GUIDE

OFFICE OF STANDARDS DEVELOPMENT

REGULATORY GUIDE 4.14

RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING AT URANIUM MILLS

A. INTRODUCTION

Uranium mill operators are required by Nuclear Regulatory Commission (NRC) regulations and license conditions to conduct radiological effluent and environmental monitoring programs. Regulations applicable to uranium milling are contained in 10 CFR Part 20, "Standards for Protection Against Radiation," and Part 40, "Domestic Licensing of Source Material." For example, § 40.65, "Effluent Monitoring Reporting Requirements," of 10 CFR Part 40 requires the submission to the Commission of semiannual reports containing information required to estimate doses to the public from effluent releases.

Information on radiation doses and the radionuclides in a mill's effluents and environment both prior to and during operations is needed by the NRC staff:

1. To estimate maximum potential annual radiation doses to the public resulting from effluent releases.

2. To ascertain whether the regulatory requirements of the NRC (including 10 CFR Part 20 dose limits, release limits, and the "as low as is reasonably achievable" requirement), mill license conditions, and the requirements of 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," have been met.

3. To evaluate the performance of effluent controls, including stabilization of active and inactive tailings piles.

4. To evaluate the environmental impact of milling operations, both during operations and after decommissioning.

5. To establish baseline data to aid in evaluation of decommissioning operations or decontamination following any unusual releases such as a tailings dam failure.

This guide describes programs acceptable to the NRC staff for measuring and reporting releases of radioactive materials to the environment from typical uranium mills.

The programs described in this guide are not requirements. Licensing requirements are determined by the NRC staff on a case-by-case basis during individual licensing reviews. Individual applicants or licensees may propose alternatives for new or existing monitoring programs that need not necessarily be consistent with this guide. The justification for such alternatives will be reviewed by the NRC staff, and the acceptability of proposed alternatives will be determined on a case-by-case basis during individual licensing reviews. For example, it is anticipated that operational monitoring programs that do not include at least three continuous air samples at the site boundary will include more extensive stack sampling and more sampling locations than are described in this guide as well as meteorological data and additional environmental monitoring requirements.

B. DISCUSSION

The radiation dose an individual receives can be determined only if the radionuclides to which an individual is exposed are known. Therefore, monitoring programs should provide accurate information on the specific radionuclides in effluents from a mill, its ore piles, and its tailings retention system and in the surrounding environment.

Methods of sampling and analysis for the radionuclides associated with uranium milling are discussed in sources listed in the bibliography. The listing of these documents is not meant to be all inclusive, nor does it constitute an endorsement by the NRC staff of all of the methods in all of the listings. Rather, these listings are provided as sources of information to aid the licensee in developing a monitoring program.

The sampling program described below is divided into two parts: preoperational monitoring and operational

*The substantial number of changes in this revision has made it impractical to indicate the changes with lines in the margin.

monitoring. Preoperational data is submitted to the NRC as part of the application process. Operational data is reported as required by § 40.65 of 10 CFR Part 40 and specific license conditions and at times of license renewal.

C. REGULATORY POSITION

1. PREOPERATIONAL MONITORING

An acceptable preoperational monitoring program is described below and summarized in Table 1. At least twelve consecutive months of data, including complete soil sampling, direct radiation, and radon flux data, should be submitted to the NRC staff prior to any major site construction. A complete preoperational report with twelve consecutive months of data should be submitted prior to beginning milling operations. Prior to the start of local mining operations, if possible, monitoring data, including airborne radon measurements, should be submitted to the NRC staff.

Applicants may propose alternatives to this preoperational program. However, equivalent alternatives should be proposed for the operational program so that the programs remain compatible.

1.1 Preoperational Sampling Program

1.1.1 Air Samples

Air particulate samples should be collected continuously at a minimum of three locations at or near the site boundary. If there are residences or occupiable structures within 10 kilometers of the site, a continuous outdoor air sample should be collected at or near the structure with the highest predicted airborne radionuclide concentration due to milling operations and at or near at least one structure in any area where predicted doses exceed 5 percent of the standards in 40 CFR Part 190. A continuous air sample should also be collected at a remote location that represents background conditions at the mill site; in general, a suitable location would be in the least prevalent wind direction from the site and unaffected by mining or other milling operations.

Normally, filters for continuous ambient air samples are changed weekly or more often as required by dust loading.

The sampling locations should be determined according to the projected site and milling operation. Preoperational sampling locations should be the same as operational locations. The following factors should be considered in determining the sampling locations: (1) average meteorological conditions (windspeed, wind direction, atmospheric stability), (2) prevailing wind direction, (3) site boundaries nearest to mill, ore piles, and tailings piles, (4) direction of nearest occupiable structure (see footnotes of Tables 1 and 2), and (5) location of estimated maximum concentrations of radioactive materials.

Samples should be collected continuously, or for at least one week per month, for analysis of radon-222. The sampling locations should be the same as those for the continuous air particulate samples.

1.1.2 Water Samples

Samples of ground water should be collected quarterly from at least three sampling wells located hydrologically down gradient from the proposed tailings area, at least three locations near other sides of the tailings area, and one well located hydrologically up gradient from the tailings area (to serve as a background sample). The location of the ground-water sampling wells should be determined by hydrological analysis of the potential movement of seepage from the tailings area, and the basis for choosing these locations should be presented when data is reported. Wells drilled close to the tailings for the specific purpose of obtaining representative samples of ground water that may be affected by the mill tailings are preferable to existing wells.

Ground-water samples should also be collected quarterly from each well within two kilometers of the proposed tailings area that is or could be used for drinking water, watering of livestock, or crop irrigation.

Samples of surface water should be collected quarterly from each onsite water impoundment (such as a pond or lake) and any offsite water impoundment that may be subject to seepage from tailings, drainage from potentially contaminated areas, or drainage from a tailings impoundment failure.

Samples should be collected at least monthly from streams, rivers, any other surface waters or drainage systems crossing the site boundary, and any offsite surface waters that may be subject to drainage from potentially contaminated areas or from a tailings impoundment failure. Any stream beds that are dry part of the year should be sampled when water is flowing. Samples should be collected at the site boundary or at a location immediately downstream of the area of potential influence.

1.1.3 Vegetation, Food, and Fish Samples

Forage vegetation should be sampled at least three times during the grazing season in grazing areas in three different sectors having the highest predicted airborne radionuclide concentration due to milling operations.

At least three samples should be collected at time of harvest or slaughter or removal of animals from grazing for each type of crop (including vegetable gardens) or livestock raised within three kilometers of the mill site.

Fish (if any) samples should be collected semiannually from any bodies of water that may be subject to seepage or surface drainage from potentially contaminated areas or that could be affected by a tailings impoundment failure.

1.1.4 Soil and Sediment Samples

Prior to initiation of mill construction (and if possible prior to mining), one set of soil samples should be collected as follows:

a. Surface-soil samples (to a depth of five centimeters) should be collected using a consistent technique at 300-

meter intervals in each of the eight compass directions out to a distance of 1500 meters from the center of the milling area. The center is defined as the point midway between the proposed mill and the tailings area.

b. Surface-soil samples should also be collected at each of the locations chosen for air particulate samples.

c. Subsurface samples (to a depth of 1 meter) should be collected at the center of the milling area and at a distance of 750 meters in each of the four compass directions.

Soil sampling should be repeated for each location disturbed by site excavation, leveling, or contouring.

One set of sediment samples should be collected from the same surface-water locations as described in Section 1.1.2. For surface water passing through the site, sediment should be sampled upstream and downstream of the site. Samples should be collected following spring runoff and in late summer, preferably following an extended period of low flow. In each location, several sediment samples should be collected in a traverse across the body of water and composited for analysis.

1.1.5 Direct Radiation

Prior to initiation of mill construction (and if possible prior to mining), gamma exposure rate measurements should be made at 150-meter intervals in each of the eight compass directions out to a distance of 1500 meters from the center of the milling area. Measurements should also be made at the sites chosen for air particulate samples.

Measurements should be repeated for each location disturbed by site excavation, leveling, or contouring.

Gamma exposure measurements should be made with passive integrating devices (such as thermoluminescent dosimeters), pressurized ionization chambers, or properly calibrated portable survey instruments.

Direct radiation measurements should be made in dry weather, not during periods following rainfall or when soil is abnormally wet.

1.1.6 Radon Flux Measurements

Radon-222 flux measurements should be made in three separate months during normal weather conditions in the spring through the fall when the ground is thawed. The measurements should be made at the center of the milling area and at locations 750 and 1500 meters from the center in each of the four compass directions. Measurements should not be taken when the ground is frozen or covered with ice or snow or following periods of rain.

1.2 Analysis of Preoperational Samples

Air particulate samples should be analyzed for natural uranium, thorium-230, radium-226, and lead-210.

Air samples collected for radon should be analyzed for radon-222.

The results of analyses of air samples should be used to determine the radionuclide concentrations for the sampling locations.

All ground-water samples collected near the tailings area should be analyzed for dissolved natural uranium, thorium-230, radium-226, polonium-210, and lead-210. Ground-water samples from sources that could be used as drinking water for humans or livestock or crop irrigation should also be analyzed for suspended natural uranium, thorium-230, radium-226, polonium-210, and lead-210.

Surface-water samples from water impoundments should be analyzed quarterly for natural uranium, thorium-230, and radium-226 and semiannually for lead-210 and polonium-210. The samples should be analyzed separately for dissolved and suspended radionuclides.

Surface-water samples from flowing surface water should be analyzed monthly for natural uranium, thorium-230 and radium-226 and semiannually for lead-210 and polonium-210. The samples should be analyzed separately for dissolved and suspended radionuclides.

The results of analyses of water samples should be used to determine the radionuclide concentrations for the sampling locations.

Vegetation, food, and fish (edible portion) samples should be analyzed for natural uranium, thorium-230, radium-226, lead-210, and polonium-210.

All soil samples should be analyzed for radium-226. Soil samples collected at air particulate sampling locations and ten percent of all other soil samples (including at least one subsurface set) should be analyzed for natural uranium, thorium-230, and lead-210. Analysis of extra soil samples may be necessary for repeat samples collected at locations disturbed by site excavation, leveling, or contouring.

Sediment samples should be analyzed for natural uranium, thorium-230, radium-226, and lead-210.

2. OPERATIONAL MONITORING

An acceptable monitoring program to be conducted during construction and after the beginning of milling operations is described below and summarized in Table 2. The results of this program should be summarized quarterly and submitted to NRC semiannually pursuant to § 40.65 of 10 CFR Part 40. An acceptable reporting format is shown in Table 3.

2.1 Operational Sampling Program

2.1.1 Stack Sampling

Effluents from the yellowcake dryer and packaging stack should be sampled at least quarterly during normal operations. The sampling should be isokinetic, representative,

and adequate for determination of the release rates and concentrations of uranium. The sampling should also be adequate for the determination of release rates and concentrations of thorium-230, radium-226, and lead-210 if this data cannot be obtained from other sources.

Other stacks should be sampled at least semiannually. The samples should be representative (not necessarily isokinetic) and adequate for the determination of the release rates and concentrations of uranium, thorium-230, radium-226, and lead-210.

All stack flow rates should be measured at the time of sampling.

2.1.2 Air Samples

Air particulate samples should be collected continuously at (1) a minimum of three locations at or near the site boundary, (2) the residence or occupiable structure within 10 kilometers of the site with the highest predicted airborne radionuclide concentration, (3) at least one residence or occupiable structure where predicted doses exceed 5 percent of the standards in 40 CFR Part 190, and (4) a remote location representing background conditions. The sampling locations should be the same as those for the preoperational air samples (see Section 1.1.1). The sampling should be adequate for the determination of natural uranium, thorium-230, radium-226, and lead-210.

Normally, filters for continuous ambient air samples are changed weekly or more often as required by dust loading.

Samples should be collected continuously at the same locations, or for at least one week per month, for analysis of radon-222.

2.1.3 Water Samples

Samples of ground water should be collected from at least three sampling wells located hydrologically down gradient from the tailings area and from one background well located hydrologically up gradient. The samples should be collected monthly through the first year of operation and quarterly thereafter from the same downslope and background wells that were used for preoperational samples (see Section 1.1.2).

Samples should be collected at least quarterly from each well within two kilometers of the tailings area that is or could be used for drinking water, watering of livestock, or crop irrigation.

Samples should be collected at least quarterly from each onsite water impoundment (such as a pond or lake) and any offsite water impoundment that may be subject to seepage from tailings, drainage from potentially contaminated areas, or drainage from a tailings impoundment failure.

Samples should be collected at least monthly from any surface water crossing the site boundary and offsite streams or rivers that may be subject to drainage from potentially contaminated areas or from a tailings impoundment failure. Stream beds that are dry part of the year should be sampled when water is flowing. Operational samples should be collected upstream and downstream of the area of potential influence.

Any unusual releases (such as surface seepage) that are not part of normal operations should be sampled.

2.1.4 Vegetation, Food, and Fish Samples

Where a significant pathway to man is identified in individual licensing cases, vegetation, food, and fish samples should be collected as described below.

Forage vegetation should be sampled at least three times during the grazing season in grazing areas in three different sectors having the highest predicted airborne radionuclide concentration due to milling operations.

At least three samples should be collected at the time of harvest or slaughter or removal of animals from grazing for each type of crop (including vegetable gardens) or livestock raised within three kilometers of the mill site.

Fish (if any) samples should be collected semiannually from any bodies of water that may be subject to seepage or surface drainage from potentially contaminated areas or that could be affected by a tailings impoundment failure.

2.1.5 Soil and Sediment Samples

Surface-soil samples should be collected annually using a consistent technique at each of the locations chosen for air particulate samples as described in Section 2.1.2.

Sediment samples should be collected annually from the surface-water locations described in Section 2.1.3.

2.1.6 Direct Radiation

Gamma exposure rates should be measured quarterly at the sites chosen for air particulate samples as described in Section 2.1.2. Passive integrating devices (such as thermoluminescent dosimeters), pressurized ionization chambers, or properly calibrated portable survey instruments should be used (see Regulatory Guide 4.13).

2.2 Analysis of Operational Samples

Samples from the yellowcake dryer and packaging stack should be analyzed for natural uranium. Samples should also be analyzed for thorium-230, radium-226, and lead-210 if this data cannot be obtained from other sources such as isotopic analysis of yellowcake product. Samples from other stacks should be analyzed for natural uranium, thorium-230, radium-226, and lead-210.

Air particulate samples should be analyzed for natural uranium, thorium-230, radium-226, and lead-210.

Air samples collected for radon should be analyzed for radon-222.

The results of analyses of air samples should be used to determine the radionuclide release rates for the stacks and the radionuclide concentrations for the stacks and other sampling locations.

Water samples should be analyzed for natural uranium, thorium-230, radium-226, polonium-210, and lead-210.

Ground-water samples from sources not expected to be used as drinking water should be analyzed for dissolved radionuclides. Ground-water samples from sources that could be used as drinking water for humans or livestock and all surface-water samples should be analyzed separately for dissolved and suspended radionuclides. These results should be used to determine radionuclide concentrations for ground water and natural bodies of water.

All vegetation, food, and fish (edible portion) samples should be analyzed for radium-226 and lead-210.

All soil samples should be analyzed for natural uranium, radium-226, and lead-210.

All sediment samples should be analyzed for natural uranium, thorium-230, radium-226, and lead-210.

3. QUALITY OF SAMPLES

Provisions should be made to ensure that representative samples are obtained by use of proper sampling equipment, proper locations of sampling points, and proper sampling procedures (see bibliography).

Air samples may be composited for analysis if (1) they are collected at the same location and (2) they represent a sampling period of one calendar quarter or less. Air samples should not be composited if (1) they represent a sampling period of more than one calendar quarter, (2) they are from different sampling locations, or (3) the samples are to be analyzed for radon-222.

Samples collected for analysis of radon-222 should be analyzed quickly enough to minimize decay losses.

Samples other than air samples should not be composited.

4. SOLUBILITY OF AIRBORNE RADIOACTIVE MATERIAL

Table II of Appendix B, "Concentrations in Air and Water Above Natural Background," to 10 CFR Part 20 lists separate values for soluble and insoluble radioactive materials in effluents. In making comparisons between airborne effluent concentrations and the values given in Table II of Appendix B to 10 CFR Part 20, the maximum permissible concentrations for insoluble materials should be used.

5. LOWER LIMIT OF DETECTION

The lower limits of detection for stack effluent samples should be 10% of the appropriate concentration limits listed in Table II of Appendix B to 10 CFR Part 20.

The lower limits of detection for analysis of other samples should be as follows:

U-natural, Th-230, Ra-226 in air	-	1×10^{-16} μCi/ml
Pb-210 in air	-	2×10^{-15} μCi/ml
Rn-222	-	2×10^{-10} μCi/ml
U-natural, Th-230, Ra-226 in water	-	2×10^{-10} μCi/ml
Po-210 in water	-	1×10^{-9} μCi/ml
Pb-210 in water	-	1×10^{-9} μCi/ml
U-natural, Th-230, Ra-226, Pb-210 in soil and sediment (dry)	-	2×10^{-7} μCi/g
U-natural, Th-230 in vegetation, food, and fish (wet)	-	2×10^{-7} μCi/kg
Ra-226 in vegetation, food, and fish (wet)	-	5×10^{-8} μCi/kg
Po-210, Pb-210 in vegetation, food, and fish (wet)	-	1×10^{-6} μCi/kg

Obviously, if the actual concentrations of radionuclides being sampled are higher than the lower limits of detection indicated above, the sampling and analysis procedures need only be adequate to measure the actual concentrations. In such cases, the standard deviation estimated for random error of the analysis should be no greater than 10% of the measured value.

An acceptable method for calculating lower limits of detection is described in the appendix to this guide.

6. PRECISION AND ACCURACY OF RESULTS

6.1 Error Estimates

The random error associated with the analysis of samples should always be calculated. The calculation should take into account all significant random uncertainties, not merely counting error.

If the analyst estimates that systematic errors associated with the analysis are significant relative to the random error, the magnitude of the systematic error should be estimated.

6.2 Calibration

Individual written procedures should be prepared and used for specific methods of calibrating all sampling and measuring equipment, including ancillary equipment. The procedures should ensure that the equipment will operate with adequate accuracy and stability over the range of its intended use. Calibration procedures may be compilations

of published standard practices, manufacturers' instructions that accompany purchased equipment, or procedures written in-house. Calibration procedures should identify the specific equipment or group of instruments to which the procedures apply.

To the extent possible, calibration of measuring equipment should be performed using radionuclide standards certified by the National Bureau of Standards or standards obtained from suppliers who participate in measurement assurance activities with the National Bureau of Standards (see Regulatory Guide 4.15).

Calibrations should be performed at regular intervals, at least semiannually, or at the manufacturer's suggested interval, whichever is more frequent. Frequency of calibration should be based on the stability of the system. If appropriate, equipment may be calibrated before and after use instead of at arbitrarily scheduled intervals. Equipment should be recalibrated or replaced after any repairs or whenever it is suspected of being out of adjustment, excessively worn, or otherwise damaged and not operating properly. Functional tests, i.e., routine checks performed to demonstrate that a given instrument is in working condition, may be performed using sources that are not certified by the National Bureau of Standards.

6.3 Quality of Results

A continuous program should be prepared and implemented for ensuring the quality of results and for keeping random and systematic uncertainties to a minimum. The procedures should ensure that samples and measurements are obtained in a uniform manner and that samples are not changed prior to analysis because of handling or because of their storage environment. Tests should be applied to analytical processes, including duplicate analysis of selected effluent samples and periodic cross-check analyses with independent laboratories (see Regulatory Guide 4.15).

7. RECORDING AND REPORTING RESULTS

This section provides guidelines for recording all results. Reports submitted to NRC should be prepared using these guidelines and the format shown in Table 3 of this guide.

7.1 Sampling and Analysis Results

7.1.1 Air and Stack Samples

For each air or stack sample, the following should be recorded:

1. Location of sample.
2. Dates during which sample was collected.
3. The concentrations of natural uranium, thorium-230, radium-226, lead-210, and radon-222 for all samples except stack samples.
4. The cconcentration of natural uranium, thorium-230, radium-226, and lead-210 for stack effluent samples.
5. The percentage of the appropriate concentration limit as shown in Table II of Appendix B to 10 CFR Part 20.
6. The estimated release rate of natural uranium, thorium-230, radium-226, and lead-210 for stack effluent samples.
7. The flow rate of each stack.

7.1.2 Liquid Samples

For each liquid sample, the following should be recorded:

1. Location of sample.
2. Type of sample (ground or surface water).
3. Date of sample collection.
4. The concentrations of natural uranium, thorium-230, radium-226, polonium-210, and lead-210. (If separate analyses were conducted for dissolved and suspended radionuclides, report each result separately.)

7.1.3 Other Samples

For other samples, the following should be recorded:

1. Location of sample.
2. Date of sample collection.
3. Type of sample (vegetation, soil, radon-222 flux, gamma exposure rate, etc.).
4. Analytical result (radionuclide concentration, gamma exposure rate, radon flux rate, etc.).

7.1.4 Error Estimates

Reported results should always include estimates of uncertainty. The magnitude of the random error of the analysis to the 95% uncertainty level should be reported for each result. If significant, an estimate of the magnitude of the systematic error should also be reported.

7.2 Supplemental Information

The following information should be included in each monitoring report submitted to NRC:

1. Name of facility, location, docket number, and license number.
2. Description of sampling equipment and discussion of how sampling locations were chosen.

3. Description of sampling procedures, including sampling times, rates, and volumes.

4. Description of analytical procedures.

5. Description of calculational methods.

6. Discussion of random and systematic error estimates, including methods of calculation and sources of systematic error.

7. The values of the lower limits of detection, along with a description of the calculation of the lower limit of detection.

8. The values of maximum permissible concentration from Table II of Appendix B to 10 CFR Part 20 used in any calculations.

9. Discussion of the program for ensuring the quality of results.

10. Description of calibration procedures.

11. Discussion of any unusual releases, including the circumstances of the release and any data available on the quantities of radionuclides released.

7.3 Units

Radionuclide quantities should be reported in curies. Radionuclide concentrations should be reported in microcuries per milliliter for air and water, microcuries per gram for soil and sediment, and microcuries per kilogram for vegetation, food, or fish. Direct radiation exposure rates should be reported in milliroentgens per calendar quarter. Radon flux rates should be reported in picocuries per square meter per second. Stack flow rates should be reported in cubic meters per second. (In the International System of Units, a curie equals 3.7×10^{10} becquerels, a microcurie equals 3.7×10^{4} becquerels, and a milliliter equals 10^{-6} cubic meters.)

Estimates of random error should be reported in the same units as the result itself. Estimates of systematic error should be reported as a percentage of the result.

Note: The Commission has discontinued the use in 10 CFR Part 20 of the special curie definitions for natural uranium and natural thorium (39 FR 23990, June 28, 1974). Reports to the Commission should use units consistent with this change.

7.4 Significant Figures

Results should not be reported with excessive significant figures, so that they appear more certain than they actually are. The reported estimate of error should contain no more than two significant figures. The reported result itself should have the same number of decimal places as the reported error.

7.5 Format

Reports should be submitted according to the format shown in Table 3.

The term "not detected," "less than the lower limit of detection (LLD)," or similar terms should never be used. Each reported result should be a value and its associated error estimate, including values less than the lower limit of detection or less than zero.

TABLE 1

PREOPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
AIR						
Particulates	Three	At or near the site boundaries	Continuous[a]	Weekly filter change or more frequently as required by dust loading	Quarterly composites of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
	One	At or close to the nearest[b] residence(s) or occupiable offsite structure(s) (if within 10 km of site)	Continuous	Weekly filter change or more frequently as required by dust loading	Quarterly composites of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
	One	At a control or background location remote from site[c]	Continuous	Weekly filter change or more frequently as required by dust loading	Quarterly composites of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
Radon Gas[d]	Five or more	Same locations as for air particulates	Continuous or at least one week per month representing about the same period each month	Continuous	Each sample or continuous	Rn-222
WATER						
Ground Water[e]	Six or more	Wells located around future tailings disposal area. At least three wells hydrologically down gradient from disposal area. At least three located on other sides of tailings disposal area.[f]	Grab	Quarterly	Quarterly	Dissolved natural uranium, Ra-226, Th-230, Pb-210, and Po-210
	One from each well	Wells within 2 km of tailings disposal area that are or could be used for potable water supplies, watering of livestock, or crop irrigation.	Grab	Quarterly	Quarterly	Dissolved and suspended natural uranium, Ra-226, Th-230, Pb-210, and Po-210
	One	Well located hydrologically up gradient from tailings disposal area to serve as control or background location.	Grab	Quarterly	Quarterly	Dissolved natural uranium, Ra-226, Th-230, Pb-210, and Po-210

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TABLE 1 (Continued)

PREOPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
Surface Water[g]	One from each body of water	Large permanent onsite water impoundments or offsite impoundments that may be subject to direct surface drainage from potentially contaminated areas or that could be affected by a tailings impoundment failure.	Grab	Quarterly	Quarterly	Suspended and dissolved natural uranium, Ra-226 and Th-230
					Semiannually	Suspended and dissolved Pb-210 and Po-210
Surface Water	One from each body of water	Surface waters passing through the site[n] or offsite surface waters that may be subject to drainage from potentially contaminated areas or that could be affected by a tailings impoundment failure.	Grab	Monthly	Monthly	Suspended and dissolved natural uranium, Ra-226, Th-230
					Semiannually	Suspended and dissolved Pb-210 and Po-210
VEGETATION, FOOD, AND FISH						
Vegetation	Three	Grazing areas near the site in different sectors that will have the highest predicted air particulate concentrations during milling operations.	Grab	Three times during grazing season	Three times	Natural uranium, Ra-226, Th-230, Pb-210, and Po-210
Food	Three of each type	Crops, livestock, etc. raised within 3 km of mill site	Grab	Time of harvest or slaughter	Once	Natural uranium, Ra-226, Th-230, Pb-210, and Po-210
Fish	Each body of water	Collection of fish (if any) from lakes, rivers, and streams in the site environs that may be subject to seepage or direct surface runoff from potentially contaminated areas or that could be affected by a tailings impoundment failure	Grab	Semiannually	Twice	Natural uranium, Ra-226, Th-230, Pb-210, and Po-210

TABLE 1 (Continued)

PREOPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
SOIL AND SEDIMENT						
Surface Soil(k)	Up to forty	300-meter intervals to a distance of 1500 meters in each of 8 directions from center of milling area	Grab	Once prior to site construction. Repeat for location disturbed by excavation, leveling, or contouring	Once	All samples for Ra-226, 10% of samples natural uranium, Th-230, and Pb-210
Surface Soil	Five or more	At same locations used for collection of air particulate samples.	Grab	Once prior to site construction	Once	Natural uranium, Ra-226, Th-230, and Pb-210
Subsurface Soil Profile(l)	Five	At center reference location and at distances of 750 meters in each of 4 directions.	Grab	Once prior to site construction. Repeat for locations disturbed by construction.	Once	Ra-226 (all samples) Natural uranium, Th-230, and Pb-210 (one set of samples)
Sediment(m)	Two from each stream	Up and downstream of surface waters passing through site or from offsite surface waters that may be subject to direct runoff from potentially contaminated areas or that could be affected by a tailings impoundment failure	Grab	Once following spring runoff and late summer following period of extended low flow	Twice	Natural uranium, Ra-226, Th-230, and Pb-210
	One from each water impoundment	Onsite water impoundments (lakes, ponds, etc), or offsite impoundments that may be subject to direct surface runoff from potentially contaminated areas or that could be affected by tailings impoundment failure	Grab	Once prior to site construction	Once	Natural uranium, Ra-226, Th-230, and Pb-210
DIRECT RADIATION	Up to eighty	150-meter intervals to a distance of 1500 meters in each of 8 directions from center of milling area or at a point equidistant from milling area(i) and tailings disposal area.		Once prior to site construction. Repeat for areas disturbed by site preparation or construction.	Once	Gamma exposure rate, using passive integrating device such as TLD, pressurized ionization chamber, or properly calibrated portable survey instrument.

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TABLE 1 (Continued)

PREOPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
	Five or more	At same locations used for collection of particulate samples		Once prior to site construction	Once	Gamma exposure rate, using passive integrating device, pressurized ionization chamber, or properly calibrated portable survey instrument.
RADON FLUX(n)	Up to ten	At center reference location and at distances of 750 and 1500 meters in each of 4 directions.		One sample during each of three months.	Each sample	Radon-222 flux

TABLE 2

OPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
STACKS						
Particulates	One for each stack	Yellowcake dryer and packaging stack(s)	Isokinetic	Quarterly	Each sample	Natural uranium, Th-230, Ra-226, and Pb-210 if not available from other sources. Measure stack flow rate semiannually.
Particulates	One for each stack	Other stacks	Representative grab	Semiannually	Each sample	Natural uranium Th-230, Ra-226, and Pb-210. Measure stack flow.
AIR						
Particulates	Three	Locations at or near the site boundaries and in different sectors that have the highest predicted concentrations of airborne particulates[b]	Continuous[a]	Weekly filter change, or more frequently as required by dust loading	Quarterly composite, by location, of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
	One or more	At the nearest residence(s) or occupiable structure(s)	Continuous	Weekly filter change, or more frequently as required by dust loading	Quarterly composite, by location, of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
	One	Control Location(s)[c]	Continuous	Weekly filter change, or more frequently as required by dust loading	Quarterly composite, by location, of weekly samples	Natural uranium, Ra-226, Th-230, and Pb-210
Radon Gas	Five or more	Same locations as for air particulates	Continuous or at least one week per month[d]	At least one week per calendar month representing approximately the same period each month	Monthly	Rn-222
WATER						
Ground Water	Three or more	Hydrologically down gradient and relatively close to the tailings impoundment[f]	Grab	Monthly (first year) Quarterly (after first year)	Monthly (first year) Quarterly (after first year)	Dissolved natural uranium, Ra-226, Th-230, Pb-210, and Po-210[e]
	At least one control sample	Hydrologically up gradient (i.e., not influenced by seepage from tailings)	Grab	Quarterly	Quarterly	Dissolved natural uranium, Ra-226, Th-230, Pb-210 and Po-210

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TABLE 2 (Continued)

OPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
	One from each well	Each well used for drinking water or watering of livestock or crops within 2 km of the tailings impoundment	Grab	Quarterly	Quarterly	Dissolved and suspended natural uranium, Ra-226, Th-230, Pb-210, and Po-210
Surface Water	Two from each water body	Surface waters passing through the mill site or offsite surface waters that are sufficiently close to the site to be subject to surface drainage from potentially contaminated areas or that could be influenced by seepage from the tailings disposal area.(h) One sample collected upstream of mill site and one sample collected at the downstream site boundary or at a location immediately downstream of location of potential influence	Grab	Quarterly	Quarterly	Dissolved and suspended natural uranium, Ra-226, Th-230, Pb-210, and Po-210(g)
	One from each water body	Large water impoundments (i.e., lakes, reservoirs) near the mill site that are sufficiently close to the site to be subject to drainage from potentially contaminated areas or that could be influenced by seepage from the tailings disposal area.	Grab	Quarterly	Quarterly	Dissolved and suspended natural uranium, Ra-226, Th-230, Pb-210, and Po-210
VEGETATION, FOOD, AND FISH						
Vegetation or Forage(o)	Three or more	From animal grazing areas near the mill site in the direction of the highest predicted airborne radionuclide concentrations	Grab	Three times during grazing season	Each sample	Ra-226 and Pb-210

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TABLE 2 (Continued)

OPERATIONAL RADIOLOGICAL MONITORING PROGRAM FOR URANIUM MILLS

Type of Sample	Sample Collection				Sample Analysis	
	Number	Location	Method	Frequency	Frequency	Type of Analysis
Food	Three of each type	Crops, livestock, etc. raised within 3 km of mill site	Grab	Time of harvest or slaughter	Once	Ra-226 and Pb-210
Fish	Each body of water	Collection of fish (if any) from lakes, rivers, and streams in the site environs that may be subject to seepage or direct surface runoff from potentially contaminated areas or that could be affected by a tailings impoundment failure	Grab	Semiannually	Twice	Ra-226 and Pb-210
SOIL AND SEDIMENT						
Soil	Five or more	Same as for air particulate samples(k)	Grab	Annually	Annually	Natural uranium, Ra-226, and Pb-210
Sediment	One or two from each water body	Same as surface water samples(m)	Grab	Annually	Annually	Natural uranium, Th-230, Ra-226, and Pb-210
DIRECT RADIATION	Five or more	Same as for air particulate samples	Continuous passive integrating device	Quarterly change of passive dosimeters	Quarterly	Gamma exposure rate

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Footnotes for Tables 1 and 2:

(a) Continuous collection means continuous sampler operation with filter change weekly or as required by dust loading, whichever is more frequent.

(b) The term "nearest" as used here means the location with the highest predicted airborne radionuclide concentrations during milling operations.

(c) Care should be taken in selection of the control sampling location so that it is representative of the site conditions. In general, a location in the least prevalent wind direction from the site should provide a suitable location for a control sampling site.

(d) Various methods are acceptable; for example: (1) Continuous collection of a gaseous air sample with samples being changed about every 48 hours for a 1-week period or (2) continuous sampling.

(e) If the sample contains appreciable suspended material, it should be filtered as soon as possible following collection through a membrane filter and the filtrate acidified to 1% hydrochloric acid.

(f) The location of the ground-water sampling wells should be determined by a hydrological analysis of the potential movement of seepage from the tailings disposal area. In general, the objective is to place monitor wells in all directions around the tailings area with the emphasis on the down gradient locations.

(g) Surface-water samples to be analyzed for dissolved and suspended fractions should be filtered as soon as possible following collection through a membrane filter and the filtrate acidified to 1% hydrochloric acid.

(h) Natural drainage systems (dry washes) that carry surface runoff from the site following a precipitation event should be sampled following the event but at a frequency not greater than monthly.

(i) The milling area refers to the area that includes ore storage pads, mill buildings, and other processing areas.

(j) Thermoluminescent dosimeters should contain two or more chips or otherwise provide for two readings per exposure period (see Regulatory Guide 4.13).

(k) Surface soil samples should be collected using a consistent technique to a depth of 5 cm.

(l) Subsurface soil profile samples should be collected to a depth of one meter. Samples should be divided into three equal sections for analysis.

(m) Several samples should be collected at each location and composited for a representative sample.

(n) Radon exhalation measurements should not be taken during periods when the ground is frozen or covered with ice or snow or following periods of rain. It is recommended that these measurements be taken in the spring through the fall during normal weather conditions.

(o) Vegetation or forage sampling need be carried out only if dose calculations indicate that the ingestion pathway from grazing animals is a potentially significant exposure pathway (an exposure pathway should be considered important if the predicted dose to an individual would exceed 5% of the applicable radiation protection standard).

TABLE 3[a]

SAMPLE FORMAT FOR REPORTING MONITORING DATA

1. STACK SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Stack flow rate (m^3/sec)

Radionuclide	Concentration (µCi/ml)	Error Estimate[b] (µCi/ml)	Release Rate (Ci/gr)	Error Estimate (Ci/gr)	LLD[c] (µCi/ml)	% MPC[c]
U-nat						
Th-230						
Ra-226						
Pb-210						

2. AIR SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection

Radionuclide	Concentration (µCi/ml)	Error Estimate (µCi/ml)	LLD (µCi/ml)	% MPC
U-nat				
Th-230				
Ra-226				
Pb-210				
Rn-222				

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(a) This table illustrates format only. It is not a complete list of data to be reported. (See text of guide and Tables 1 and 2.)

(b) Error estimate should be calculated at 95% uncertainty level, based on all sources of random error, not merely counting error. Significant systematic error should be reported separately. See Sections 6.1, 7.1.4, and 7.3.

(c) All calculations of lower limits of detection (LLD) and percentages of maximum permissible concentration (MPC) should be included as supplemental information.

TABLE 3 (Continued)

SAMPLE FORMAT FOR REPORTING MONITORING DATA

3. LIQUID SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample (for example: surface, ground, drinking, stock, or irrigation)

Radionuclide	Concentration (μCi/ml)	Error Estimate (μCi/ml)	LLD (μCi/ml)
U-nat (dissolved)			
U-nat (suspended)(d)			
Th-230 (dissolved)			
Th-230 (suspended)(d)			
Ra-226 (dissolved)			
Ra-226 (suspended)(d)			
Pb-210 (dissolved)			
Pb-210 (suspended)(d)			
Po-210 (dissolved)			
Po-210 (suspended)(d)			

4. VEGETATION, FOOD, AND FISH SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample and portion analyzed

Radionuclide	Concentration (μCi/kg wet)	Error Estimate (μCi/kg)	LLD (μCi/kg)
U-nat			
Th-230			
Ra-226			
Pb-210			
Po-210			

(d) Not all samples must be analyzed for suspended radionuclides. See Sections 1.2 and 2.2 of this guide.

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TABLE 3 (Continued)

SAMPLE FORMAT FOR REPORTING MONITORING DATA

5. SOIL AND SEDIMENT SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample and portion analyzed

Radionuclide	Concentration (μCi/g)	Error Estimate (μCi/g)	LLD (μCi/g)
U-nat			
Th-230			
Ra-226			
Pb-210			
Po-210			

6. DIRECT RADIATION MEASUREMENTS

For each measurement, report the dates covered by the measurement and the following information:

Location	Exposure Rate (mR/qr)	Error Estimate (mR/qr)

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7. RADON FLUX MEASUREMENTS

For each measurement, report the dates covered by the measurement and the following information:

Location	Flux (pCi/m^2-sec)	Error Estimate (pCi/m^2-sec)

BIBLIOGRAPHY

ANSI N13.1-1969, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities," American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

ANSI N13.8-1973, "Radiation Protection in Uranium Mines," American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

ANSI N14.10-1974, "Specification and Performance of Onsite Instrumentation for Continuously Monitoring Radioactivity in Effluents," American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

Cavallo, L.M. et al., "Needs for Radioactivity Standards and Measurements in Different Fields," *Nuclear Instruments and Methods*, Vol. 112, 1973, pp. 5-18.

"Environmental Radioactivity Surveillance Guide," ORP-SID-72-2, U.S. Environmental Protection Agency, Washington, D.C., 1972.

"Environmental Surveillance for Fuel Fabrication Plants," BNWL-1973, Battelle Pacific Northwest Laboratories, Richland, Washington, 1973.

Friedland, Stephen S. and Lyle Rathbun, "Radon Monitoring: Uranium Mill Field Experience with a Passive Detector," presented to IEEE Nuclear Science Symposium, San Francisco, California, October 1979.

Fuchs, N. A., "Sampling of Aerosols," *Atmospheric Environment*, Vol. 9, 1975, pp. 697-707.

George, A.C. and A.J. Breslin, "Measurements of Environmental Radon with Integrating Instruments," presented at the Atomic Industrial Forum Uranium Mill Monitoring Workshop, Albuquerque, N.M., 1977.

George, A.C., A.J. Breslin, and S.F. Guggenheim, "A Cumulative Environmental Radon Monitor," Proceedings of Ninth Midyear Health Physics Symposium, Denver, Colorado, 1976.

Gibson, W.M., *The Radiochemistry for Lead*, NAS-NS 3040, National Academy of Sciences-National Research Council, 1961.

Grindler, J.E., *The Radiochemistry of Uranium*, NAS-NS 3050, National Academy of Sciences-National Research Council, 1962.

"A Guide for Environmental Radiological Surveillance at ERDA Installations," ERDA 77-24, Department of Energy, Washington, D.C., 1977.

Handbook of Radiochemical Analytical Methods, EPA-680/4-75-001, USEPA, 1975.

Harley, John H., editor, *HASL Procedures Manual*, HASL-300, USERDA, revised annually.

Hyde, E.K., *The Radiochemistry of Thorium*, NAS-NS 3004, National Academy of Sciences-National Research Council, 1960.

Instrumentation for Environmental Monitoring, Lawrence Berkeley Laboratory, LBL-1, Vol. 3, updated periodically, Berkeley, California.

Kirby, H.W., and M.L. Salutsky, *The Radiochemistry of Radium*, NAS-NS 3057, National Academy of Sciences-National Research Council, 1964.

May, K. R., N. P. Pomeroy, and S. Hibbs, "Sampling Techniques for Large Windborne Particles," *Journal of Aerosol Science*, Vol. 7, 1976, pp. 53-62.

McCurdy, D. E., K. J. Schiager, and E. D. Flack, "Thermoluminescent Dosimetry for Personal Monitoring of Uranium Miners," *Health Physics*, Vol. 17, 1969, pp. 415-422.

Methods for Air Sampling and Analysis, American Public Health Association, Washington, D.C., 1977.

Operational Health Physics, Proceedings of the Ninth Midyear Topical Symposium of the Health Physics Society, Central Rocky Mountain Chapter, Health Physics Society, P.O. Box 3229, Boulder, Colorado 80303, 1976.

Percival, D.R., and D.B. Martin, "Sequential Determination of Radium-226, Radium-228, Actinium-227, and Thorium Isotopes in Environmental and Process Waste Samples," *Analytical Chemistry*, Vol. 46, 1974, pp. 1742-1749.

Radioassay Procedures for Environmental Samples, 999-RH-27, U.S. Public Health Service, Washington, D.C., 1967.

Regulatory Guide 4.5, "Measurements of Radionuclides in the Environment–Sampling and Analysis of Plutonium in Soil," USNRC, May 1974.

Regulatory Guide 4.13, "Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry: Environmental Applications," USNRC, July 1977.

Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations)–Effluent Streams and the Environment," USNRC, December 1977.

Shearer, S.D., Jr., and C.W. Sill, "Evaluation of Atmospheric Radon in the Vicinity of Uranium Mill Tailings," *Health Physics*, Vol. 17, 1969, pp. 77-88.

Sill, C.W., "An Integrating Air Sampler for Determination of Radon-222," *Health Physics*, Vol. 16, 1969, pp. 371-377.

Sill, C.W., "Simultaneous Determination of U-238, U-234, Th-230, Ra-226, and Pb-210 in Uranium Ores, Dusts, and Mill Tailings," *Health Physics*, Vol. 33, 1977, pp. 393-404.

Sill, C.W., and C.P. Willis, "Radiochemical Determination of Lead-210 in Uranium Ores and Air Dusts," *Analytical Chemistry*, Vol. 49, 1977, pp. 302-306.

Sill, C.W., "Determination of Thorium and Uranium Isotopes in Ores and Mill Tailings by Alpha Spectrometry," *Analytical Chemistry*, Vol. 49, 1977, pp. 618-621.

Sill, C.W., et al., "Simultaneous Determination of Alpha-Emitting Nuclides of Radium Through Californium in Soil," *Analytical Chemistry*, Vol. 46, 1974, pp. 1725-1737.

Sill, C.W., and R.L. Williams, "Radiochemical Determination of Uranium and the Transuranium Elements in Process Solutions and Environmental Samples," *Analytical Chemistry*, Vol. 41, 1969, pp. 1624-1632.

Sill, C.W., "Separation and Radiochemical Determination of Uranium and the Transuranium Elements Using Barium Sulfate," *Health Physics*, Vol. 17, 1969, pp. 89-107.

Standard Methods for the Examination of Water and Wastewater, 13th Edition, American Public Health Association, 1971.

Wedding, J.B., A.R. McFarland, and J.E. Cermak, "Large Particle Collection Characteristics of Ambient Aerosol Samplers," *Environmental Science and Technology*, Vol. II, pp. 387-390, 1977.

Workshop on Methods for Measuring Radiation In and Around Uranium Mills, Atomic Industrial Forum Program Report, Vol. 3, No. 9, Atomic Industrial Forum, Inc., Washington, D.C., 1977.

Wrenn, M.E. and H. Spitz, "Design of a Continuous Digital-Output Environmental Radon Monitor," *IEEE Transactions on Nuclear Science*, NS-22, 1975.

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APPENDIX

LOWER LIMIT OF DETECTION

For the purposes of this guide, the Lower Limit of Detection (LLD) is defined as the smallest concentration of radioactive material sampled that has a 95% probability of being detected, with only a 5% probability that a blank sample will yield a response interpreted to mean that radioactive material is present. (Radioactive material is "detected" if it yields an instrument response that leads the analyst to conclude that activity above the system background is present.)

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ S_b}{3.7 \times 10^4\ EVY \exp(-\lambda\Delta t)}$$

where

LLD	is the lower limit of detection (microcuries per milliliter);
S_b	is the standard deviation of the instrument background counting rate (counts per second);
3.7×10^4	is the number of disintegrations per second per microcurie;
E	is the counting efficiency (counts per disintegration);
V	is the sample volume (milliliters);
Y	is the fractional radiochemical yield (when applicable);
λ	is the radioactive decay constant for the particular radionuclide; and
Δt	is the elapsed time between sample collection and counting.

The value of S_b used in the calculation of the LLD for a particular measurement system should be based on the actual observed variance of the instrument background counting rate rather than an unverified theoretically predicted variance.

Since the LLD is a function of sample volume, counting efficiency, radiochemical yield, etc., it may vary for different sampling and analysis procedures. Whenever there is a significant change in the parameters of the measurement system, the LLD should be recalculated.*

*For a more complete discussion of the LLD, see "HASL Procedures Manual," John H. Harley, editor, USERDA, HASL-300 (revised annually) and Currie, L.A., "Limits for Qualitative Detection and Quantitative Determination--Application to Radiochemistry," *Anal. Chem.* 40, 1968, pp. 586-93, and Donn, J. J. and R. L. Wolke, "The Statistical Interpretation of Counting Data from Measurements of Low-Level Radioactivity," *Health Physics*, Vol. 32, 1977, pp. 1-14.

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DATA ON GROUNDWATER IMPACTS AT THE EXISTING ISR FACILITIES

INTRODUCTION

On December 11, 2008, the U.S. Nuclear Regulatory Commission (NRC) held a briefing on the status of uranium recovery facilities during which the staff briefed the Commissioners on the status of uranium recovery applications, in-situ recovery (ISR) facilities generic environmental impact statement (GEIS), rulemaking for groundwater protection at ISR facilities, and Native American outreach. Following that briefing, the Commission directed the NRC staff to provide it with the data it has in hand that assesses environmental impacts to the groundwater from previously licensed ISR facilities (Staff Requirements Memorandum dated January 8, 2009, SRM M081211).

This report addresses that request. The NRC staff found relevant information from three NRC licensed ISR facilities and from Research and Development (R&D) ISRs that were licensed in the late 1970s to early 1980s. The existing data on impacts to groundwater at the Texas licensed facilities were not available for NRC review and not summarized in this report.

POTENTIAL GROUNDWATER IMPACTS AT AN ISR FACILITY

Before an NRC-licensed ISR can begin operations at the project site, the licensee must obtain an Underground Injection Control (UIC) permit from the U.S. Environmental Protection Agency (EPA) or EPA-authorized State. The permit must exempt the portion of the aquifer subject to uranium mining from classification as an underground source of drinking water. The portion of the aquifer where uranium extraction occurs is referred to as the “production zone.” Once uranium recovery operations begin, several different types of environmental impact can occur: impacts to groundwater quality in the production zone during operation and after restoration following the cessation of operation, impacts from the migration of extraction fluids to the aquifer outside the production zone and aquifers above and below the production zone, and impacts to aquifers above the production zone from well casing failures.

Within the production zone, the impacts from operations include elevated levels of various constituents introduced with the extraction fluids (e.g., oxygen, bicarbonate, and hydrogen peroxide) and chemical species that become mobile during the extraction process (e.g., uranium and other metals). After ISR operations are completed at a facility, NRC requires the licensee to restore the exempted aquifer water quality to pre-operational (or baseline conditions), drinking water standards, or alternate concentration limits. The primary goal of restoration is to return the production zone to pre-operational conditions, which would result in no impact; however, that is usually not attainable for all constituents at most ISRs. NRC regulations allow restoration to other standards that are protective of public health and safety and the environment but as restoration to these standards results in changes from pre-operational conditions, restoration results in impacts.

During operations, extraction fluids may directly impact the aquifer surrounding the production zone. A migration of fluids towards the surrounding aquifer is referred to as an excursion. Any excursion from an active wellfield is monitored and is closely controlled. A perimeter monitoring well network surrounds the production zone at a distance of 300 to 500 feet to detect excursions before they can cross the horizontal boundary of the exempted portion of the aquifer. Monitoring wells are also installed in the aquifer above and below the exempted aquifer to

detect vertical excursions. Licensees are required to correct excursions detected by the monitoring wells.

Another potential direct impact to the surrounding aquifers during operations is an uncontrolled release of fluids from the subsurface wells due to its loss of well integrity at a depth other than the screened horizon. This potential impact is primarily limited to overlying aquifers as production wells generally do not extend below the exempted aquifer. Impacts to overlying aquifers may occur from well failures involving either injection fluids or extraction fluids.

Several existing facilities also have the capability for disposal of 11e.(2) byproduct liquid waste through on-site deep well injection. An exemption from the EPA underground source of drinking water requirements is required for each deep well injection. This classification differs from the classification of the exempted aquifer for ISR operations because the injected fluids will remain permanently in this exempted aquifer.

Lastly, the potential exists for impacting the groundwater (e.g., from an undetected excursion) in the region of an operating ISR. As such, NRC-licensed ISR facilities are required to periodically monitor regional groundwater's for potential impacts from licensed operations.

The data in hand on the environmental impacts to the groundwater from ISR facilities are discussed below.

DISCUSSION OF GROUNDWATER IMPACTS AT NRC-LICENSED FACILITIES

There are currently three operating facilities licensed by the NRC. Two facilities, COGEMA's Irigaray/Christensen Ranch facility and PRI's Smith Ranch/Highland Uranium Project (HUP) facility, operate in Wyoming and Crow Butte Resources Crow Butte facility operates in Nebraska. This report presents data from those licensed operating facilities. A fourth facility, Hydro Resources, Inc., Crown Point facility in New Mexico, has an NRC license but has never operated. Documentation for 34 early licensed R&D facilities were also reviewed for this paper. Data from these R&D facilities are similar in extent to the information provided in this paper for the existing, operational licensed facilities.

Exempted Aquifer – Restoration

The NRC requires an applicant for an ISR license to document the restoration process in the license application. The staff reviews this information to ensure its potential effectiveness and adequacy in terms of defining an appropriate surety. During the restoration process, the licensee has the flexibility within certain parameters to adjust the process to meet the goal. After a licensee determines that the active restoration is completed, a licensee discontinues active restoration to allow stabilization monitoring. After the stabilization monitoring is complete, the licensee submits a restoration report for NRC approval. Generally, the restoration report is based on individual wellfields rather than one facility-wide report.

NRC staff has approved 11 wellfield restorations at the 3 existing licensed facilities. All of the restorations had levels of one or more parameters above baseline levels (a baseline level is defined as the mean value determined from a selected ground of wells screened in the exempted aquifer prior to ISR operations). The restoration data from the currently licensed facilities have shown that this goal is attainable for many parameters (50 to 70 percent of the 35 parameters commonly monitored) but is not attainable for other constituents, in particular, the

major and trace cations with solubilities most susceptible to the oxidation state of the aquifer water (i.e., iron, manganese, arsenic, selenium, uranium, vanadium and radium-226).

The data for the approved restorations are as follows:

> Nine wellfield restorations, Wellfield Units 1 through 9, have been approved for the COGEMA Irigaray project. The restorations have been effective in reducing the levels of 50 percent of the parameters to their baseline levels. Of those parameters that did not meet the baseline levels, COGEMA reported that 13 parameters exceeded the observed range in baseline data for that parameter. The parameters that did not meet the range in baseline data are alkalinity, ammonium, barium, carbonate, chloride, calcium, conductivity, lead, magnesium, manganese, sodium, total dissolved solids, and radium-226.
>
> One wellfield restoration, HUP Wellfield A, has been approved for the PRI HUP facility. The restoration was effective in reducing the levels of most parameters, 70 percent of the parameters have been restored to their baseline levels. The parameters that did not meet their baseline levels are alkalinity, arsenic, bicarbonate, chloride, calcium, conductivity, iron, magnesium, manganese, pH, sodium, selenium, sulfate, total dissolved solids, uranium, and radium-226.
>
> One wellfield restoration, Mine Unit 1, has been approved for the CBR facility. The restoration was effective in reducing 70 percent of the parameters to their baseline levels. The parameters that did not meet their baseline levels are alkalinity, arsenic, bicarbonate, calcium, iron, magnesium, molybdenum, potassium, uranium, vanadium and radium-226.

The data in hand for the R&D indicate similar results as on the impacts to the production aquifer following restoration as summarized above for the currently existing ISR facilities. The R&D facilities generally required significantly more time to reach levels for an NRC approved restoration due to the use of an extraction fluid that included added ammonium at several early R&D facilities. A license condition on the makeup of the extraction fluid for the existing ISR facilities effectively prohibits the use of ammonium in the extraction fluids.

For the approved restorations, the impacts to groundwater in the exempted aquifer met all regulatory standards for the state or EPA UIC program, met the quality designated for its class of use prior to ISR operations, have been shown to decrease in the future due to natural attenuation processes, and have been shown to meet drinking water standards at the perimeter of the exempted aquifer. Therefore, the impacts to the exempted aquifer for each of the approved restorations do not pose a threat to human health or the environment.

Aquifers Surrounding the Exempt Production Aquifer

Excursions

By license condition, all existing licensees must: (1) establish approved excursion parameters and define an acceptable excursion monitoring well network on a production unit basis; (2) perform bi-monthly sampling at the monitoring well network for the excursion parameters; (3)

report to the NRC Project Manager within 24 hours (48 hours in some cases) of an initiation of an excursion with a follow-up report within in 30 days; and (4) perform weekly confirmatory monitoring for a well on excursion status until corrective actions prove successful to eliminate the excursion status. All existing licensees are required by license condition to maintain on-site a record of excursions and the associate corrective actions. These reports are examined by NRC staff during routine inspections of the facilities. A license condition for one licensee (COGEMA) also requires quarterly reporting on all wells on excursion status until termination of the excursion status.

Based on a review of historical licensing documentation, the number of excursions reported for the three existing NRC-licensed operating facilities and the duration of the excursions constitute a small percentage of the total number of samples analyzed over that period. The data indicate that excursions have been controlled by the pumping and injection processes. In some cases, the excursions continued for several years. The impact to groundwater was investigated for each long-term excursion and it was determined that the associated impact did not pose a threat to human health or the environment. Continued monitoring is required for several of the wells on long-term excursion status until the wellfield restoration is complete to ensure acceptable impact to groundwater throughout the ISR operations. Detailed information on excursions at the licensed operating ISR facilities is provided in Table 1.

Well Integrity Failures

By license condition, all existing licensees must perform mechanical integrity tests (MITs) for all injection and production wells initially, to ensure that the wells are constructed properly, and subsequently, on a routine schedule, to ensure that the wells do not develop leaks. The facility must maintain this information on-site for NRC review during routine inspections.

Based on a review of the historical licensing documentation, the number of MIT failures reported for the three existing NRC-licensed facilities indicates that the mechanical integrity testing programs provide early detection of well failures prior to impacts to the environment. Overall, the frequency rate of the MIT failures is low for all existing facilities, except for a brief period in 2002 during which an abnormally high failure rate was reported for the PRI facility. The high failure rate was attributed to the use of inferior casing material for the wells. The facility promptly corrected the situation and no impacts were reported during monitoring of the upper aquifer. One MIT failure at the Crow Butte facility was attributed to a casing coupling failure which resulted in impacts to the shallow aquifer. The impacts were mitigated. The staff currently reviews casing material proposed for new facilities based on these lessons learned.

The data in hand indicates that MIT failures do occur. At two of the three existing licensed ISR facilities, investigations into impacts to the overlying aquifers are not immediately performed. However, the aquifer immediately overlying the production zone is monitored on a continual basis for excursions and the monitoring data indicate no impacts to that aquifer attributable to a well failure. At the third licensed facility, the impacts to the overlying aquifers are investigated following an MIT failure. The impacts at that facility did not pose a threat to human health or the environment for five of the six MIT failures. In the case of the single failure that did result in measurable unacceptable impacts, the impacts were mitigated to levels that were protective of human health or the environment. Detailed information on MIT failures at the licensed operating ISR facilities is provided in Table 2.

On-Site Liquid Waste Disposal by Deep Well Injection

Two of the three NRC licensed facilities have on-site deep injection wells for disposal of waste liquid 11e.(2) byproduct material waste. In a license application, an applicant must document the location of each disposal well, its depth and separation from potable aquifers, anticipated rate of injection, and liquid chemistry of the byproduct waste. The NRC generally approves usage of an on-site disposal through deep well injection if this action is approved through the EPA 40 CFR Part 146 UIC program or state-approved UIC program and as long as exposure at the wellhead is protective of human health and the environment.

During the life of the facility, the licensee must maintain records on the disposal well usage and provides annual reports to the NRC. In addition, the licensee must perform routine MIT tests on each disposal well.

The data for the existing NRC-licensed operating facilities indicate that on-site deep well disposal of byproduct material waste has been conducted in a manner that is protective of human health and the environment.

Regional Aquifers

Annual reporting that includes monitoring of the aquifers regionally (i.e., at a distance from the operations) is a license condition for all existing NRC-licensed operating ISR facilities. The constituents analyzed for the regional monitoring program include uranium and radium-226. The sampling locations include domestic wells, livestock wells or any nearby groundwater source. Based on a review of historical licensing documentation, data from the regional monitoring at all existing ISR facilities indicate that no impacts attributable to an ISR facility were observed at the regional monitoring locations. In addition, the staff is unaware of any situation indicating that: (1) the quality of groundwater at a nearby water supply well has been degraded; (2) the use of a water supply well has been discontinued; or, (3) a well has been relocated because of environmental impacts attributed to an ISR facility.

The data in hand on regional monitoring at the existing ISR licensed facilities includes the following:

> For the COGEMA Irigaray/Christensen Ranch facility, semi-annual monitoring is required for seven regional ranch water supply wells.
>
> For the PRI Smith Ranch/HUP facility, quarterly monitoring is required at 18 groundwater sites throughout its permit area.
>
> For the CBR Crow Butte facility, semi-annual monitoring is required at 19 groundwater sites within 1 kilometer of a wellfield.

SUMMARY AND CONCLUSIONS

Potential environmental impacts to groundwater at an ISR facility can result from inadequate restoration of the production aquifer following completion of the ISR operations, leakage from a failure of the subsurface well materials, or an excursion of the leaching fluids to the aquifers surrounding the production or exempted aquifer.

For NRC-approved restorations of the production aquifer, the staff acknowledges that several parameters require a long time to reach pre-mining concentration levels after operations at an ISR facility are completed. However, the concentration levels at the time of restoration approval have been determined to be protective of human health and the environment.

Excursions and MIT failures have been reported but, in most cases, are controlled and do not pose a threat to human health or environment to the surrounding aquifers. In the case of excursions, several long-term excursions have been reported for two existing ISR facilities. The existing impacts were investigated and determined not to pose a threat to human health or the environment. In the case of MIT failures, two license facilities do not investigate the impacts to the overlying aquifers; however, routine monitoring of the aquifer immediately overlying the production zone at those facilities has not detected impacts attributed to an MIT failure. At the third facility, the impacts to the overlying aquifers are investigated for each MIT failure. For five of the six reported MIT failures at that facility, no impacts to groundwater were identified. For one reported failure, the impacts were mitigated to levels protective of human health and the environment.

Regional groundwater monitoring is required for all three existing facilities. The monitoring data indicated no impacts attributed to the migration of impacted groundwater from the existing facility.

TABLE 1

DATA IN HAND ON EXCURSIONS AT THE NRC-LICENSED OPERATING ISR FACILITIES

COGEMA Irigaray/Christensen Ranch Facility

Thirty-one excursion events were reported for the COGEMA Irigaray/Christensen Ranch facility. Of the 31 excursion events, 20 events were horizontal excursions and 11 events were vertical excursions. Most horizontal excursions were short-lived as the licensee was able to correct the situation by controlling the pumping and/or extraction rates at the nearby wellfield. Because the wellfields were undergoing restoration rather than operation (the database reviewed for excursions extended from the present back to the year 2000 during which time wellfields at the COGEMA facility were undergoing restoration), the control by changing pumping rates was slightly more difficult because the pumping and injection rates were low during the restoration process. Vertical excursions were less likely to occur but generally their durations were longer than horizontal excursions.

One horizontal excursion event at COGEMA was not controlled in a timely manner during 2004-2005. The Wyoming Department of Environmental Quality (WDEQ) released a well from excursion status based on a request by the licensee. The request was based on supporting documentation in which the licensee stated that the Best Practicable Technology had been applied during the wellfield restoration, the chemical makeup exceeded the baseline data but was consistent with the pre-mining class of use for the aquifer, area of the aquifer denoted by the “excursion” was limited in extent, and the chemistry of the production zone was not the source of the excursion. The licensee proposed quarterly monitoring at that well until final regulatory approval of the restoration activities. In 2008, the licensee submitted restoration data for Mine Unit 5. The excursion in question was addressed in that restoration package. The licensee indicated that while the excursion parameters (chloride, conductivity and alkalinity) remained elevated, the levels of trace metals and radionuclides were not elevated and consistent with attenuation within the wellfield. As part of its review process, NRC staff has requested additional information on the chemistry at this well. The restoration data currently are under NRC staff review.

The duration of vertical excursions at the COGEMA facility was generally longer than the typical horizontal excursion. In fact, most “long-term” vertical excursion events were terminated prior to reaching pre-excursion levels by the regulatory agencies following an in-depth review of impacts. It was shown that all parameters stabilized below the levels the state required for the pre-mining use of the aquifer. Therefore, the environmental impacts to the aquifer from the excursion were considered negligible and excursion status was terminated.

PRI Smith Ranch/HUP Facility

Twelve excursion events were reported for the PRI Smith Ranch/HUP facility. All 12 excursion events were horizontal excursions. Eleven of the 12 excursion events occurred at the HUP project. One event was induced by drawdown

during the required sampling of the well based on the geologic conditions. Sampling procedures for the wells in that vicinity were modified to minimize drawdown during the sampling. Unlike COGEMA, PRI does not routinely report the termination of their excursion events. The NRC guidance for a review of an ISR license application only addresses a timely notification for the initiation of an excursion but not a notification for its termination. The termination is addressed during NRC routine inspections and/or the licensee's quarterly (60-day) reports.

Seven wells at the PRI facility have been on excursion status for at least 60 days. The excursions at four (4) wells were attributed to effects of a former underground mine in the area of the wellfields and those at the other three wells were during wellfield restorations. The reported data on the long-term excursion events indicate that the water quality meets the WDEP pre-mining class of use for the aquifer. The NRC staff will review the data during the wellfield restoration report to ensure that the environmental impacts are protective of human health and the environment at the completion of the wellfield operations.

CBR Crow Butte Facility

Twenty excursion events were reported for the CBR Crow Butte facility. Eleven events were horizontal excursions of which four excursions lasted for up to six years. Three of the four excursions were due to wellfield geometry, i.e., the excursion event was at monitoring wells between wellfields (within the exempted aquifer) and the elevated levels were attributed to production at both wellfields. The fourth excursion was located in an area where the production zone wells were partially penetrating, i.e., within the lower portion of the exempted aquifer. Fully penetrating wells were installed and a control on the excursion was returned. The nine vertical excursions were attributed to natural fluctuations in the parameter levels in the upper aquifer and therefore, concluded not to be an excursion.

TABLE 2

DATA IN HAND ON MIT FAILURES AT THE NRC-LICENSED OPERATING FACILITIES

COGEMA Irigaray/Christensen Ranch Facility

One-hundred thirty-five MIT failures have been reported for the COGEMA Irigaray/Christensen Ranch facility since 1998. The failure rate has been consistent on an annual basis at less than five percent of the wells tested.

PRI Smith Ranch/HUP Facility

Eighteen MIT failures were reported for the PRI Smith Ranch/HUP from the fourth quarter of 1999 to the first quarter of 2002. The MIT reports are included in submittals to Wyoming Department of Environmental Quality for the mining permit. The MIT failures are reviewed by NRC personnel during routine inspections. The failure rate was approximately equal to the rate reported for COGEMA (five percent of the wells tested).

During the fourth quarter of 2002, PRI reported an abnormally high failure rate. The source of the failure rate was attributed to faulty casing material. The casings were replaced. No impact to the surrounding overlying aquifer was detected during the excursion monitoring.

CBR Crow Butte Facility

Six MIT failures were reported for the CBR Crow Butte facility. The MIT failures were investigated to determine the depth of the casing failure. Five failures were determined to be at shallow depths. One failure resulted in impacts to the shallow groundwater in the immediate vicinity of the well. Those impacts were remediated to the aquifer baseline levels.

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Historical Case Analysis of Uranium Plume Attenuation

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Abstract

Groundwater plumes containing dissolved uranium at levels above natural background exist adjacent to uranium ore bodies at uranium mines, milling locations, and at a number of explosive test facilities. Public health concerns require that some assessment of the potential for further plume movement in the future be made. Reaction-transport models, which might conceivably be used to predict plume movement, require extensive data inputs that are often uncertain. Many of the site-specific inputs are physical parameters that can vary spatially and with time. Limitations in data availability and accuracy mean that reaction-transport predictions can rarely provide more than order-of-magnitude bounding estimates of contaminant movement in the subsurface. A more direct means for establishing the limits of contaminant transport is to examine actual plumes to determine if, collectively, they spread and attenuate in a reasonably consistent and characteristic fashion. Here a number of U plumes from ore bodies and contaminated sites were critically examined to identify characteristics of U plume movement.

The magnitude of the original contaminant source, the geologic setting, and the hydrologic regime were rarely similar from site to site. Plumes also spanned a vast range of ages and no complete set of time-series plume analyses exist for a particular site. Despite the accumulated uncertainties and variabilities, the plume data set gave a clear and reasonably consistent picture of U plume behavior. Specifically, uranium plumes:

- Appear to reach steady-state, that is, they quit spreading rapidly (within a few years).
- Exceed roughly 2 km in length only in special cases e.g. where *in situ* leaching has been carried out. The majority is much smaller.
- Exhibit very similar U chemistry between sites. This implies analogous contaminant attenuation mechanisms despite their location.

throughout the reaction front [79]. A reactive transport model by Lichtner and Waber [80] for the Osamu Utsumi mine successfully predicts the migration of the redox front and the resulting phases precipitated along the reaction path. In this case, pyrite oxidation causes the fluid to be reduced, resulting in precipitation of uraninite in the redox front [80; 81]. Morro do Ferro is richer in Th and depleted in U relative to Osamu Utsumi [29]. Groundwater sampled close to the surface of this deposit is oxidized as expected, but more reduced in deeper samples in the boreholes. The high concentration of Th in the groundwater is thought to be associated to colloidal matter because of its low solubility and its high partition with colloidal matter at the Osamu Utsumi site [29]. The Morro do Ferro plume was measured using a vertical profile along a transect comprising a limited set of sampling boreholes. The plume length is ~0.15 km.

3.2.4 Cigar Lake

The Cigar Lake unconformity-type U ore deposit in northern Saskatchewan, Canada [82-84] is hydrothermal in origin, was formed ~1.3 Ma ago, and is confined to an altered sandstone ~430 meters below the surface [84; 85]. The primary U minerals are uraninite and pitchblende. Waters in contact with the ore originate from an overlying permeable sandstone aquifer. Because the Cigar Lake ore deposit is not exposed at the surface, U release is extremely slow. Weathering, formation of a surrounding clay-rich matrix, and capping by an impermeable quartz-cemented zone cause the groundwater in contact with the ore body to be highly reduced. The system has consequently been assumed to be closed with respect to U. U transport in this ore body has been modeled by Liu et al. [86] using a near-field release model assuming molecular diffusion perpendicular to the clay zone and advective groundwater flow parallel to the clay zone. Bruno et al. [87] modeled the fluid chemical evolution along different flowpaths, using a simple kinetic mass transfer calculation entailing oxidative uraninite dissolution, assuming long residence times. Indeed, Liu et al. [86] model predicts very low U concentrations as observed in the field. The confinement of U and other radionuclides in the clay zone arrest their migration, therefore producing plumes in the porous overlying sandstone that are too narrow to be detected [86].

4.0 Plume Analysis

The maximum surface extension of both artificial and natural plumes or **maximum plume axial length** is used as the index criteria to assess plume behavior. Note though that the concept of maximum plume axial length, as applied here, is by necessity operational because of the random, limited, and in most cases, subjectively biased well sampling or monitoring used by different workers at different sites. Moreover, the highly distorted morphology of groundwater plumes, the presence of daughter plumes, and the presence of background levels of U causes more uncertainty as to the real extent of the 2-D surface coverage of these plumes. To establish an objective basis of comparison, visual inspection of plume contour maps and U concentration data in sample wells were used jointly to establish the maximum plume axial lengths. Specifically, the maximum plume axial length is defined here as *the maximum distance between two points encompassing the farthest boundaries of the plume as*

constrained and/or permitted by the sampling well network in a particular site where measurable U concentrations in the range of 10-20 ppb have been obtained.

Previous workers [88] conversely, have considered the farthest distance between the source (or highest contaminant concentration) and the plume boundary. This approach is useful in intuitively assessing the limits for potential spreading of a plume within a given area if the data set is sufficiently large and reliable. For most U plumes, temporal and spatial limitations in well sampling and the generation of daughter plumes through ongoing remediation activities, or natural recharge, makes identification of the source within a waste site a very difficult task for a given well monitoring network. This could lead to underestimates of plume length that can only be overcome by a large and fairly dependable data set. Given the limited amount of useful data, the irregular spatial distribution of monitoring wells, and the scarce number of the latter at each site, we found the maximum axial length provides (in the extreme case of U mobilization) a reasonably good estimate of the 2-D contaminant surface coverage. Note there is a general lack of temporal data for periods longer than 5 years for most sites. Many of the sites possessed a very large (hundreds of meters across) and disperse source term. The width of the source term is implicitly counted in the maximum plume axial length measurement. In other words, if the actual plume advance were modeled as emanating from a point source, the calculated plume lengths would be a great deal less. In some cases, particularly for the large scale natural analogues (e.g., Poços de Caldas and Oklo), the plume lengths were estimated based on a vertical profile using a linear monitoring well transect. To illustrate the manner in which plumes were measured, figures 8 through 11 show a number of the Title I UMTRA plumes (Wyoming, Colorado, and Arizona) and the labeled plume lengths.

Many of the UMTRA sites are located within 2 or 3 km of rivers. There are a few cases where groundwater plumes were truncated by discharge into rivers, e.g. Figure 8 - Riverton, Wyoming, as might be expected where rivers are fed by groundwater. In arid regions though, rivers often lose water to adjacent aquifers and many of the plumes we observed spread parallel to, or away from, nearby rivers, suggesting that measured plume lengths reflect groundwater transport.
Table 5 shows all the U plumes considered in this study along with estimated maximum axial plume lengths. The frequency distribution of maximum axial plume lengths for all sites listed in table 5 is shown in figure 12, and suggest that the maximum observed distance of migration is a little more than 2 kilometers. Note again that this distance is the maximum observed spread of the 10-20 ppb U plume contour, and that it includes both upgradient and downgradient limbs of the plume. This means, the downgradient (maximum) reach of plumes from the source is substantially less than 2 km. If we calculate plume length using contours of 44 ppb U, the MCL, most of the plumes (if not all of them) would have an axial length of approximately 0.5 km or less. An anomalous long outlier is the plume associated with the Konigstein mine [63; 64], located 25 km southeast of the city of Dresden, Germany and the UMTRA site Falls City, Texas. *In situ* leaching (ISL) was conducted in the Konigstein mine using periodic inputs of sulfuric acid (H_2SO_4) that mixed and diluted with local groundwater needing further additions of the acid to continue the leaching process [63].

Table 5. Summary of estimated maximum axial plume lengths and their site characteristics. The listed UMTRA sites are the only ones for which plume length data can be extracted.

Site	Type	Max. Axial Plume Length (km)	Min.Axial Plume Length* (km)	Sampled Depth (m)	Sources	Comments
Canonsburg, PA	UMTRA (Title I)	0.3-0.37	-	2-8	89	Groundwater table can be found at shallow depths in the fill. Humid continental climate.
Crow Butte Uranium Mine Unit 1, NB	In situ leaching	0.63	0.07	-	90	Pre-operational/baseline maximum plume length measured to ~ 20 ppb. Post-operational ISL mining caused [U] to be orders of magnitude larger in monitoring groundwater wells.
Falls City, TX	UMTRA (Title I)	4.95	3.94	-	39	Plume analysis comprises tailings pile areas 1, 2, 3, 4, 5, 6, and 7. Largest UMTRA plume.
Fernald Processing Site (OH)	UMTRA (Title I)	1.3	0.61-0.78	-	91	Private well monitoring locations (1992-1996)
Grand Junction, CO	UMTRA (Title I)	2.5	0.47 - 0.6	-	92	Bulk groundwater composition is SO_4^- rich and relatively HCO_3^- poor. Close to saturation with respect to calcite.
Gunnison, CO	UMTRA (Title I)	2	0.4	50-150	93, [a]	Lindgren[a] reported a plume length value of 1.5 km interpolated distance to [U]=40 ppb.
Hanford (WA) 300 Area process trench	UMTRA (Title I)	0.79	0.52	50-150	94	Plume bounded by the Columbia River
Kennecott Uranium Facility (WY)	UMTRA - Mine (Title II)	0.69	0.26	~15	95	Highly irregular plume shape. Maximum plume length measured to ~8 pCi/L
Konigstein Mine, Germany	In situ leaching	3.6-4.0	~1.5	~15-350	63; 64	In situ leaching (ISL) of U with sulfuric acid (H_2SO_4). Among longest plume measured.

[a] E. R. Lindgren (unpublished report)

Table 5 (cont.). Summary of estimated maximum axial plume lengths and their site characteristics.

Site	Type	Max. Axial Plume Length (km)	Min.Axial Plume Length* (km)	Sampled Depth (m)	Sources	Comments
LLNL-plume 1 pit 4-5, CA	Explosive Activity	0.43	0.08	-	96	Sampled 2nd quarter 1994; plume length measured to the [^{234}U + ^{238}U]=10 pCi/L (~30 ppb) contour.
Maybell, CO	UMTRA (Title I)	0.4	0.15	40-50	97	U/TDS* ratio indicates that soluble salts move further than U beyond the mill tailing limits.
Monticello Millsite, CO	UMTRA (Title I)	2.2-2.4	0.42	-	98	Plume length distance measured to a ^{234}U + ^{238}U concentration level of ~18 pCi/L (~54 ppb).
Monument Valley, AZ	UMTRA (Title I)	1.4	1.1	17-47	36	Plume length for the$[U]_T$>44ppb region (deep De Chelly aquifer) is ~0.7 km. Max. plume length determined for the alluvial aquifer.
Naturita, CO	UMTRA (Title I)	0.7	0.2	3-76	99	Plume length may be larger than estimated value. Groundwater sampling restricted to the shallow river alluvium.
New Rifle, CO	UMTRA (Title I)	1.6	0.6	30-95	100	U/TDS ratio is similar in all sampling wells suggesting that U salts and U migrate at the same rate.
Rio Algom, Moab - Lisbon Facility, UT	UMTRA - Mine (Title II)	2.52	1.71	13-45	101	Maximum plume length measured to 10 -20 pCi/L natural U sampling well - among the largest Title II plumes
Riverton, WY	UMTRA (Title I)	1.7	1.2	7-8	34; 35; 102	Lindgren[a] reported a plume length value of 0.9 km interpolated distance to the 44 ppb [U] point
Slick Rock (NC), CO	UMTRA (Title I)	0.24	0.12	20-50	103	Sampling restricted to tailings pile. Plume may be bigger than estimated. Monitoring wells at plume boundary show [U] ≈ 900-1000 ppb.

Table 5 (cont.). Summary of estimated maximum axial plume lengths and their site characteristics.

Site	Type	Max. Axial Plume Length (km)	Min.Axial Plume Length (km)	Sampled Depth (m)	Sources	Comments
Slick Rock (UC), CO	UMTRA (Title I)	0.5	0.2	20-50	103	Site is bounded by a topographic high and a river.
Sohio Western L-Bar, NM	UMTRA - Mine (Title II)	1.34	0.96	-	104	Maximum and minimum plume lengths are approximate - few wells available for measuring natural U sampling
Split Rock (WY) Northwest Valley	UMTRA (Title II)	2.63	0.75	0-30	105	Mill tailings still remain in place. Long plume length for an UMTRA site.
Split Rock, (WY) Southwest Valley	UMTRA (Title II)	2.51	0.86	0-30	105	Mill tailings still remain in place. Long plume length for an UMTRA site.
Split Rock (WY) Between Northwest and Southwest Valley	UMTRA (Title II)	2	-	0-30	105	Mill tailings still remain in place. Plume length measured between two valleys containing the mill processing plants and tailings.
Tuba City, AZ	UMTRA (Title I)	1.12	0.5	15-18	12; 37; 106; 107	Maximum plume length measured to [U] ≈ 40 ppb [107].
Weldon Springs Site, Missouri (WSOW)	UMTRA (Title I)	0.6	-	-	108	Plume length value is **very** approximate. [U] well data is very heterogeneous. Multiple plumes observed. Very localized plume lengths with [U]>15 pCi/L (~45 ppb) are only reported.
Weldon Springs Site, Missouri (WSCP)	UMTRA (Title I)	1.1	-	-	108	Multiple plumes observed. Same explanation as above.

Table 5 (cont.). Summary of estimated maximum axial plume lengths and their site characteristics.

Site	Type	Max. Axial Plume Length (km)	Min.Axial Plume Length (km)	Sampled Depth (m)	Sources	Comments
Koongarra ore deposit, Alligator River Uranium Field, Australia	Natural Analogue	0.48-0.5	0.38	13-25	32; 67; 73	Presence of a weathered zoned. Uranyl-carbonate complexes predominant due to high HCO_3^- concentration in deeper groundwater.
Bangombe, Oklo natural reactors, Gabon	Natural Analogue	0.25	-	25-500	68; 69; 75; 109; 110	Presence of a weathered zone. Groundwater chemistry controlled by the $Fe^{2+}/Fe(OH)_3$ equilibria. Fluids are not enriched in CO_2.
Okelobondo, Oklo natural reactors, Gabon	Natural Analogue	0.9-1.0	-	6-100	68; 69; 75; 76; 109; 110	Presence of a weathered zone. Groundwater chemistry controlled by the $Fe^{2+}/Fe(OH)_3$ (reduced) and $Mn^{2+}/MnOOH$ (oxidized) equilibria. The latter is richer in CO_2.
Osama Utsumi, Poços de Caldas, Brazil	Natural Analogue	0.5-0.6	-	0-125	78; 111-113	Presence of a weathered zone. Pyrite oxidation induces reduction of fluids and subsequent UO_2 precipitation in the redox front.
Morro do Ferro, Poços de Caldas, Brazil	Natural Analogue	0.15	-	0-85	78; 111; 112; 114	Presence of a weathered zone. Th rich deposit. The presence in groundwater is probably associated to colloids. Ore zone is very close to the surface.
Cigar Lake ore deposit, Canada	Natural Analogue	0.4	-	0-500	84; 87	Deep (~430 m) and concealed unconformity type U deposit. Capped by an impermeable quartz barrier. Considered a closed system.

* Minimum axial lengths are measured perpendicular to maximum axial length.

Leached contaminants have therefore been spread further than they would have otherwise. ISL has been used in many U mines in the United States, e.g., Falls City, Texas, and worldwide [115] and is being currently considered as a cheaper option for future U mining by various countries [116; 117]. Falls City (Texas) mill site show the largest observed plume for a Title I UMTRA site. It also has a fairly recent history of secondary solution mining operations between 1978 to 1982 which may be attributed to its spatial extent of contamination[118]. Some examples of previous and presently planned use of ISL solution mining are Germany (Konigstein), Czech Republic (Stráz mine in north Bohemia), Bulgaria, Ukraine, Russia, Kazakhstan, Uzbekistan, China, United States, and Australia [116; 117; 119]. The Konigstein mine is probably the best studied example of intensive use of ISL in U mining and its consequences on aquifer and groundwater contamination [115]. A recent example of ISL solution mining by injection of an oxidant and a carbonate-rich solution in the USA is the Crow Butte U mine unit 1 in Nebraska [90]. The groundwater chemical patterns of post-operational ISL activities show a plausible maximum plume length increase that may exceed ~3-4 times that of pre-operational/baseline standards (baseline max. plume length ≈ 0.62 km)[90]. Even the subsequent restoration/stabilization activity of groundwater quality at this site shows U concentrations that exceed MCL limits further beyond the monitoring well network.

5.0 Discussion and Conclusions

The hydrologic conductivities, Kds, and original contaminant source masses for the various sites probably vary by orders of magnitude (see e.g. table 4). Nevertheless, actual plume trajectories seem to cluster, and suggest that the combined effects of dispersion and chemical reaction are sufficient to arrest most uranium plumes before they move more than roughly a kilometer from their source. The natural life cycle of a uranium plume appears to involve an initial movement away from a source region that takes place within a few years and does not exceed 2 kilometers, followed by a geologically long period of immobile quiescence. Natural plumes from ores that have been weathered and subjected to periodic meteoric inputs for long periods of time do not migrate appreciably beyond their known natural barriers, even during mining. Similarly, the UMTRA sites do not show a significant dispersion of contaminants beyond the limits of the contaminated area, even though these are not as deeply buried and are in more porous strata than those found in the natural analogues and ore U mining sites. The plume length and the U concentration in monitoring wells remain relatively constant, or change insignificantly, for periods of time approaching 15 years in many cases[a]. It appears that sorption, dilution, and precipitation are sufficiently effective sinks to limit short-term (years to decades) the advance of artificial U plumes. In long-term situations (thousands to millions of years), weathering processes and secondary precipitation of oxidized uranyl phases appears to limit advance of natural plumes. This picture of U plume behavior has a number of implications for activities

[a] E. R. Lindgren (unpublished report)

Stratigraphy of the Inyan Kara Group and Localization of Uranium Deposits, Southern Black Hills, South Dakota and Wyoming

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Deposition in fluvial unit 3 is characterized by an abundance of western-suite minerals. Chert commonly ranging in grain size from sand to pebble size is especially abundant. Chert grains may have been derived either from distant sources or from Paleozoic sediments, but the larger chert pebbles probably were derived from local sources including chert lenses in the basal Fuson Member, the Minnewaste Limestone Member, and the Sundance Formation. Other silicified material, consisting of petrified wood and silica-cemented sand and silt from the Lakota, probably is included in the siliceous material of fluvial unit 3. A high percentage of volcanic grains indicates that volcanic activity accompanied a renewed uplift of the western source areas. The limited contribution of sediments of the eastern suite is marked by a low feldspar content and by a clay matrix that contains very little kaolinitic clay but much illitic and mica clay.

Toward the end of Fuson time the eastern source area contributed much sediment to the sandstone of fluvial unit 4. Volcanic material, rounded zircon, and chert are less abundant in this sandstone than in the older fluvial unit 3, whereas the mica content and the proportion of kaolinite to total clay are greater. The uplift of the eastern source areas may have been related to local deformation which shifted the axis of the Black Hills syncline to the west and caused the stream channel of fluvial unit 4 to migrate slightly westward in some areas. This shift of the channel is reflected by the maximum scouring of the channel and the maximum thickness of the fluvial sandstone at the southwest side of the paleodrainage, and by a noticeable thinning of the sandstone at the northeast side of the drainage (Gott and Schnabel, 1963, pl. 13).

By Middle Fall River time the eastern source areas supplied most of the sediment to the southern Black Hills area. Paleocurrent directions in sandstone of fluvial unit 5 in the southeastern Black Hills suggest a streamflow from the east and southeast which deposited much plagioclase feldspar and abundant angular tourmaline and zircon. Corresponding decreases in the abundance of rounded tourmaline and zircon and in the percentage of volcanic grains confirm the decrease in sediment from western source areas. The continued low garnet content in the sediments indicates that significant amounts of garnet were not eroded from the outcrops of Precambrian rocks in the eastern source area at this time.

STRUCTURE

The Black Hills uplift consists of an arcuate north- to northwest-trending dome-shaped anticline that is surrounded by the Missouri Plateau (Fenneman, 1931, p. 79). The mapped area included in the present report has about 6,000 feet of structural relief and lies across the south end of the uplift (pl. 1). The area may be divided into three parts — eastern, central, and western parts — each having a different structural character. (1) The eastern part of the mapped area is folded into three relatively large sinuous south-plunging anticlines and several smaller anticlines (pl. 2) which shape the south end of the uplift. The Black Hills gravity axis coincides with the Chilson anticline 5 miles east of Edgemont, S. Dak. Nearly all the anticlines are asymmetric, having a gentle southeast-dipping flank, a steep west-dipping flank, and a parallel syncline lying about 1 mile west of the crest (pl. 1). The west side of this folded area is bounded by the south-plunging Sheep Canyon monocline along the flank of the Chilson anticline. (2) The central part of the mapped area consists of the southwest-dipping flank of the Black Hills, which is modified by the broad Dewey terrace, by three northwest-trending anticlines, by the northeast-trending normal faults of the Dewey and Long Mountain structural zones (pl. 1, north half), and by smaller normal faults. (3) North of the Dewey terrace, within the western part of the mapped area, major north- and northwest-trending Fanny Peak and Black Hills monoclines form the margin of the Black Hills uplift and the adjoining Powder River basin to the west. These monoclines are transected by small northeast-trending normal faults and by a few northwest-trending faults. In addition, a smaller monocline and two small north-trending anticlines are present. Configuration of the folds in the area is shown on plate 1 by structure contours drawn on the base of the Fall River Formation or on the reconstructed base where the Fall River has been removed by erosion.

FOLDS

The asymmetric, slightly arcuate Dudley anticline, 2 miles east of Hot Springs, S. Dak., can be traced southward for 9 miles along the outcrop of the Inyan Kara Group to the Cheyenne River, 1½ miles north of the Angostura Reservoir. The south-plunging anticline has an amplitude of as much as 600 feet and has about 100 feet of closure (Wolcott, 1967).

The Cascade anticline, 2 miles west of Hot Springs, is the largest fold of the southeastern Black Hills. The anticline has an amplitude of 1,300 feet and has as much as 650 feet of structural closure (Wolcott, 1967). The steep west flank of this asymmetric anticline attains a maximum dip of 70° SW., as contrasted to an average dip of 5° SE. on the east flank. West of Hot Springs the anticline forms a ridge that

is held up by dip slopes of the resistant Minnekahta Limestone, and farther south it forms a ridge that is held up by resistant sandstones of the Inyan Kara Group. The south-plunging structure follows a sinuous 17-mile-long course across the area as it trends first to the southwest and then to the south and southeast. The anticlinal axis bifurcates south of Cascade Springs; the main axis continues an additional 8 miles south of the area of this report.

The south-plunging Chilson anticline, 5 miles east of Edgemont, is at least 30 miles long, but only the northern 10 miles of the structure lies within the area discussed here. The asymmetric fold has an amplitude of 800 feet, and its gentle flank dips only 2°–3° SE. Resistant sandstones of the Inyan Kara form a topographic high along the axis of the structure.

The northernmost 3 miles of the gently dipping southwest-trending Cottonwood Creek anticline lies within the mapped area and has little, if any, topographic expression. The fold has an amplitude of only 100 feet, and strata exposed at the surface consist predominantly of easily eroded shales of Cretaceous age.

The south-plunging nose of another asymmetric anticline enters the area 7 miles northwest of Hot Springs and continues southward 4 miles before it terminates. The steep flank dips 10° W. and the gentle flank dips 3° SE., forming a fold with 400 feet of amplitude. Rocks of the anticline exposed at the surface consist of the Minnekahta Limestone, Opeche Formation, and Minnelusa Formation, a stratigraphic sequence of alternating resistant and nonresistant strata that erosion has irregularly dissected to partially mask topographic expression of the fold.

Three southeast-trending anticlines having amplitudes of 100–200 feet are present in the central part of the mapped area. These parallel structural features dip 6°–13° (Braddock, 1963). The longest extends south of the Dewey fault zone for 7 miles and then terminates in a 1½-mile-wide closed structural feature known as the Barker Dome. The two smaller anticlines north of the Dewey fault zone are only 2–3 miles long and less than 1 mile wide.

Two other south-trending anticlines are at the west side of the mapped area, 3 miles northeast of the L A K Ranch and 5 miles south of the ranch. The first-mentioned anticline is at least 5 miles long and has an amplitude of 600 feet. It is bounded on the west side by the Fanny Peak monocline and on the east by an asymmetric syncline. The other anticline, 5 miles south of the L A K Ranch, has an amplitude of 200 feet and is bounded on the west by the Fanny Peak monocline and on the east by a shallow syncline.

A part of the common boundary of the Black Hills uplift and Powder River basin lies within the area and is formed by segments of the intersecting northwest-trending Black Hills monocline and north-northeast-trending Fanny Peak monocline. Northwest of the intersection of these monoclines at the L A K Ranch, 7 miles southeast of Newcastle, Wyo., the basin-uplift boundary is formed by the Black Hills monocline (pl. 1). Sandstones of the Inyan Kara Group crop out on a hogback along the axis of the monocline, and then within a mile they plunge 2,000 feet beneath the shales that underlie the plains. South-southeast of the intersection, the monocline diverges from the margin of the basin and has about 1,000 feet of relief, but within 12 miles the monocline gradually merges into the southwest-dipping flank of the uplift.

The Fanny Peak monocline forms the basin-uplift margin south of the L A K Ranch (pl. 1, north half) and, within the mapped area, has about 2,300 feet of relief. North of the ranch the monocline, exposed lower in the stratigraphic section, is steeper but has only 1,200 feet of relief.

A smaller, unnamed monocline with 800 feet of structural relief lies between the Black Hills and Fanny Peak monoclines north of the L A K Ranch. This monocline trends southward 3 miles from the northern boundary of the area before swinging to the southeast.

About 2½ miles east of Edgemont the west-dipping south-plunging Sheep Canyon monocline at the west margin of the Livingston terrace has 400 feet of relief within a distance of half a mile. The slightly sinuous monocline trends almost due north for 12 miles.

The southwest flank of the Black Hills is modified by the Dewey, Edgemont, and Livingston structural terraces, as well as by several small unnamed terraces indicated by the structure contours on plate 1. The Dewey terrace, bounded by the Fanny Peak monocline on the west and bisected by the Dewey fault zone, covers more than 30 square miles in the Dewey quadrangle and extends south of the mapped area, where it is not as well defined. The Edgemont terrace, which covers about 10 square miles (Ryan, 1964), is present at Edgemont, north of the Cottonwood Creek anticline, and is bounded on the east by the Sheep Canyon monocline. Much of the terrace is overlain by alluvium of Quaternary age, and therefore, details of the structure are not known. The smaller, Livingston terrace, 4 miles northeast of Edgemont, is bounded on the west by the Sheep Can-

yon monocline and on the east by the Chilson anticline. Rocks of the Inyan Kara Group crop out on the terrace, forming a gentle south-dipping surface. A small unnamed terrace covering 1–2 square miles is adjacent to the northwest side of the Long Mountain structural zone about 8 miles north of Edgemont.

FAULTS

Steeply dipping to vertical northeast-trending normal faults are common in the northwest and central parts of the area but are sparse in the folded eastern part. Generally, the north sides of the faults are upraised, as occurs in the Dewey and Long Mountain structural zones (pl. 2), in the central part of the area.

The Dewey structural zone consists of sinuous en echelon steeply dipping to vertical normal faults that uplift the north side of the zone a total of 500 feet by a combination of fault displacement and drag. The fault zone can be traced for 13 miles northeastward across the Dewey and Jewel Cave SW quadrangles, before the zone bifurcates east of the mapped area (pl. 2). One branch continues east for 6 miles, and the other branch trends an equal distance to the northeast. Although no direct evidence for horizontal movement along the faults is reported, the sinuous en echelon trace of the faults suggests that a minor strike-slip component of movement may possibly exist within the fault zone.

The less well defined Long Mountain structural zone, 7 miles north of Edgemont, consists of small northeast-trending normal faults exposed in rocks of the Inyan Kara Group and Sundance Formation within a zone measuring several miles across. Individual faults within this zone generally have been traced less than a mile, and continuity of the structures is variable. For 2 miles southwest of Long Mountain, where the faults border a structural terrace, the zone is more clearly defined, and the northwest sides of the faults are uplifted. To the north, strata are downdropped toward the center of a wide northeast-trending fault zone. The faults have a displacement of as much as 40 feet, but adjacent to the faults as much as 60 feet of additional structural relief results from folding of the sedimentary strata.

In the Clifton and Dewey quadrangles sinuous and arcuate or ring faults and low-angle faults have been mapped in addition to the usual northeast-trending faults. The sinuous faults are randomly oriented and may be associated with the arcuate faults, such as those 11 miles north of Dewey. There, the faults are present in an area where anomalous gravity measurements indicate high relief on the buried surface of Precambrian rocks. The faults may have resulted from compaction of sediments around the basement high, as was suggested by Cuppels (1963), but they may also have resulted from dissolution and removal of evaporites in the Minnelusa Formation.

Two minor northwest-trending reverse(?) faults in sandstone of fluvial unit 5 of the Fall River Formation 3 miles north of the Dewey fault dip at low angles to the southwest. Dips range from nearly horizontal to 40° SW. and average about 25° SW. Slickensides and breccia along one of the faults were traced about 3 miles. The topography on the exposed fluvial unit 5 sandstone suggests that the southwest side of the faults may have been uplifted as much as 30 feet by reverse movement; however, most of the displacement probably occurred along bedding planes within the sandstone and is not readily discernible.

JOINTS

Joints within the southern Black Hills area are nearly vertical and commonly strike northeast or northwest. The major set of joints within the north and central parts of the area strike northeast, whereas a northwest orientation is dominant in the folded eastern part of the area (fig. 10). The differences in orientation of major joint sets probably reflect divergent stresses that deformed two major basement blocks, as discussed later.

STRUCTURAL INTERPRETATION

Uplift of the Black Hills probably began in Late Cretaceous time and continued until early Eocene time (Bartram, 1940). Chamberlin (1945) suggested that compression in a northeast direction may have produced north and northwest shear zones that determined the outline of the Black Hills; however, Noble (1952) believed that the main structural features of the uplift resulted from vertical forces associated with igneous intrusion. Osterwald and Dean (1961, p. 345–346) noted that structures of Paleozoic and Mesozoic age at the south end of the Black Hills trend parallel to structures of Precambrian age; they suggested that "the original Precambrian structures guided later and recurrent deformation."

PRECAMBRIAN STRUCTURE

The Precambrian structure of a nearby area in the central part of the Black Hills was interpreted by Redden (1968) to have evolved during three periods of deformation. (1) Major north-northwest-trending, west-dipping, isoclinal folds and subparallel faults were formed, and the rocks were metamorphosed. Redden (1968, pl. 34) inferred that displacement along many of the faults resulted in reverse throw. (2) In the metamorphosed rocks, shear deformation, localized along northeast trends, formed

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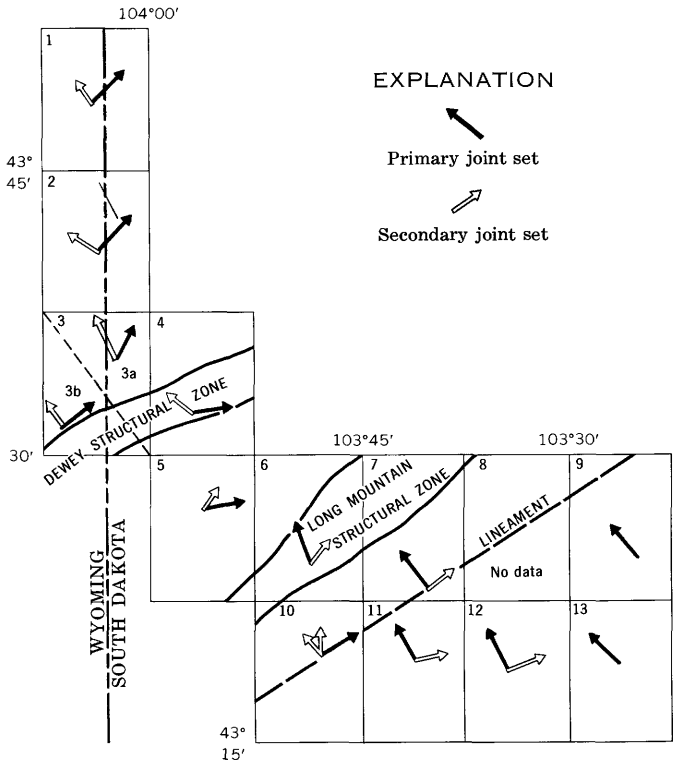


Map No.	Reference	Joint Sets	
		Primary	Secondary
1	Brobst and Epstein (1963)	N. 45° E.	N. 20°–45° W.
2	Cuppels (1963)	N. 40°–50° E.	N. 50°–60° W.
3a	Brobst (1961)	N. 10°–45° E.	N. 10°–40° W.
3b	....do	N. 45°–60° E.	N. 10°–40° W.
4	Braddock (1963)	N. 80° E.	N. 50° W.
5	Schnabel (1963)	N. 75°–85° E.	N. 35°–45° E.
6	Gott and Schnabel (1963)	N. 20° W.	NE.
7	Wilmarth and Smith (1957a, b, c, d)	N. 30°–40° W.	N. 50°–60° E.
8	Wolcott and others (1962)	No data	No data.
9	D. E. Wolcott (unpub. data, 1969)	N. 40° W.	
10	Ryan (1964)	N. 60° E.	N., N. 40° W.
11	Bell and Post (1971)	N. 30° W.	N. 75°–80° E.
12	Post (1967)	N. 20°–40° W.	N. 70° E.
13	J. J. Connor (unpub. data, 1969)	N. 40°–50° W.	

FIGURE 10. — Average orientation of joint sets in the southern Black Hills.

nearly vertical foliation. (3) Intrusion of granite and pegmatite masses domed the rocks. At this time pegmatite dikes were intruded along the northeast-trending shear foliation, as well as along bedding-plane foliation.

RECURRENT DEFORMATION

Sedimentary rocks in the southern Black Hills were repeatedly deformed along northeast trends during the Mesozoic Era and again during the Laramide orogeny. This deformation, which paralleled northeast-trending structures of Precambrian age, is most evident in the Dewey and Long Mountain structural zones, where mild structural adjustments affected deposition of the Inyan Kara Group prior to faulting that displaced the Inyan Kara. Mild structural deformation during the Early Cretaceous diverted the main northwest-flowing consequent streams and affected the courses of their tributaries. Thick fluvial sandstones were deposited where streamflow was restricted to areas of more rapid subsidence, along the axis of a gentle northwest-trending syncline (Bolyard and McGregor, 1966), whereas finer grained and interbedded sediments were deposited on the more stable interstream areas. Locally, sandstone was deposited in small northeast-trending channels where tributaries flowed parallel to the secondary structures.

The Dewey structural zone underwent minor deformation during Middle to Late Jurassic and Early Cretaceous time, prior to the Laramide faulting. Early uplift of the area immediately north of the Dewey fault is indicated by the nearly total absence of the Canyon Springs Sandstone Member in outcrops of the Sundance Formation of Late Jurassic age. At one small outcrop north of the Dewey fault the Canyon Springs rests upon an irregular erosion surface on the Spearfish Formation, but south of the fault the Canyon Springs Member is conformable with the Spearfish (Braddock, 1963). The area north of the fault, therefore, was uplifted or upwarped during Canyon Springs time while sandstones were deposited south of the fault. Later during Early Cretaceous time, mild deformation at the Dewey structural zone affected the course of consequent streams that deposited channel sandstones of the Inyan Kara Group (pl. 1, north half). During deposition of fluvial unit 1 of the Chilson Member, the northwest-flowing stream changed course and flowed westward at the structural zone before resuming its northwest course. Similarly, the stream that deposited fluvial sandstone of unit 4 of the Fuson Member altered course slightly at the structural zone.

Recurrent deformation during Early Cretaceous time also preceded Laramide faulting in the Long Mountain structural zone. Repeatedly, the northwest-flowing streams that deposited fluvial units 1, 2, 5, and 6 were diverted to the northeast at the structural zone as the area north of the zone remained stable or was slightly elevated. Rapid subsidence at the structural zone apparently determined the course of a northeast-flowing tributary during much of Inyan Kara time.

Although direct evidence of Early Cretaceous movement along northeast-trending structures of Precambrian age is lacking, many of these older structures are known. Layered pegmatite dikes of Precambrian age, mapped northwest of Pringle by Redden (1963), mark northeast-trending structures

of Precambrian age that are alined with a northern branch of the Dewey structural zone (pl. 2). Similarly, geophysical data indicate a large concealed northeast-trending wrench fault northeast of the Long Mountain structural zone (pl. 2). Another concealed structure of Precambrian age is indicated by the sharp bend in an aeromagnetic anomaly north of Hot Springs (Meuschke and others, 1963). This structure apparently yielded to Laramide deformational stresses and thereby influenced the folding of the asymmetrical anticlines in the eastern part of the area. The concealed structure is coincident with the north end of a lineament that is marked by northeasterly bends and northward terminations of the Dudley, Cascade, Chilson, and Cottonwood Creek anticlines of Laramide age (pl. 2). This lineament trends S. 60° W. for 25 miles to Edgemont, S. Dak.

During the repeated deformation along the structural zones, the Paleozoic rocks probably were badly fractured. Later, when artesian pressures caused ground waters to migrate vertically through the stratigraphic section, these structural zones were especially favorable for the development of solution collapse structures discussed later.

DEFORMATIONAL FORCES

A major vertical force, as proposed by Noble (1952), probably caused the Laramide uplift of the Black Hills, but many structures within the mapped area indicate secondary compressive stresses from a westerly direction. These lateral stresses acted in a northeast to easterly direction and, locally, in a southeasterly direction.

Northeastward compression probably formed the three northwest-trending anticlines in the central part of the area and the low-angle reverse(?) faults north of Dewey. Higher on the flank of the Black Hills, toward the axis of the uplift, the stress was eastward, as indicated by a change of strike of faults in the Dewey structural zone. Similarly, the general northeast strike of major joint sets changes to a more easterly orientation in the Jewel Cave SW quadrangle (fig. 10). The change in stress orientation possibly is related to a buttressing effect by the granitic intrusive at Harney Peak (pl. 2) and to a deflection of the compressive force toward the east.

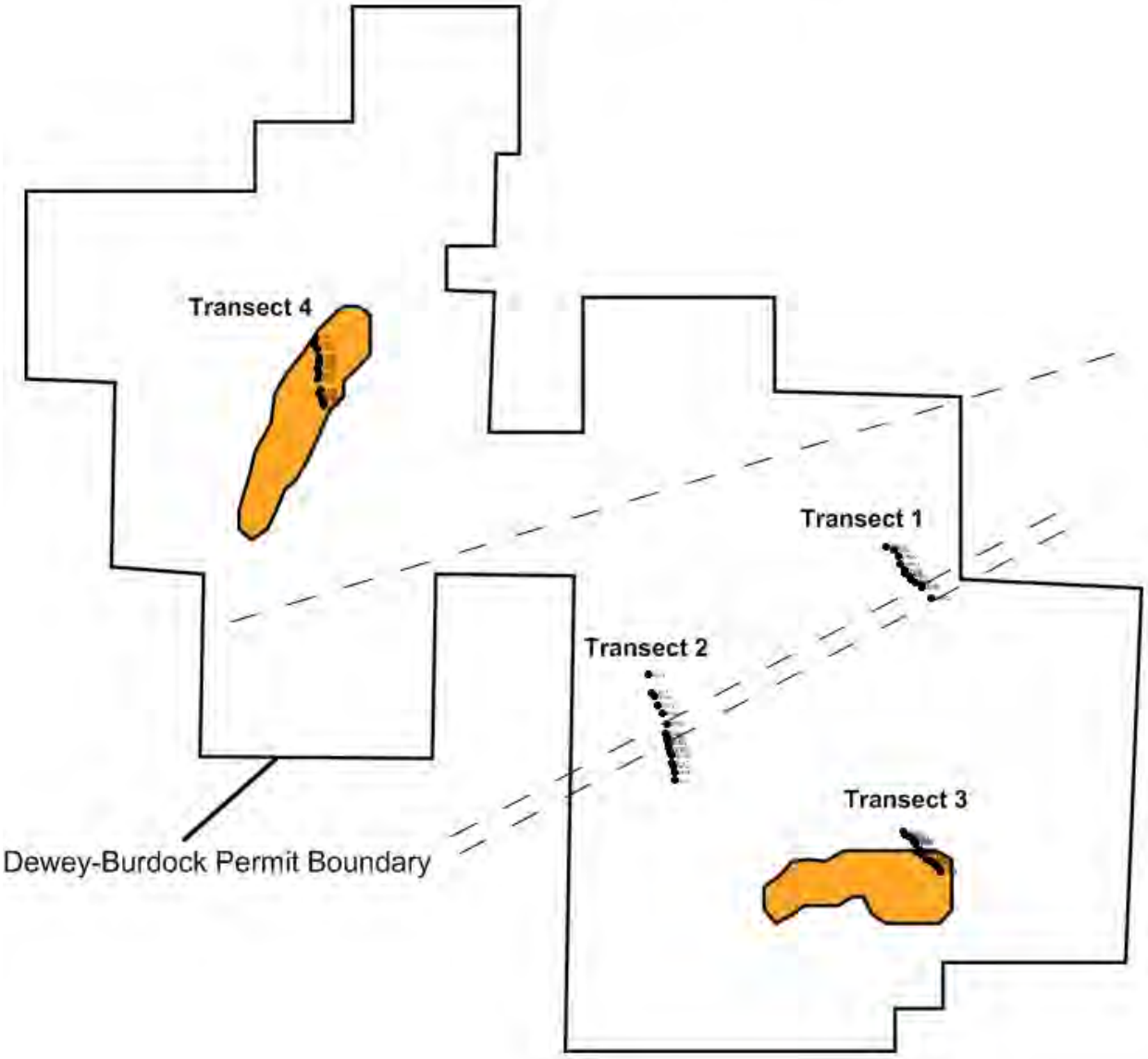
An eastward compression is also believed to have formed the anticlines in the eastern part of the area. The stress probably was transmitted through a basement block lying north of the lineament previously discussed. The eastward compressive force exerted by the northern block would have imparted both eastward and southward force vectors upon the adjacent southern block, and it would have created a resultant stress acting in an east-southeast direction. This east-southeast force probably caused the eastward deflection of the anticlinal folds along the lineament. The divergent orientation of forces acting upon the two blocks created a different orientation for the major joint sets on each side of the lineament. Although local variations in joint patterns exist, the major joint set on the northern block strikes northeasterly, whereas the major set on the south block strikes northwesterly (fig. 10). To a lesser degree the Dewey and Long Mountain structural zones also appear to have affected the orientation of joint sets.

SUBSIDENCE STRUCTURES

Many structural features consisting of breccia pipes, collapse structures, and, possibly, synclinal folds are solution features formed by dissolution of beds of anhydrite, gypsum, limestone, dolomite, and, perhaps, salt with accompanying collapse or slumping of overlying rocks. Numerous caverns and solution breccias and a few breccia pipes present in the Pahasapa Limestone of Mississippian age locally cause draping and faulting of the overlying lower part of the Minnelusa Formation. More extensive solution has occurred in the upper part of the Minnelusa, where nearly 250 feet of anhydrite and gypsum has been removed, as shown by figure 11 (see also Bowles and Braddock, 1963, p. C93), and subsidence of the interbedded sandstone, siltstone, and dolomite has formed founder breccias (Braddock, 1963).

Most breccia pipes bottom within the founder breccias of the Minnelusa; some pipes are exposed in vertical canyon walls for as much as 200 feet, and a few pipes stope upward as much as 1,300 feet to the Lakota Formation (Bowles and Braddock, 1963). Diameters of the pipes range from tens of feet to several hundred feet. These breccia pipes (fig. 12) consist of disoriented blocks, fragments, and detrital particles of sedimentary rocks which were displaced downward and which later were recemented by calcite deposited from artesian waters. The brecciation and disorientation of displaced blocks within a collapse structure are less intense toward the upper limit of stoping, high above the zone of solution. Where the structure terminates, only minor faulting, slight slumping, or draping may be present near the center of the collapse. Minor collapse at the surface may extend downward into a typical breccia pipe. Similarly, recent sinks within the outcrop of the Lakota Formation (Wolcott, 1967) probably pass downward into cemented or partially cemented breccias.

Location of Drill Hole Transects



Legend

- TVA drill holes
- Potential faults from Exh OST-005 at pages 29 and 30

Attachment 4

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

PETITION TO INTERVENE AND REQUEST FOR HEARING OF THE OGLALA SIOUX TRIBE

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309, the notice published by the Nuclear Regulatory Commission (NRC or Commission) at 75 Fed.Reg. 467 (Jan. 5, 2010), and the Commission Order of March 5, 2010, Petitioner Oglala Sioux Tribe (Tribe or Petitioner) hereby requests a hearing and petitions to intervene in this proceeding regarding the application of Powertech (USA) Inc. (Powertech) for a uranium recovery license for the Dewey-Burdock Project, a proposed in-situ leach (ISL) uranium mine in Custer and Fall River Counties, South Dakota. The Tribe's standing to intervene is described in Section II of this pleading, and the Tribe's contentions are set forth in Section III.

The Tribe submits this petition because the project may pose serious threats to the Tribe's cultural, historic, economic, and conservation interests. As detailed herein, the Environmental Report, the Technical Report, and the Supplemental Report that comprise the application contain serious defects, such that the application as a whole fails to satisfy the requirements of federal law, including the Atomic Energy Act, the National Historic Preservation Act, and the National Environmental Policy Act, along with the implementing regulations for these laws. As discussed in more detail in Section III on contentions, the primary concerns are the lack of compliance with

Contention 7: Failure to Include in the Application a Reviewable Plan for Disposal of 11e2 Byproduct Material

The Environmental Report indicates that Powertech intends to use some unidentified facility for disposal of the 11e2 Byproduct generated at the proposed ISL Facility. See Powertech ER at 1-7, 4-6. It is not sufficient, however, for an applicant to merely state that permanent disposal will occur in conformance with applicable laws.

The very reason for the licensing process is to ensure that the problems associated with mill tailings which UMTRCA addresses do not recur under the modern licensing regime. Nowhere do the regulations at 10 C.F.R. Part 40, Appendix A allow an applicant to merely assert that tailings will be handled in accordance with applicable law. The opposite is required by federal law: an applicant must address permanent disposal at the time it seeks a license for activities which create 11e2 Byproduct.

Basis and Discussion

The relevant regulations applicable to new uranium processing operations state in plain language:

> ***Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling***, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31(h) to include in a license application ***proposed specifications relating to*** milling operations and ***the disposition of tailings or wastes resulting from such milling activities***.

40 C.F.R. Part 40 Appendix A (emphasis added). This regulation implements the UMTRCA amendments to the Atomic Energy Act, which require the NRC to ensure that the specific proposal for disposition of tailings and wastes involved in milling is subjected to review in the initial license application. However, it is impossible to determine, based on the application, Environmental Report, and NEPA documents, whether any specific plans exist for the

disposition of the 11(e)2 Byproduct that will be produced by Powertech and what impacts such disposition would entail.

For this reason alone, the Powertech application must be summarily denied, without conduct of further proceedings. Such result is contemplated by the regulations:

> Each application must clearly demonstrate how the requirements and objectives set forth in appendix A of this part have been addressed. Failure to clearly demonstrate how the requirements and objectives in appendix A have been addressed shall be grounds for refusing to accept an application.

40 C.F.R. § 40.31(h). Even where the regulations recognize flexible implementation, specific plans for handling the tailings is a mandatory requirement:

> In many cases, flexibility is provided in the criteria to allow achieving an optimum tailings disposal program on a site-specific basis. However, in such cases the objectives, technical alternatives and concerns which must be taken into account in developing a tailings program are identified. As provided by the provisions of § 40.31(h) applications for licenses must clearly demonstrate how the criteria have been addressed.

40 C.F.R. Part 40 Appendix A.

The failure to address disposal requirements for 11e2 byproduct is not a technical deficiency that can be cured by expending NRC staff resources to cure minor defects. Where the applicant has a duty to provide specific information on this major feature of an ISL license application, and such information is omitted, the NRC staff must not expend federal resources and must instead reject the license without further inquiry or assistance to an applicant who fails to meaningfully address this critical licensing requirement. In sum, the application (including the Environmental Report) does not provide the necessary information to fulfill the applicant's burden to demonstrate that its proposal satisfies the criteria set out in Part 40 Appendix A.

Moreover, the policies set forth by NEPA prevent the NRC staff from segmenting the disposal issues from the inquiry into whether applicant will be allowed to create 11e2 Byproduct

material in the first instance. *In re Pac. Gas & Elec. Co.*, 67 N.R.C. 1, 13 (N.R.C. Jan. 15, 2008).("There is no genuine dispute that NEPA and AEA legal requirements are not the same [. . .] and NEPA requirements must be satisfied."). Failure to identify the permanent disposal facility avoids examination of all direct, indirect, and cumulative impacts of the proposal, as required by NEPA. *Custer County Action Ass'n v. Garvey*, 256 F.3d 1024, 1035 (10th Cir. 2001)(Where a "federal action" exists, the NEPA process must "analyze not only the direct impacts of a proposed action, but also the indirect and cumulative impacts of 'past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.'").

Where "federal action" triggers NEPA -- here, the applicant's proposal to conduct ISL mining activities -- an agency cannot define "the project's purpose in terms so unreasonably narrow as to make [NEPA] 'a foreordained formality.'" *City of Bridgeton v. FAA*, 212 F.3d 448, 458 (8th Cir. 2000)(citations omitted). Here, NEPA mandates that the NRC consider the ISL mining activities which create tailings at the same time it considers the specific method, transportation requirements, and site for tailings disposal. This mandate of federal law attaches at such time as the need for disposal is reasonably foreseeable, which occurs before submission of an application to the NRC for a license to create 11e2 Byproduct by processing uranium, not after the NRC rules on the admissibility of contentions submitted without benefit of NEPA documentation.

The CEQ regulations that apply to each agency's implementation of NEPA state that the requisite site-specific environmental impact statement should be available at all stages of the decision-making process, not merely at the end of that process as a "rubber stamp" to approve the environmental impacts of the process. Because the application in this case involves

extensive, site-specific consideration -- including but not limited to, access, geology, hydrogeology, quantitative impacts upon water supplies for domestic use, livestock, agriculture, non-domesticated plants and animals, and qualitative on-going and subsequent impacts to water supplies of all the same due to releases of chemicals into the surface, groundwater and aquifers flowing through the licensed site -- failure of the site-specific environmental impact statement to inform every step of the license application decision-making process means that the final decision cannot comply with NEPA. At a minimum, without a completed, site-specific environmental impact statement as a guide, NRC staff, the public, and the Tribe have no basis to identify and access alternatives to the license application and find ways to avoid or mitigate possible adverse environmental impacts of the licensed activity.

These NEPA requirements are consistent with the requirement in Subpart 40, Appendix A's *Criteria One*, which requires that the applicant and the NRC examine "alternative tailings disposal sites" when considering a milling application. *See Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 299 (D.C.Cir. 1988)(*citing Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976)(formulation of alternatives during the NEPA disclosure and study process is at the heart of the NEPA-mandated procedures).

The history, legal requirements, and policies embodied in federal laws applicable to the present proceedings require NRC staff to refuse further analysis of an application which lacks any analysis of the specifications for a reasonable range of alternatives for final disposition of the 11e2 byproduct material. The deficiencies in the application require denial or rejection of the application without further inquiry or expenditure of scarce government resources.

Contention 8: Requiring the Tribe to Formulate Contentions before an EIS is Released Violates NEPA

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

LIST OF CONTENTIONS OF THE OGLALA SIOUX TRIBE BASED ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309, and this Board's Scheduling Orders dated November 2, 2010, October 16, 2012, and December 18, 2012, Intervenor Oglala Sioux Tribe (Tribe) hereby sets forth the following additional contentions in this proceeding regarding the Draft Supplemental Environmental Impact Statement (DSEIS) for Powertech (USA) Inc.'s proposed Dewey-Burdock Project in-situ leach (ISL) uranium mine. The Tribe's standing to was confirmed in this Board's Order of August 5, 2010, which was not appealed. As such, pursuant to 10 C.F.R. § 2.309(c)(4), the Tribe is not required to address issues related to standing in this filing.

The Oglala Sioux Tribe is a federally-recognized Indian Tribe, located on the Pine Ridge Reservation. The Oglala Sioux Tribe is a body politic comprised of approximately 41,000 citizens, with territory of over 4,700 square miles in the southwestern portion of South Dakota. The Oglala Sioux Tribe is the freely and democratically-elected government of the Oglala Sioux people, with a governing body duly recognized by the Secretary of Interior. The Oglala Sioux Tribe is the successor in interest to the Oglala Band of the Teton Division of the Sioux Nation, and is a protectorate nation of the Unites States of America. The Oglala Band reorganized in

As a result of these systemic flaws in the manner in which scientific justifications are presented and the lack of time for the public to review information purported to be relied upon in the DSEIS, the document must be re-published in a manner that provides the necessary information, with the commensurate additional public comment period.

DSEIS Contention 6: Failure to Adequately Describe or Analyze Proposed Mitigation Measures

The DSEIS violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations by failing to include the required discussion of mitigation measures.

Basis and Discussion:

This contention is one of omission and thus requires no expert opinion in support. However, the Supplemental Declaration of Dr. Robert Moran provides additional support for this contention. See e.g., Moran Suppl. Decl. at ¶ 114 ("the mitigation consists only of proposals to make plans to restore groundwater in the future. There is no detail as to the effectiveness of these proposed mitigation measures, nor any analysis of whether any such plans have succeeded in the past."); ¶¶ 92-94, 102-103, 104-113, 116-119.

NRC regulations at 10 C.F.R. §§ 51.10, 51.70, and 51.71 require all DSEIS documents to include all analyses required under NEPA, and that compliance with NEPA "be supported by evidence that the necessary environmental analysis have been made." With respect to mitigation, NEPA requires the agencies to: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," 40 CFR § 1502.14(f); and (2) "include discussions of: . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 CFR § 1502.16(h). NEPA regulations define "mitigation" as a way to

avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§ 1508.20(a)-(e). "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989).

Specifically in the mining context, federal courts hold that NEPA also requires that the agency fully review whether the mitigation will be effective. See *South Fork Band Council v. Dept. of Interior*, 588 F.3d 718, 728 (9th Cir. 2009). "The [agency's] broad generalizations and vague references to mitigation measures … do not constitute the detail as to mitigation measures that would be undertaken, and their effectiveness, that the [agency] is required to provide." *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1380-81 (9th Cir. 1998). The DSEIS's reliance on a future, as yet-unsubmitted, mitigation to prevent/mitigate adverse impacts to these resources also violates NRC duties under NEPA and the National Historic Preservation Act [NHPA]. The NHPA, and its implementing regulations, require full review of these impacts as part of the public review process – something which has not occurred here.

Thus, to the extent NRC relies on mitigation for any impacts, such mitigation must be specifically spelled-out, at least in reasonable detail, and the effectiveness of the proposed mitigation must be analyzed. In this case, the DSEIS expressly relies on mitigation in concluding that impacts are "small" and in justifying a preliminary recommendation to issue the proposed license. DSEIS at xlv, xxx. Unfortunately, the proposed mitigation consists largely, if not exclusively, of a list of plans to be developed later, outside the NEPA process. DSEIS at 6-1 through 6-19. Much like the failure to analyze baseline data, the DSEIS fails to provide the any of the required detailed analysis of proposed mitigation measures, and makes no attempt to

evaluate the effectiveness of any of the proposed mitigation. For instance, the DSEIS repeatedly refers to Powertech's commitment to restore groundwater back to its pre-mining condition. "The applicant will also be required to restore groundwater parameters affected by ISR operations to levels that are protective of human health and safety." DSEIS at 2-69. The DSEIS similarly simply states that Powertech will be required to restore aquifers to background concentrations. E.g., DSEIS at 4-51, 5-52, 4-64. However, such assurances, without any evaluation of how effective these restorations efforts are expected to be, do not satisfy NEPA.

Here, historic evidence demonstrates that ISL uranium mines have a very poor record of restoring ground water aquifers – in fact, none have ever actually restored an aquifer. Indeed, as recently described by the U.S. Geological Survey, "**to date, no remediation of an ISR operation in the US has successfully returned the aquifer to baseline conditions. Often at the end of monitoring, contaminants continue to increase by reoxidation and resolubilation of species reduced during remediation."** J.K. Otton, S. Hall, "In-situ recovery uranium mining in the United States: Overview of production and remediation issues," U.S. Geological Survey, 2009 (IAEA-CN-175/87)(emphasis added)(attached to OST comments on the DSEIS as Exhibit 4). Similar post-mining increases in contamination levels in impacted aquifers are described in more detail in other USGS publications. See Hall, S. "Groundwater Restoration at Uranium In-Situ Recovery Mines, South Texas Coastal Plain," USGS Open File Report 2009-1143 (2009)(attached to OST comments on the DSEIS as Exhibit 5). Independent research focused on ISL uranium mining efforts in Texas also demonstrated the ineffectiveness of industry and regulatory agency assurances of the ability to restore aquifers to pre-mining water quality. Darling, B., "Report on Findings Related to the Restoration of In-Situ Uranium Mines in South Texas," Southwest Groundwater Consulting, LLC (2008) (attached to OST comments on the

DSEIS as Exhibit 6). These issues echo the issues regarding repeated failures of industry and regulators to meet pollution control assurances as set forth in the Oglala Sioux Tribe's successful Petition to Intervene in the Dewey-Burdock licensing process. Petition to Intervene at 1-11 (attached to OST comments on the DSEIS as Exhibit 7). Lastly, recent investigative journalism pieces have also exposed the lack of effective mitigation for ISL uranium mining operations such as that proposed at Dewey-Burdock. See Lustgarten, Abrahm, "On a Wyoming Ranch, Feds Sacrifice Tomorrow's Water to Mine Uranium Today," ProPublica, Dec. 26, 2012 (attached to OST comments on the DSEIS as Exhibit 8).

The ISL industry's historic and ongoing inability to control aquifer contamination and restore groundwater impacted by ISL uranium mining must be acknowledged, documented, and competently addressed within the NEPA process. While the DSEIS presents some general methods for restoration of the groundwater following mining operations, it does not provide detail as to how this proponent expects to succeed where all others have failed, assess any objective criteria to measure the (in)effectiveness of these methods, address any corrective measures should predictable failures occur, nor reveal how these issues affect the potential impacts of the proposed project. This includes the failure in the DSEIS to assess its plan to review groundwater restoration only for a period of 12 months. DSEIS at 2-37. There is no support of basis for this time period, nor any discussion of the basis or effectiveness of such a time period. See Moran Suppl. Decl. at ¶ 115.

A detailed evaluation of the effectiveness of any proposed mitigation measure is required by NEPA. Disclosure and analysis of mitigation alternatives in a DSEIS is particularly necessary in light of the documented inability of the ISL uranium mining industry to operate and close without causing groundwater contamination. This lack of analysis of proposed mitigation

measures is expansive, and not limited to ground water mitigation. The current mitigation measure discussion consists of a multi-page chart which simply lists a series of proposed mitigation measure, with no elaboration or other analysis of how the operator expects to accomplish these items, or the expected effectiveness/limitations of each measure, as required by NEPA. To comply with NEPA, each mitigation measure must be detailed with specific description, supporting data, and analysis of process and effectiveness within the context of a Draft NEPA document. As it stands, the NRC must conduct this necessary work, then re-issue the DSEIS for meaningful public and agency review.

DSEIS Contention 7: The DSEIS Fails to Include a Reviewable Plan for Disposal of 11e2 Byproduct Material

The DSEIS indicates that Powertech may or may not use the White Mesa Uranium Mill in Utah, or some other unidentified facility, for disposal of the 11e2 Byproduct generated at the proposed ISL Facility. It is not sufficient, however, for a DSEIS to avoid a meaningful review of impacts by merely stating that permanent disposal will occur in conformance with applicable laws. This lack of analysis violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations.

The very reason for the NEPA process is to ensure that the problems associated with mill tailings which UMTRCA addresses are fully analyzed and thus do not recur under the modern licensing regime. Nowhere do the regulations or NEPA allow the agency to merely assert that tailings will be handled in accordance with applicable law. The opposite is required by federal law: the DSEIS must analyze all impacts associated with permanent disposal of wastes generated at the facility.

Basis and Discussion:

This contention is one of omission, and thus does not require expert support. The relevant regulations applicable to new uranium processing operations state in plain language:

> ***Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling***, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31(h) to include in a license application ***proposed specifications relating to*** milling operations and ***the disposition of tailings or wastes resulting from such milling activities***.

40 C.F.R. Part 40 Appendix A (emphasis added). This regulation implements the UMTRCA amendments to the Atomic Energy Act, which require the NRC to ensure that the specific proposal for disposition of tailings and wastes involved in milling is subjected to review in the initial license application. However, it is impossible to determine, based on the DSEIS whether any specific plans exist for the disposition of the 11(e)2 Byproduct that will be produced by Powertech and what impacts such disposition would entail. Although specifically referenced, there is no analysis of whether or not Utah law or the Energy Fuels license would allow the transport and disposal of Powertech's 11(e)2 byproduct. Importantly, although Utah law and license terms may be more stringent than NRC's, no analysis is contained in the SDEIS.

The failure to address disposal requirements for 11e2 byproduct is not a technical deficiency that can be ignored or pushed off until a later time. Rather, the agency has a duty to provide specific information on this major feature of an ISL license in a Draft EIS in order to allow the Tribe, the public, NRC, and other government decisionmakers to conduct a meaningful analysis of the full scope of environmental impacts involved with Powertech's license application.

Moreover, the policies set forth by NEPA prevent the NRC staff from segmenting the disposal issues from the inquiry into whether applicant will be allowed to create 11e2 Byproduct

material in the first instance. *In re Pac. Gas & Elec. Co.*, 67 N.R.C. 1, 13 (N.R.C. Jan. 15, 2008)("There is no genuine dispute that NEPA and AEA legal requirements are not the same [. . .] and NEPA requirements must be satisfied."). Failure to identify and analyze the permanent disposal facility in the DSEIS avoids examination of all direct, indirect, and cumulative impacts of the proposal, as required by NEPA. *Custer County Action Ass'n v. Garvey*, 256 F.3d 1024, 1035 (10th Cir. 2001)(Where a "federal action" exists, the NEPA process must "analyze not only the direct impacts of a proposed action, but also the indirect and cumulative impacts of 'past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.'").

Where "federal action" triggers NEPA -- here, the applicant's proposal to conduct ISL mining activities -- an agency cannot define "the project's purpose in terms so unreasonably narrow as to make [NEPA] 'a foreordained formality.'" *City of Bridgeton v. FAA*, 212 F.3d 448, 458 (8th Cir. 2000)(citations omitted). Here, NEPA mandates that the NRC consider the ISL mining activities which create tailings at the same time it considers the specific method, transportation requirements, and site for tailings disposal. This mandate of federal law attaches at such time as the need for disposal is reasonably foreseeable, which occurs before publication of the DSEIS, and not at a later time to be determined.

The CEQ regulations that apply to each agency's implementation of NEPA state that the requisite site-specific environmental impact statement should be available at all stages of the decision-making process, not merely at the end of that process as a "rubber stamp" to approve the environmental impacts of the process. Because the DSEIS requires extensive, site-specific consideration -- including but not limited to, access, geology, hydrogeology, quantitative impacts upon water supplies for domestic use, livestock, agriculture, non-domesticated plants and

animals, and qualitative on-going and subsequent impacts to water supplies of all the same due to releases of chemicals into the surface, groundwater and aquifers flowing through the licensed site -- failure of the site-specific environmental impact statement to inform every step of the license application decision-making process means that the final decision cannot comply with NEPA. At a minimum, without a completed, site-specific environmental impact statement as a guide, NRC staff, the public, other governmental entities, and the Tribe have no basis to identify and access alternatives to the license application and find ways to avoid or mitigate possible adverse environmental impacts of the licensed activity.

These NEPA requirements are consistent with the requirement in Subpart 40, Appendix A's *Criteria One,* which requires that the applicant and the NRC examine "alternative tailings disposal sites" when considering a milling application. *See Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 299 (D.C.Cir. 1988)(*citing Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976)(formulation of alternatives during the NEPA disclosure and study process is at the heart of the NEPA-mandated procedures).

DSEIS Contention 8: Requiring the Tribe to Formulate Contentions before a Final EIS is Released and Failing to Follow Scoping Process Violates NEPA

The procedure used by NRC to consider the Powertech application fails to satisfy the public participation and informed decision-making mandates of NEPA, as implemented through 10 C.F.R. §§ 51.28, 51.29, 51.10, 51.70 and 51.71, and the National Environmental Policy Act's implementing regulations.. The procedural requirements of NEPA are designed to benefit those who participate in agency decision-making processes and to require that the agency take a "hard look" at the impacts, alternatives, mitigation measures, and other aspects of a federal action at the earliest stages of the decision process, in recognition that when a "decision is made without

the information that NEPA seeks to put before the decisionmaker, the harm that NEPA seeks to prevent occurs." *See*: *Sierra Club v. Marsh*, 872 F.2d 497, 500 (1st Cir. 1989) *quoting Commonwealth of Massachusetts v. Watt*, 716 F.2d 946 at 953 (1st Cir. 1983).

By contrast, the procedure used in the present proceedings denies the Tribe and the NRC the information that a NEPA analysis provides. Importantly, this interdisciplinary analysis and information is provided during the NEPA process by the applicant, staff, and members of the public. All of these sources of information are recognized by NEPA, but the Tribe is prejudiced here when significant sources of information are not available until the NRC has taken final action to accept or deny its contentions. It is of no consequence that the NRC provides an opportunity to seek permission to pursue new or rejected contentions later in the proceedings, based on information revealed in the NEPA analysis. *See*: *Id.* ("Once large bureaucracies are committed to a course of action, it is difficult to change that course - even if new, or more thorough, NEPA statements are prepared and the agency is told to 'redecide.'").

Basis and Discussion:

NRC Staff has violated NEPA by requiring that the Tribe formulate and submit detailed contentions before the NEPA process is complete, denying the Tribe the benefit of a final NEPA analysis. This statutory violation is not remedied by providing a *post hoc* NEPA analysis, as is contemplated by the NRC regulations. Failure to conform to the timing policies and requirements of NEPA wastes resources of both the NRC Staff and the Tribe. The procedural harms are demonstrated by previously aborted attempts to gain approval of plans to mine in the Dewey-Burdock area: "A Draft Environmental Statement (DES) was prepared by TVA to address the impact of a proposed underground mine in the Dewey-Burdock area, but TVA never completed the NEPA process." Powertech Environmental Report at 1-4.

Conducting NEPA analysis early in the process is necessary to meet the requirement that NEPA analysis must precede the decision-making process, lest the agency unleash a "bureaucratic steam roller" aimed at approval, but without the public participation and informed decisionmaking requirements of NEPA." See *Davis v. Mineta*, 302 F.3d 1104, 1115 (10th Cir. 2002. In short, the procedures the NRC used for the present application fail to satisfy NEPA's purpose, which is to influence the decision making process "by focusing the [federal] agency's attention on the environmental consequences of a proposed project," so as to "ensure[] that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). Where NRC Staff has applied regulations in violation of a statutory duty, or where the application of the regulations reveals that such regulations violate a statutory duty, NRC cannot rely on such agency regulations as a basis to violate the a statute. *United States v. Haggar Apparel Co*., 526 U.S. 380, 392 (U.S. 1999)(where a "regulation is inconsistent with the statutory language or is an unreasonable implementation of it […], the regulation will not control.").

Relatedly, the DSEIS was issued without the benefit of a required scoping process. 40 C.F.R. § 51.28(a) speaks in mandatory terms ("shall") when discussing the parties to which the NRC must invite to scoping. These parties include the Tribe, as an admitted party to this proceeding. Further, 40 C.F.R. § 51.29(a) sets forth a detailed procedure for scoping that is necessary to ensure compliance with NEPA. These steps were not conducted in this case. This denied the Tribe the opportunity, among other things, to provide input to help define the proposed action, identify the issues NRC had identified as significant issues to be analyzed in depth, which would be eliminated from study and why, and to ensure that other environmental

review and consultation requirements related to the proposed action may be prepared concurrently and integrated with the DSEIS. 40 C.F.R. § 51.29(a)(1)-(5).

Further, 40 C.F.R. § 51.29(b) requires that NRC "will prepare a concise summary of the determinations and conclusions reached, including the significant issue identified, and will send a copy to each participant in the scoping process." In this case, no such summary was prepared. The lack of this process, followed by the requirement that the Tribe provide all of its comments and contentions on the DSEIS instead of during scoping deprives the Tribe of the ability to have its concerns raised at the proper time ("as soon as practicable")(§ 51.29(a)) and to have significant issues identified and addressed, as contemplated by the regulations. The result is a 'back-ended' process that requires the Tribe to identify those significant issues only now at the DSEIS stage, and denies the Tribe the opportunity to provide comment on a DSEIS that takes full account of those significant issues. This process fails to comply with NEPA or NRC regulations.

DSEIS Contention 9: The DSEIS Fails to Consider Connected Actions

The Powertech proposal to conduct ISL operations and conduct associated waste disposal activities is being considered by multiple federal agencies. However, NRC, the lead agency for purposes of NEPA - has failed engage these other agencies and therefore has failed to comply with the "action-forcing" mandate and purpose of NEPA. These failings violate 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations.

Basis and Discussion:

The mandate and purpose of NEPA is to influence the decision making process "by focusing the [federal] agency's attention on the environmental consequences of a proposed

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

STATEMENT OF CONTENTIONS OF THE OGLALA SIOUX TRIBE FOLLOWING ISSUANCE OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309, and this Board's Scheduling Order dated March 4, 2013, Intervenor Oglala Sioux Tribe (Tribe) sets forth the following statement on contentions in this proceeding regarding the Final Supplemental Environmental Impact Statement (FSEIS) for Powertech (USA) Inc.'s proposed Dewey-Burdock Project in-situ leach (ISL) uranium mine. The Tribe's standing was confirmed in this Board's Order of August 5, 2010, which was not appealed. As such, pursuant to 10 C.F.R. § 2.309(c)(4), the Tribe is not required to address issues related to standing in this filing.

The Oglala Sioux Tribe is a federally-recognized Indian Tribe, located on the Pine Ridge Reservation. The Oglala Sioux Tribe is a body politic comprised of approximately 41,000 citizens, with territory of over 4,700 square miles in the southwestern portion of South Dakota. The Oglala Sioux Tribe is the freely and democratically-elected government of the Oglala Sioux people, with a governing body duly recognized by the Secretary of Interior. The Oglala Sioux Tribe is the successor in interest to the Oglala Band of the Teton Division of the Sioux Nation, and is a protectorate nation of the Unites States of America. The Oglala Band reorganized in

the FSEIS confirms that NRC staff did not seek expert consult with U.S. FWS in preparation of the SEIS:

> NRC staff expect that similar potential impacts described in SEIS Section 4.6.1.1.1.1.2, including injury or mortality from vehicles and electrical lines, fragmentation, vegetation conversion, and loss of breeding habitat, for nongame and migratory birds will also potentially impact chestnut-collared longspur, dickcissel, loggerhead shrike, and blue-grey gnatcatcher.

FSEIS at 4-98. Reliance on what "NRC staff expect" cannot substitute for the expert analysis of U.S. FWS that is required by federal law. See FEIS at 4-86 - 4-92 (portion of Section 4.6.1.1.1.1.2 that addresses birds and raptors).

NRC Staff correspondence presented for the first time in the FSEIS regarding ESA consolation duties confirm that MBTA and Eagle Protection Act consultation with U.S. FWS has not taken place, even though U.S. FWS alerted NRC Staff to these consolation requirements during correspondence regarding Endangered Species Act requirements. FSEIS at A-157. In short, NRC Staff completed the NEPA process without the procedural and substantive protections afforded these species by NEPA, MBTA, and the Eagle Protection Act.

FSEIS Contention 2: Inadequate Analysis of Direct, Indirect, and Cumulative Impacts of Disposal of Solid 11e2 Byproduct Material or the Reasonable Alternatives to Transportation and Disposal at the White Mesa Facility

The FSEIS indicates that after the DSEIS was released for comment, Powertech, NRC staff, and other ISL facility operators have finalized their designation of the White Mesa Uranium Mill near the White Mesa Ute Community in Utah as the site for disposal of more than 300 cubic yards of 11e2 Byproduct generated annually by at the proposed Powertech Facility and other ISL facilities in the region. FSEIS at 2-53. This information was not available in the DSEIS and thus forms the basis for a new contention. The FSEIS correctly confirms that the

solid 11e2 Byproduct Materials is subject to licensing requirements of 10 CFR Part 40, Appendix A, Criterion 2. FSEIS at 2-53.

The White Mesa Mill is not licensed to receive or dispose of Powertech's solid 11e2 Byproduct Material. The draft license does not authorize Powertech to dispose of solid 11e2 Byproduct Material at White Mesa. Although comparisons of alternatives forms the heart of the NEPA process, the impacts of transporting and disposing of the solid 11e2 Byproduct Material in Utah was not compared against any other alternative disposal site. Further, neither the FSEIS nor the GEIS address the cumulative impact or alternatives to Utah licensing the White Mesa Mill as the disposal facility for the NRC-licensed ISL wastes.

The FSEIS fails to provide a meaningful review of foreseeable impacts of generating many tons of solid 11e2 Byproduct Materials by merely stating that permanent disposal will occur in conformance with applicable laws, but does not analyze any of the applicable criteria of regulations applicable to solid 11e2 Byproduct Material disposal. FSEIS at 2-53. This lack of NEPA analysis violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations.

A properly conducted NEPA process must ensure that the impacts and alternatives of creation, storage, and disposal of mill tailings – aka 11e2 Byproduct Material - are fully analyzed and addressed. Permanent disposal of solid 11e2 Byproduct material is a central feature of the modern Uranium Mill Tailings Radiation Control Act licensing regime under which Powertech seeks to operate its ISL facility. 10 C.F.R. Part 40, Appendix A. Nowhere do NRC regulations or NEPA allow NRC staff to merely assert that solid 11e2 Byproduct Materials will be handled in accordance with applicable law without further analysis. The opposite is required by federal law: now that the FSEIS, for the first time, firmly identifies the White Mesa Mill as to repository

for its waste, the FSEIS must analyze all impacts and alternatives involved with disposing of wastes created at an ISL facility, including the permanent disposal of solid 11e2 Byproduct Materials generated at the facility. The FSEIS reveals that NRC staff proposes to issue a license permitting Powertech to create and store solid 11e2 Byproduct Materials (aka tailings or UMTRCA wastes) on site for an indefinite period, with no disposal license, and no analysis of the impacts or alternatives to shipment and disposal at White Mesa.

This contention is a combination contention of omission and inadequate NEPA analysis, and thus does not require expert support. The relevant regulations applicable to new uranium processing operations state in plain language:

> ***Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling***, or byproduct material at sites formerly associated with such milling, ***is required by the provisions of § 40.31(h) to include in a license application proposed specifications relating to*** milling operations and ***the disposition of tailings or wastes resulting from such milling activities***.

40 C.F.R. Part 40 Appendix A (emphasis added). This regulation implements the UMTRCA amendments to the Atomic Energy Act, which require NRC to ensure that the specific proposal for disposition of tailings and wastes involved in milling is subjected to license scrutiny and approval in initial license application that allows creation of the wastes in the first instance. However, the FSEIS now identifies a plan to dispose of the 11(e)2 Byproduct that will be produced by Powertech and other ISL facilities. The FSEIS confirms that White Mesa lacks a license approval from Utah to accept and dispose of the wastes created by the draft license or other NRC-licensed ISL facilities in the region. FSEIS at 3-116. However, the FSEIS does not analyze the impacts such disposition would entail, does not compare those impacts to other reasonable disposal alternatives, and does not analyze whether disposal at White Mesa facility

can be accomplished in accordance with 40 C.F.R. Part 40 Appendix A or the corresponding Utah Agreement State provisions.

The FEIS contains is no analysis of whether or not Utah law or the Mill owner's (Energy Fuels) license would allow the interstate transport and disposal of Powertech's 11(e)2 byproduct given the history of leaks and violations at the White Mesa facility. Interstate transportation impacts across the Intermountain West are recognized, but are dismissed without specific analysis asserted on the naked assertion that impacts of shipping yellowcake to Tennessee in sealed containers poses the same risks as shipping solid 11e2 Byproduct Materials across the Intermountain West, for disposal at White Mesa. FSEIS at 4-22. The FSEIS presents no information on the type of containers that would be required for the shipments to White Mesa and no corresponding information on the moisture content of the solid 11e2 Byproduct Materials or the anticipated decommissioning wastes. FSEIS at 4-22.

Although NEPA requires comparison across reasonable alternatives, the FSEIS identifies no other site that is currently licensed to dispose of 11e2 Byproduct Material. The reader of the FSEIS is left to conclude that no other licensed facility exists in the United States that could accept the Powertech 11e2 Byproduct Material. Whether or not this is the case, White Mesa is not currently licensed to accept Powertech wastes, or wastes from other facilities identified in the GEIS.

The failure to address and license the disposal of solid 11e2 Byproduct Material is not a technical deficiency that can be ignored or pushed off until a later time. UMTRCA requires disposal of solid 11e2 Byproduct Material is subject to licensing, from the time the facility is first issued a license to create these regulated wastes to such time as final disposal and closure

takes place. 10 C.F.R. Part 40, Appendix A. Both the draft license and the FSEIS ignore this key feature of the post-UMTRCA licensing requirements.

Further, the agency has a duty to provide specific information, analysis, and alternatives regarding on this major feature of an ISL license in order to allow the Tribe, the Ute Mountain Ute Tribe, the public, NRC, and other government decisionmakers to conduct a meaningful analysis of the full scope of environmental impacts involved with Powertech's license application.

The policies set forth by NEPA prevent the NRC staff from segmenting the disposal issues from the inquiry into whether applicant will be allowed to create solid 11e2 Byproduct Material in the first instance. *In re Pac. Gas & Elec. Co.*, 67 N.R.C. 1, 13 (N.R.C. Jan. 15, 2008)("There is no genuine dispute that NEPA and AEA legal requirements are not the same [. . .] and NEPA requirements must be satisfied."). Failure to analyze the permanent disposal facility in the FSEIS avoids examination of all direct, indirect, and cumulative impacts of the proposal and alternative disposal options, as required by NEPA. *Custer County Action Ass'n v. Garvey*, 256 F.3d 1024, 1035 (10th Cir. 2001)(Where a "federal action" exists, the NEPA process must "analyze not only the direct impacts of a proposed action, but also the indirect and cumulative impacts of 'past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.'").

Where "federal action" triggers NEPA -- here, the applicant's proposal to conduct ISL mining activities that create solid 11e2 Byproduct Materials -- an agency cannot define "the project's purpose in terms so unreasonably narrow as to make [NEPA] 'a foreordained formality.'" *City of Bridgeton v. FAA*, 212 F.3d 448, 458 (8th Cir. 2000)(citations omitted). Here, NEPA mandates that the NRC consider the ISL mining activities which create tailings at

the same time it considers the specific method, transportation requirements, and site for the solid 11e2 Byproduct Material disposal. This mandate of federal law attaches at such time as the need for disposal of solid 11e2 Byproduct material is reasonably foreseeable and is already confirmed in the FSEIS as a necessary component of the licensed activity. FSEIS at 2-53. Ongoing NRC problems with delaying waste disposal decisions until after wastes are created should confirm that NEPA analysis and UMTRCA licensing cannot reasonably wait until a later time to be determined after the waste-generated activity is licensed. See *New York v. NRC*, 681 F.3d 471, 483 (D.C. Cir. 2012)(rejecting NRC attempts to avoid NEPA analysis of permanent disposal options).

The NRC regulations and CEQ regulations that apply to each agency's implementation of NEPA state that the requisite site-specific environmental impact statement for disposal activities should be available at all stages of the decision-making. Id. Upon selecting the White Mesa Mill as the proposed destination for the waste from this proposal and the region, as has been done at the FSEIS stage, the NRC Staff must follow through with the necessary analysis. The FSEIS lacks site-specific analysis of disposal alternatives, including, but not limited to, access, geology, hydrogeology, quantitative impacts upon water supplies for domestic use, livestock, agriculture, non-domesticated plants and animals, and qualitative on-going and subsequent impacts to water supplies of all the same due to releases of chemicals into the surface, groundwater and aquifers flowing through the licensed disposal site.

Failure of the FSEIS to analyze the site-specific impacts and alternatives sites, along with cumulative impacts of shipping other regional wastes not analyzed in the GEIS, means that the final decision cannot comply with NEPA. At a minimum, without a completed, site-specific environmental impact statement as a guide, NRC staff, the public, other governmental entities,

and the Tribe have no basis to identify and access alternatives to the license application and find ways to avoid or mitigate possible adverse environmental impacts of the licensed activity.

These NEPA requirements are consistent with the requirement in Subpart 40, Appendix A's *Criteria One*, which requires that the applicant and the NRC examine "alternative tailings disposal sites" when considering a milling application. See *Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 299 (D.C. Cir. 1988)(*citing Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976)(formulation of alternatives during the NEPA disclosure and study process is at the heart of the NEPA-mandated procedures).

FSEIS Contention 3: Failure to Provide NEPA Comment Opportunity for Impacts Associated with Air Emissions

The DSEIS violates 10 C.F.R. §§ 51.10, 51.70, 51.71, the National Environmental Policy Act and implementing regulations, by failing to conduct the required "hard look" analysis at impacts of the proposed mine associated with air emissions and liquid waste disposal.

Although significant new information was provided in the FSEIS, no opportunity was provided for the Tribe or the public to comment on the data and analysis provided for the first time in the FSEIS. FSEIS at E-164 to E-167 (summarizing new air information and analysis in the FSEIS). This is a contention of omission and of inadequate NEPA analysis, where a main purpose of NEPA - allowing public involvement and comment - was denied by delaying meaningful analysis of air emissions until the FSEIS. This NEPA analysis used by NRC denied the public and NRC decisionmakers the benefit of comments of other agencies with jurisdiction, control, and expertise on air emissions, including the Environmental Protection Agency and the National Park Service.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	January 9, 2015

Oglala Sioux Tribe's Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law

In accordance with this Board's Order dated December 10, 2014 (Order Admitting Exhibits, Closing the Record on Contention 3 and Setting Briefing Dates), Intervenor Oglala Sioux Tribe ("OST" or "Tribe") hereby submits this Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law with respect to Contentions 1A, 1B, 2, 3, 4, 6, and 9 as previously admitted in this proceeding.

INTRODUCTION AND SUMMARY

Throughout this proceeding, NRC Staff has supported the applicant and its mining proposal while inappropriately and illegally deferring necessary and required reviews of significant environmental and cultural impacts to future post-license and non-public analyses. The license now, analyze later approach fails to meet the legal standards of the National Environmental Policy Act and National Historic Preservation Act, and falls short of applicable NRC regulatory requirements. The Board is presented with the opportunity to correct the NRC Staff errors, as promoted by the applicant, by invalidating the license, vacating the application, and remanding the matter to allow Azarga Uranium Corporation to begin the licensing process anew. Powertech (USA), Inc. no longer exists.

Thus, these two contentions are separate in their legal bases and supporting facts. Contention 1A deals with the failure of NRC Staff to comply with NEPA, and implementing regulations, before issuing the FSEIS. Contention 1B deals with NRC Staff's failure to comply with the NHPA, and implementing regulations before issuing the license. Where the original contention is now split into two separate contentions, NRC Staff can no longer defend a lack of proper NEPA review by relying on non-NEPA documents that attempt to achieve post-licensing compliance with the NHPA. The caselaw supports the independent review of NEPA and NHPA compliance where "compliance with the NHPA 'does not relieve a federal agency of the duty of complying with the impact statement requirement 'to the fullest extent possible.'" *Lemon v. McHugh*, 668 F. Supp. 2d 133, 144 (D.D.C. 2009) *quoting Preservation Coalition, Inc. v. Pierce*, 667 F.2d 851 (9th Cir. Idaho 1982) *quoting* 42 U.S.C. § 4332.

Contention 1A: **Failure to Meet NEPA Requirements Regarding Protection of Historical and Cultural Resources.**

Contention 1A asserts that NRC Staff failed to adequately analyze cultural and historic resources under NEPA in an environmental document before the license issues. "'Environmental document' includes the documents specified in 40 C.F.R. § 1508.9 (environmental assessment), § 1508.11 (environmental impact statement), § 1508.13 (finding of no significant impact), and § 1508.22 (notice of intent). 40 C.F.R. § 1508.10. NEPA and its implementing regulations from both NRC and CEQ require that the environmental document on which action is based must contain analysis beyond that contained in the FSEIS here.

Specifically, 10 C.F.R. § 51.71(d) and NEPA require each FSEIS to include an analysis of all environmental impacts of a proposed action, including cultural impacts. See also, August 19, 2014 Transcript (Ms. Yilma) at p. 785, lines 14-19. 10 C.F.R. § 51.70(a) places an affirmative duty on NRC Staff to conduct all NEPA analysis in conjunction with other surveys or

studies required under federal law. This includes necessary surveys required under NHPA. 10 C.F.R. § 51.60 requires the presentation of the information specified in 10 C.F.R. § 51.45. In turn, 10 C.F.R. § 51.45(b) requires a "description of the environment affected" and a discussion of the "impacts of the proposed action on the environment." These requirements are also mandated under the National Environmental Policy Act.

In this case, the FSEIS contains an inadequate analysis of cultural impacts. These concerns have been repeatedly presented to NRC Staff and the applicant. Yet, despite having years to do so, neither has conducted an adequate and competent cultural resources survey, impacts analysis, or mitigation review within the project area, as required by NEPA. This is even despite express promises from NRC Staff to do so. As stated in the NRC Staff Answer to Contentions on the Draft Supplemental Environmental Impact Statement:

> As the Staff explained when it issued the DSEIS, however, it is working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment.

NRC Staff Answer at 13.

Despite this promise, the only Class III level archaeological survey conducted in this case is the original survey by applicant witness Dr. Hannus and the students at Augustana College. The Augustana College survey was presented by the applicant in the Environmental Report, at Appendix 4.10-A. Exhibit APP-009. This submittal demonstrates that the Augustana College survey left a significant number of archaeological, historical, and traditional cultural resources on site unevaluated; therefore, the potential impacts to these resources have not been addressed. Among these are 87 known sites. ER, Appendix 4.10-A at ii. Importantly, the Environmental Report fails to provide any identifiable survey protocol or methodology developed with any involvement by the Tribe. As a result, this number is undoubtedly higher.

Further, there are discrepancies between the number of sites identified in the report included in the Application at ER, Appendix 4.10-A and sworn testimony given by the state historic preservation officer in a State of South Dakota proceeding related to this matter, such that significant sites are not be included or discussed in the Application. See Declaration of Wilmer Mesteth at ¶¶ 15-19; Exhibit OST-15. The result is that no NEPA environmental document contains a scientifically-defensible protocol and methodology for analysis of cultural resources, in violation of NEPA. The FSEIS admits this deficiency by discussing the NRC Staff's unsuccessful attempt to secure a scientifically-valid independent cultural survey of the project area, and further confirms that instead of having such a survey completed, NRC Staff abandoned that approach and did not pursue it any further. FSEIS at 1-23 to 24; Exhibit NRC-008-A.

The primary reliance by NRC Staff and the applicant on the Augustana study is not supportable – particularly given the testimony at the hearing. Dr. Hannus, who lead the Augustana study at the behest of the applicant admitted that his team is not "in any way qualified to be conducting TCP surveys" and further conceded that given the heightened cultural issues of the Sioux Tribes that "there will be sites that will need to be addressed archaeologically and there will be probably sites that need to be addressed as traditional cultural properties." August 19, 2014 Transcript at p. 858, lines 4-8; 12-20. See also August 19, 2014 Transcript at p. 859, lines 18-24 (Dr. Hannus)("And again, that really should clearly, I think, show us that for us to then be able to make some kind of in roads ourselves, being not of Native background, to identification of sites that are traditional cultural properties that have a tie to spirituality and so on, it is not in our purview to do that.").

Applicant witness Dr. Luhman reiterated this point, confirming that "a traditional Level 3 survey may, in fact, encounter some resources that would be associated with Native American groups or which they would identify. But, they wouldn't necessarily identify all of the resources primarily because some of the knowledge is not available to those conducting the Level 3 survey. That would be provided by the Native American groups themselves." August 19, 2014 Transcript at p. 762, line 24 to p. 763, line 6. See also, August 19, 2014 Transcript at p. 764, lines 14-18 (OST witness Mr. Mesteth)("[w]e're the ones that are the experts, not the archaeologists. They make assumptions and hypotheses about our cultural ways and it's not accurate. Some of the information is not accurate. And that's why we object in certain situations."); p. 765, line 25 to p. 766, line 9 (Mr. Mesteth).

Importantly, despite NRC Staff's heavy reliance on Augustana's initial work included in the application material and on Augustana to conduct all the additional field work, Dr. Hannus testified that his office has never worked on any projects that considered the cultural resources at a site. August 19, 2014 Transcript at p. 843, lines 4-7. Despite this fact, NRC Staff witness Dr. Luhman testified that NRC Staff relied on Augustana to conduct all of the initial and follow up field survey work at the site, with the exception of the three non-Sioux tribes that submitted reports. August 19, 2014 Transcript at p. 818, lines19-22.

Upon the Sioux Tribes' request as early as 2011 that cultural resource surveys be conducted at the site, NRC Staff prompted the applicant to bring in Dr. Sabastian and her firm to coordinate this review. August 19, 2014 Transcript at p. 784, lines 20-25 (Dr. Sabastian). However, Dr. Sabastian also testified that she also has never been involved in any kind of "actual physical on-the-ground TCP survey-kind of thing that we're talking about." August 19, 2014 Transcript at p. 846, lines 9-21.

Lastly, Mr. Fosha testified that he worked with the applicant and Augustana "from the very start of the project, so the bulk of this material is a result of myself reviewing what Augustana College had been doing in the field." August 19, 2014 Transcript at p. 865, lines 3-6. Mr. Fosha testified that he met with the applicant and between them discussed methods for identification of sites and the methods and steps to take "throughout the process," but only related to the State of South Dakota permit, and having "nothing to do with the NRC permit or anything like that" – even remarking that "up until the point where Augustana was nearly finished I was the only review agency on this project." August 19, 2014 Transcript at p. 865, line 23 to p. 866, line 5. Despite Mr. Fosha being the only person giving any direction to Dr. Hannus' Augustana team, Mr. Fosha testified that his experience and focus was solely "the field of archaeology" and not culturally as to the concerns of the Tribes. August 19, 2014 Transcript at p. 867, lines 14-20.

The only NRC Staff or applicant witness that testified to having any experience in conducting cultural resource field surveys was NRC Staff witness Dr. Luhman. However, as stated, Dr. Luhman admitted to relying exclusively on Augustana for both the initial field work and the follow up field studies, even though Dr. Hannus' testimony had confirmed that Augustana had no culturally relevant experience. August 19, 2014 Transcript at p. 818, lines19-22 (Dr. Luhman). Dr. Luhman did testify that "in those projects in which I have been involved [a cultural survey] it is typically that [the Tribes] are working alongside with the archaeological survey team as they are going about doing the survey. It could be in the preliminary stages of doing the generalized recognizance (sic) of the project area. Oftentimes the federal agency and other parties will be along that process so that there can be discussions while out in the field, and these are for sometimes very large projects. But in my experience it typically is at the same time

when there is an ongoing consultative and survey process." August 19, 2014 Transcript at p. 836, line 18 to p. 837, line 2.

Consistent with the admitted lack of any culturally relevant experience or focus by any of the prior analysts in reviewing sites for cultural resource impacts, at the live hearing NRC Staff witness Ms. Yilma admitted that no written cultural resources analysis prepared during any part of the NEPA analysis included any comments or reports from any Sioux Tribes. August 19, 2014 Transcript at p. 821, lines 3-7; *id*. at p. 875, lines 6-11. This is despite testimony from NRC Staff witness Ms. Yilma as to the Staff's recognition of the importance of the area to the Sioux from a cultural perspective from the earliest stages of the application review stage. August 19, 2014 Transcript at p. 774, line 21 to p. 775, line 1. See also, August 19, 2014 Transcript at p. 771, lines 1-7 (Ms. Yilma). NRC Staff witness Ms. Yilma also testified as to the importance and focus at least as early as 2011 by both the Sioux Tribes and within NRC Staff on the need for culturally-based field surveys in order to fulfill the NEPA and NHPA requirements. August 19, 2014 Transcript at p. 776, line 22 to p. 777, line 3; p. 790, lines 1-17. Indeed, NRC Staff witness Ms. Yilma testified that after meeting in 2011 with the Oglala Sioux, Standing Rock Sioux, Flandreau Santee Sioux, Sisseton Wahpeton (Sioux), Cheyenne River Sioux, and Rosebud Sioux (see August 19, 2014 Transcript at p. 810, lines 16-22), NRC Staff specifically deliberated about conducting an ethnographic study of the site to ensure incorporation of Sioux cultural and historic perspectives, but "the ultimate decision was instead of an ethnographic study a field survey was necessary, so we focused our attention on the field survey approach." August 19, 2014 Transcript at p. 846 line 22 to 847, lines 8. Despite admitting that it was "necessary" to the analysis, no cultural resources review or field study incorporating any Sioux cultural expertise

was ever conducted at the site or incorporated into any NEPA document. August 19, 2014 Transcript at p. 821, lines 3-7 (Ms. Yilma); *id*. at p. 875, lines 6-11 (Ms. Yilma).

Taken together, this testimony and evidence establishes NRC Staff's failure to conduct the necessary hard look under NEPA, as by their own admission, despite it being necessary to the analysis, no Sioux comments or reports were incorporated into the cultural resources reviews, and none of the parties that conducted any cultural review of the site, including field surveys, were trained, experienced, or competent to review or survey the area for, let alone determine impacts from the project to, the cultural resources of Sioux origin. In answering a follow up question by Chairman Froehlich to Dr. Hannus asking whether, as Dr. Sabastian had testified, did Dr. Hannus believe that identification of Sioux traditional sites "depends on the knowledge and traditional culture practitioners," Dr. Hannus responded: "Yes, I mean, I absolutely would have to, because there isn't any other way the framework that I work within functions." August 19, 2014 Transcript at p. 860, lines 1-8. In short, admissions and testimony confirm that NRC Staff deferred to the applicant's unqualified consultants, while rejecting proposals to incorporate Sioux cultural expertise.

The forgoing discussion and testimony helps answer the Board's question presented in the December 10, 2014 Order, asking whether federal courts have held that a Level III cultural survey satisfies NEPA requirements as to places of religious or cultural significance (as opposed to NHPA § 106 requirements). December 10, 2014 Board Order at 4. Counsel represents that despite a lengthy search, he has found no federal case law establishing any bright line rule that a Level III survey, by itself, establishes compliance with NEPA. Given the facts of this case, the answer is "no". NEPA requires a "hard look" – in this case, despite conducting a Level III survey, by their own admission none of the surveyors had any expertise or ability to conduct a

competent identification or analysis of the cultural resources at the site that would satisfy the "hard look" requirement of NEPA.

Ultimately, rather than preparing an environmental document based on a competent survey that included proper scientific expertise, proper methodology, and the participation of the Tribal representatives, NRC Staff instead simply invited Tribes to visit the site for themselves, making no provision for any methodologies or scope. August 19, 2014 Transcript at p. 847, lines 12-20 (Ms. Yilma); August 19, 2014 Transcript at p. 821, lines 3-7 (Ms. Yilma). Several Tribes, including the Oglala Sioux Tribe, rejected the terms of the NRC Staff directed survey as improper and insufficient. FSEIS at 1-25; Exhibit NRC-008-A-1. Instead of resolving these issues in an appropriate and satisfactory, NRC Staff simply charged forward, collecting information from only three (3) Tribes that did participate in the exercise (none of them Sioux) and unilaterally deeming the analysis sufficient. August 19, 2014 Transcript at p. 820, lines 18-25 (Ms. Yilma).

During this time period, NRC Staff also opted to "separate" the NHPA 106 process from the NEPA process. FSEIS at 1-26; Exhibit NRC-008-A-1. The result of this separation is that the NHPA 106 process is still ongoing, despite the finalization of the FSEIS. In and of itself, the separation of these two processes is not contrary to law. However, as it was carried forward in this case, NRC Staff deferred necessary cultural resources impact reviews, and **all** analysis of mitigation measures for these impacts, as well as project alternatives that result from that impact and mitigation analysis, to a process outside any NEPA-recognized environmental documents. As a result, regardless of how NRC Staff attempts to discharge its duties under NHPA, there is no "good faith" exemption from the "hard look" requirements of NEPA. Overall, the fact remains that the FSEIS – the relevant environmental document – lacks the required competent,

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	May 26, 2015

OGLALA SIOUX TRIBE'S PETITION FOR REVIEW OF LPB-15-16 AND DECISIONS FINDING TRIBAL CONTENTIONS INADMISSIBLE

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entitled "Government-to-Government Relations with Native American Tribal Governments" (April 29, 1994), 59 Fed. Reg. 22951, and Presidential Executive Order 13007, "Indian Sacred Sites" (May 24, 1996), 61 Fed. Reg. 26771. The federal courts echo this principle in mandating all federal agencies to fully implement the federal government's trust responsibility. See *Nance v. EPA*, 645 F.2d 701, 711 (9th Cir. 1981)("any Federal Government action is subject to the United States' fiduciary responsibilities toward the Indian tribes").

B. Relief Granted the Tribe in Prevailing on Contentions 1A and 1B

The ASLB found that the FSEIS "has not adequately addressed the environmental effects of the Dewey-Burdock project on Native American cultural, religious, and historic resources, and the required meaningful consultation between the Oglala Sioux Tribe and the NRC Staff has not taken place." LPB-15-16 at 42. Despite this finding of violations and a lack of compliance with both NEPA and the National Historic Preservation Act, the Board nevertheless allowed the Record of Decision and the license itself to stand. Federal law prohibits such a result, as it is contrary to the statutory requirement that NEPA and the NHPA compliance precede and inform the agency action, which here, is the license to conduct operations and possess/dispose of 11e2 Byproduct Material. The Commission should exercise review over this important issue to ensure that its programs maintain compliance with federal statutory mandates.

NHPA Section 106 specifically requires that the NRC "shall, **prior to the approval** of the expenditure of any Federal funds on the undertaking or **prior to the issuance of any license**, as the case may be, take into account the effect of the undertaking…." 16 U.S.C. § 470(f)(emphasis added). Similarly, "[u]nder NEPA, each federal agency must prepare an Environmental Impact Statement ('EIS') **before taking** a 'major Federal action[] significantly affecting the quality of the human environment.' 42 U.S.C. § 4332(2)(C)." *New York v. NRC*, 681 F.3d 471, 476 (D.C. Cir. 2012), *accord*, 40 C.F.R. § 1500.1(b)("NEPA procedures must

ensure that environmental information is available to public officials and citizens **before** decisions are made and **before** actions are taken.")(emphasis added).

Given that the ASLB confirmed the NRC Staff failure to comply with NEPA and the NHPA with regard to consideration of impacts to cultural and historical resources of the Oglala Sioux Tribe, the proper remedy is that employed by the federal courts up a finding of a violation of NEPA: to vacate the decision and remand back to the agency for further proceedings necessary to achieve compliance. See *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012). Here, where the licensed activity has not commenced and wastes requiring perpetual care have not been created, there is no legal or practical reason for the ASLB to keep a license in place where it has held that NRC Staff issued the license without compliance with NEPA and NHPA.

C. Contention 2: The FSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Groundwater Quality

In its Partial Initial Decision dated April 30, 2015, the ASLB ruled in favor of NRC Staff and Powertech that the FSEIS presents an adequate analysis of baseline water quality conditions at the site. This determination constitutes an error of law in that the Board misapplied Commission precedent in *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-1, 63 NRC 1, 6 (2006) by following, without detailed analysis, the ruling of another ASLB panel in *Strata Energy, Inc.*(Ross In Situ Recovery Uranium Project), LBP-15-3, 80 NRC ___ (Jan. 23, 2015).

Specifically, the ASLB misapplied the *Hydro Resources, Inc.* and *Strata* results to render ineffective both 10 C.F.R. § 51.45(b) requiring a scientifically defensible analysis of baseline water quality, and 10 C.F.R. Part 40, Appendix A, Criterion 5, requiring "complete" baseline data. The Board instead followed the NRC Staff and Powertech arguments that these provisions can be effectively supplanted by the post-licensing establishment of "pre-operational"

January 29, 2015

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
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POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

NRC STAFF'S REPLY BRIEF

I. Introduction

The NRC Staff responds to the proposed findings of fact and post-hearing briefs of the Oglala Sioux Tribe and the Consolidated Intervenors (collectively, the Intervenors).[1] The Intervenors argue in support of their seven admitted contentions, which challenge the Final Supplemental Environmental Impact Statement (FSEIS) the Staff prepared for the Dewey-Burdock Project. Below, the Staff responds to each of the Intervenors' arguments that, in preparing the FSEIS, the Staff violated the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*; the National Historic Preservation Act (NHPA), 16 U.S.C. § 470; and NRC regulations.

As the Staff explained in its initial post-hearing brief, it complied fully with all applicable laws when preparing the Dewey-Burdock FSEIS. The Staff followed NEPA and NHPA guidance when preparing both the FSEIS and the Programmatic Agreement for the Dewey-Burdock Project. Furthermore, in the FSEIS the Staff discussed environmental impacts and mitigation measures at a level of detail that is consistent with other EISs that have been upheld on review. Although the Intervenors cite to general statements of NEPA or NHPA law to support their

[1] The Staff will refer to the Oglala Sioux Tribe's Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law as the "Tribe's Brief" and the Consolidated Intervenors' Proposed Findings of Fact and Conclusions of Law and Response to Post-Hearing Order as the "Consolidated Intervenors' Brief."

3. The Staff Complied with NEPA by Discussing how Mitigation Measures Can Reduce Impacts in Various Environmental Areas

The Intervenors argue that the Staff failed to analyze the effectiveness of numerous mitigation measures listed in the FSEIS. Tribe's Brief at 66–67, 72; Consolidated Intervenors' Brief at 54. Although the Intervenors do not specifically describe the type of additional analysis the Staff should have included in the FSEIS, they appear to suggest the Staff should have, at a minimum, assigned an "effectiveness rating" to each mitigation measure. They also cite one case where the district court remanded an EIS to the agency to consider, among other issues, "the efficacy of mitigation measures." Tribe's Brief at 67.

As the Staff explained in response to the Board's post-hearing questions, NEPA does not require an agency to prove that the mitigation measures it identifies will be effective in reducing environmental impacts. *See Biodiversity Conservation Alliance v. Bureau of Land Management*, 2010 U.S. Dist LEXIS 62431 (D. Wyo. 2010) at *60 ("Neither NEPA nor FLMPA impose a procedural requirement for the BLM to verify the efficacy of mitigation measures in order for the BLM to utilize those measures to protect public lands from [undue and unnecessary degradation]."). The agency must simply have a reasonable basis for identifying a measure as a possible means of reducing environmental impacts. *Methow Valley*, 490 U.S. at 353. While the agency must provide some sense of how the mitigation measures it identifies will help reduce environmental impacts, "[t]he discussion of effectiveness of mitigation measures does not need to be highly detailed." *Moapa Band of Paiutes*, 2011 U.S. Dist. LEXIS 116046 at *23. Moreover, where it is obvious how mitigation measures will help reduce environmental impacts, the agency need not discuss the effectiveness of those measures. *See Oregon Natural Desert Ass'n v. Jewell*, 2013 U.S. Dist. LEXIS 130466 (D. Or. 2013) at *5 ("The FEIS discusses the effectiveness of some mitigation measures and the effectiveness of other measures is obvious.").

For many of the mitigation measures that the Staff describes in the FSEIS, it should be obvious how they will reduce environmental impacts. Powertech's license includes numerous conditions that serve as legally enforceable mitigation measures and which are obviously directed to reducing impacts in specific resource areas. For example, License Condition 10.6, which addresses groundwater restoration, will limit impacts to groundwater.[36] For other measures, the Staff explains at least briefly how they will reduce environmental impacts. The Staff has previously cited examples of FSEIS sections including these types of explanations, comparing the FSEIS's text to that of an EIS which, according to the reviewing court, adequately discussed the effectiveness of mitigation measures. Response to Post-Hearing Questions at 25–26, Initial Statement of Position at 45–46. The Staff does not devote pages to discussing the effectiveness of each mitigation measure, but that is not required. *Moapa Band of Paiutes,* 2011 U.S. Dist. LEXIS 116046 at *23; *Oregon Natural Desert Ass'n*, 2013 U.S. Dist. LEXIS 130466 at *5.

The cases the Intervenors cite in their post-hearing briefs do not show any deficiency in the Dewey-Burdock FSEIS. The Tribe relies on *Wyoming Outdoor Council v. U.S. Army Corps of Eng'rs,* 351 F. Supp. 2d 1232, 1238 (D. Wyo. 2005). That case, however, involved the agency's attempt to use a mitigated finding of no significant impact (FONSI) to avoid preparing an EIS. The court found that the agency "fail[ed] to point to a shred of scientific evidence in the record to demonstrate that [the mitigation measure it identified] is a successful mitigation measure." *Id.* at 1251. For the Dewey-Burdock Project, the Staff did not rely on a FONSI, and the mitigation measures it identified therefore are not subject to the same level of scrutiny. *See Detroit Edison Co*. (Fermi Nuclear Power Plant, Unit 3), LBP-12-23, 76 NRC 445, 467 (2012) (stating that, when an agency relies on mitigation measures to justify a FONSI "there must be some assurance that the mitigation measures constitute an adequate buffer against the

[36] In FSEIS Section 4.5.2.1.1.3, "Aquifer Restoration Impacts," the Staff discusses the success of aquifer restorations at NRC-licensed ISR facilities. Ex. NRC-008-A-2 at 373.

negative impacts from the authorized activity to render such impacts so minor as to not warrant an EIS.") (internal citations omitted). In any event, for each mitigation measure listed in the Dewey-Burdock FSEIS, the Staff had a basis for concluding the measure will help reduce environmental impacts. For example, a number of mitigation measures listed in the FSEIS are best management practices that, by definition, have been used successfully to reduce impacts in certain environmental areas.[37]

The Intervenors also cite two cases the Staff has previously addressed in its briefs: *South Fork Band Council of Western Shoshone of Nevada v. U.S. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009); and *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1381 (9th Cir. 1998). Tribe's Brief at 66, Consolidated Intervenors' Brief at 54. As the Staff explained, the EISs involved in these cases are readily distinguishable from the Dewey-Burdock FSEIS. Initial Statement of Position at 45–46, Response to Post-Hearing Questions at 26. In *South Fork Band Council of Western*, "[n]othing whatsoever [was] said about whether the anticipated harms could be avoided by any of the listed mitigation measures." 588 F.3d at 727. In *Neighbors of Cuddy Mountain*, the agency's own expert admitted that the measures identified by the agency were not actually mitigation measures. 137 F.3d at 1381.

In conclusion, the Staff discussed the effectiveness of mitigation measures to the extent required under NEPA.

4. The Intervenors' Other Arguments Lack Merit

The Intervenors make several other arguments related to mitigation measures, each of which the Board should reject. The Tribe claims that "the FSEIS concedes that [NHPA] consultation was not complete upon the conclusion of the NEPA process," as reflected by "the lack of a signed Programmatic Agreement[.]" Tribe's Brief at 68. The FSEIS concedes no such point, and in any event it was the Record of Decision for the Dewey-Burdock Project, not the

[37] The best management practices the Staff cites in the FSEIS are drawn from the Generic EIS (GEIS) for in-situ uranium recovery facilities, which lists the sources of these practices. Ex. NRC-010-B-1 at 110–114.

June 22, 2015

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

NRC STAFF'S RESPONSE TO OGLALA SIOUX TRIBE'S PETITION FOR REVIEW OF LBP-15-16

I. Introduction

The NRC Staff responds to the Oglala Sioux Tribe's petition for Commission review of the Atomic Safety and Licensing Board's Partial Initial Decision.[1] The Tribe asks the Commission to review the Board's rulings on four contentions that it did not admit in the hearing: Contention 7 (disposal of byproduct material), Contention 8 (environmental scoping), New Contention 1 (borehole data), and New Contention 2 (sufficiency of data on groundwater pathways). The Tribe also asks the Commission to review the Board's rulings on admitted Contentions 1A and 1B (both involving cultural resources), Contention 2 (baseline groundwater quality), Contention 3 (hydrogeological confinement), and Contention 6 (mitigation measures).

For Contentions 1A and 1B, the Staff agrees that the Commission should review the Board's rulings, for reasons stated in the Staff's own petition for review.[2] The Tribe itself does not identify any legal or factual error in the Board's rulings warranting review, however, and the Commission should therefore deny its petition as it relates to these contentions. The

[1] *Powertech (USA) Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-15-16, 81 NRC __ (April 30, 2015) (slip op.).

[2] NRC Staff's Petition for Review of LBP-15-16 (ADAMS Accession No. ML15146A499) (May 26, 2015).

Powertech cannot begin operating the Project unless such options remain available. Accordingly, *New York v. NRC* does support the Tribe's argument that the Staff needed to analyze impacts related to a lack of disposal sites, and it does not call into question the Board's ruling on Contention 7.

In conclusion, because the Tribe does not identify any error of law or abuse of discretion in the Board's ruling, the Commission should decline review of Contention 7. *Crow Butte North Trend*, CLI-09-12, 69 NRC at 543; *Shieldalloy*, CLI-07-20, 65 NRC at 503–05.

B. Contention 8 (Environmental Scoping)

In Contention 8, the Tribe argued that the Staff violated NEPA and 10 C.F.R. Part 51 by not conducting a full environmental scoping process for the Dewey-Burdock application. The Board found that, because the Dewey-Burdock SEIS is a supplement to the GEIS for ISR applications, it qualifies for the exception in 10 C.F.R. § 51.26(d) and § 51.92(d). LBP-13-9 at 46. Under this exception, the Staff need not conduct scoping when preparing an EIS supplement.

The Tribe argues that the Dewey-Burdock SEIS is not a true "supplement" to the GEIS, but simply a document that tiers off the GEIS.[16] Because the Dewey-Burdock EIS is not a supplement to the GEIS, the Tribe argues, the Board erroneously found that the exception in 10 C.F.R. § 51.26(d) and § 51.92(d) applies to the Staff's NEPA review. The Tribe argues that because this exception does not apply, the Staff needed to conduct a full scoping process for the Dewey-Burdock FSEIS, including the preparation of a scoping summary report, which is required by 10 C.F.R. § 51.29(b). In support of its arguments the Tribe cites the August 2013

[16] Petition at 7–8. "Tiering" is a practice by which an agency may eliminate discussions of issues that have been addressed in other NEPA documents. 10 C.F.R. Part 51, Appendix A, Footnote 1. "Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review." *Id.* (citing 40 C.F.R. § 1508.28).

report of the NRC's Office of the Inspector General (OIG), which included findings that largely correspond to the Tribe's arguments.[17]

The Tribe fails to show there is a substantial question regarding the Board's ruling or any other basis for granting review under 10 C.F.R. § 2.341(b)(4). The Tribe presents a false choice when it argues that, because the Dewey-Burdock EIS tiers off the GEIS, it cannot also be a supplement to the GEIS.[18] Neither the regulations of the Council on Environmental Quality (CEQ) nor the NRC's regulations in 10 C.F.R. Part 51 state that an EIS supplement cannot tier off another document. To the contrary, the CEQ's regulations acknowledge that an EIS supplement may tier off an EIS.[19] Furthermore, while the Tribe argues that 10 C.F.R. § 51.92 "only allows site specific 'supplements' to a site specific EIS," not a GEIS, this regulation imposes no such limitation. Finally, the Tribe does not cite any federal court precedent supporting its argument that, in order for a document to be considered an EIS supplement, it cannot tier off another document.

The Tribe also argues that the Staff's failure to conduct scoping for the Dewey-Burdock Project denied the Tribe the opportunity to present its concerns about the Project.[20] In fact, the Tribe had ample opportunity to present its concerns. Although the Staff did not conduct a full scoping process when preparing the Dewey-Burdock FSEIS, it nonetheless invited the Tribe's input at an early stage in the document's development. In late 2009, the Staff proposed a meeting with the Oglala Sioux Tribe to discuss the Dewey-Burdock Project, a meeting the Tribe

[17] Audit of NRC's Compliance with 10 CFR Part 51 Relative to Environmental Impact Statements (ADAMS Accession No. ML13232A192) (August 20, 2013) at 17–26.

[18] The Staff's response to OIG's draft findings on this issue can be found at pages 38–41 of the OIG's August 20, 2013 report.

[19] 40 C.F.R. § 1508.28(b). Although the NRC is not bound by CEQ regulations it has not expressly adopted, it nonetheless defers to these regulations in appropriate cases. *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-91-02, 33 NRC 61 (1991).

[20] Petition at 8.

was unable to attend.[21] In early 2010, the Staff placed advertisements in six newspapers with circulation in the Dewey-Burdock area, including the Lakota Country Times and the Native Sun, inviting the public to comment on the Dewey-Burdock Project.[22] When the Staff issued the DSEIS for public comment in November 2012, it accepted all comments received within a 99-day period, not just those comments received within the typical, 45-day comment period for a draft EIS.[23] The Staff also posted its analysis of tribal field survey results on the NRC's public webpage for the Dewey-Burdock Project, inviting both tribes and the general public to comment on its analysis.[24]

In addition, the Staff conducted a full scoping process when preparing the GEIS for ISR applications. In the GEIS the Staff considered the need for, and the environmental impacts of, ISR facilities in four geographic areas. One of these areas is the Nebraska-South Dakota-Wyoming area, where the Dewey-Burdock facility will be located.[25] The Staff also focused its review on even narrower geographic areas, however, and it considered specific features of the Black Hills area, in which the Dewey-Burdock site lies. The Staff identified the prospective Dewey-Burdock facility in numerous maps and figures within the GEIS, and it explained that the GEIS would serve as part of the Staff's analysis for its review of the Dewey-Burdock application. The Staff held three public scoping meetings for the GEIS, and it provided a 103-day period for public comments on the draft version of the GEIS. In addition, during the public comment period the Staff held eight public meetings near sites for which the Staff anticipated receiving ISR applications. The Staff held three meetings in the Nebraska-South Dakota-Wyoming area,

[21] Hearing Transcript at 771, lines 1–7; Ex. NRC-015 at 1.

[22] Ex. NRC-008-A-1 at 63–64.

[23] Ex. NRC-008-B-2 at 376.

[24] In addition, the Staff mailed the survey results directly to the Oglala Sioux Tribe and other tribes, specifically requesting their input on the results. Ex. NRC-015 at 15.

[25] The "Wyoming-South Dakota-Nebraska" area refers to the area at the junction of these states; it does not refer to the entirety of the three states, as reflected by the fact that two of the other areas addressed in the GEIS are "Wyoming West" and "Wyoming East."

including meetings in Newcastle, Wyoming, which is approximately 30 miles from the Dewey-Burdock site, and Chadron, Nebraska, which is approximately 50 miles from the Oglala's Sioux Tribe's Pine Ridge Reservation.

In sum, the Dewey-Burdock EIS is properly considered a supplement to the GEIS, and the Staff repeatedly sought both the Tribe's and the general public's input when preparing the GEIS and Dewey-Burdock FSEIS. The Tribe therefore does not show that the Board's ruling on Contention 8 is erroneous, nor does it raise a substantial question regarding the ruling.

C. New Contention 1 (Borehole Data)

The Tribe argues that the Board incorrectly rejected New Contention 1, which the Tribe filed based on Powertech's disclosure of additional borehole data after the oral hearing.[26] According to the Tribe, these data support its position that there are numerous pathways by which ISR solutions could migrate out of the production zones at the Dewey-Burdock Project, and which the Staff did not adequately consider in the FSEIS. The Tribe also argues that, in rejecting its contention, the Board improperly ruled on the merits of the contention, rather than simply on whether the contention was admissible.

The Tribe fails to show there is any issue warranting Commission review. Contrary to the Tribe's arguments, the Board applied the correct standard for determining whether New Contention 1 was admissible. In particular, the Board found that the Tribe's contention failed to meet 10 C.F.R. § 2.309(c)(2) because it relied on information that was not materially different from information already in the record. LBP-15-16 at 107. The Board also found that the Tribe's contention failed to meet 10 C.F.R. § 2.309(f)(1)(vi) because it did not raise a genuine dispute concerning the adequacy of the Staff's review. *Id.* Although the Board also stated that the new borehole data "did not 'paint a seriously different picture of the environmental landscape,'" language which in the Tribe's view reflects a merits determination, in context it is clear that the Board simply found the Tribe failed to raise a genuine issue as to whether this was

[26] Petition at 8–10.

April 3, 2017

William J. Froehlich, Chair
Administrative Judge
Atomic Safety and Licensing Board Panel
Mail Stop T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Mark O. Barnett
Administrative Judge
Atomic Safety and Licensing Board Panel
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G. Paul Bollwerk, III
Administrative Judge
Atomic Safety and Licensing Board Panel
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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

In the Matter of
POWERTECH (USA) INC.,
Docket No. 40-9075-MLA; ASLBP No. 10-898-02-MLA-BD01

Dear Administrative Judges:

In its Partial Initial Decision issued on April 30, 2015, the Board directed the Staff to submit monthly reports regarding its consultation efforts with the Oglala Sioux Tribe.

By email dated March 17, 2017, counsel for the Oglala Sioux Tribe informed the Staff that the Tribe was committed to providing its concept for a site survey approach and its availability for a teleconference in early April. The Staff is currently awaiting this information.

The Staff will update the Board on the status of its consultations with the Tribe on May 1, 2017.

Respectfully submitted,

/Signed (electronically) by/
Emily Monteith

_____
Emily Monteith
Counsel for NRC Staff

April 3, 2017

William J. Froehlich, Chair
Administrative Judge
Atomic Safety and Licensing Board Panel
Mail Stop T-3 F23
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Mark O. Barnett
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In the Matter of
POWERTECH (USA) INC.,
Docket No. 40-9075-MLA; ASLBP No. 10-898-02-MLA-BD01

Dear Administrative Judges:

In accordance with 10 C.F.R. § 2.336, 10 C.F.R. § 2.1203, and the Board's orders in this proceeding, the U.S. Nuclear Regulatory Commission (NRC) Staff provides the Board and the parties with a supplemental hearing file and mandatory disclosures (Attachment 1). As required by 10 C.F.R. § 2.336(c), the Staff is providing an affidavit certifying that all relevant materials have been disclosed.

The Staff will continue to update its mandatory disclosures, hearing file, and privilege logs in accordance with 10 C.F.R. § 2.336(d), § 2.1203(c), and the Board's orders.

Respectfully submitted,

/Signed (electronically) by/
Emily Monteith

_____
Emily Monteith
Counsel for NRC Staff

Enclosures: Attachment 1: Hearing File Index
Attachment 2: Affidavit of Ron Burrows

cc: Electronic Information Exchange Service List

ATTACHMENT 1
POWERTECH HEARING FILE AND MANDATORY DISCLOSURES
April 3, 2017 Update (Publicly Available Documents)

ID Number	Accession Number	Document Date	Title
00-2987	ML17086A142	03/17/2017	Email Correspondence with Oglala Sioux Tribe Providing Update on Tribal Survey Approach for the Dewey-Burdock ISR Project.

August 3, 2017

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH USA, INC.	)	Docket No. 40-9075-MLA
	)	
(Dewey-Burdock	)	
In Situ Uranium Recovery Facility)	)	

NRC STAFF'S MOTION FOR SUMMARY DISPOSITION OF
CONTENTIONS 1A AND 1B

INTRODUCTION

In accordance with 10 C.F.R. § 2.1205, the Atomic Safety and Licensing Board's Partial Initial Decision dated April 30, 2015,[1] and the Commission's Memorandum and Order dated December 23, 2016,[2] the Nuclear Regulatory Commission (NRC) Staff moves for summary disposition on Contentions 1A and 1B.[3] In Contention 1A, the Board found that, when considering how the Dewey-Burdock Project may affect cultural resources, the Staff failed to meet the "hard look" standard of the National Environmental Policy Act[4] (NEPA).[5] In Contention 1B, the Board found that the Staff failed to satisfy the consultation requirements of the National

[1] *Powertech (USA), Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-15-16, 81 NRC 618 (2015).
[2] *Powertech (USA), Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), CLI-16-20, 84 NRC 219 (2016).
[3] In accordance with the Board's Order dated October 4, 2010, counsel for the Staff contacted counsel for the other parties to obtain their views on this Motion and to provide the Staff's material facts about which the Staff believes there is no genuine dispute. *See* Order (Prehearing Conference Call Summary and Initial Scheduling Order) (Oct. 4, 2010) (Agencywide Documents Access and Management System (ADAMS)) Accession No. 102770545) at 10. Counsel for Powertech stated that they support the Motion. Counsel for the Oglala Sioux Tribe and counsel for the Consolidated Intervenors stated that they intend to oppose the motion.
[4] 42 U.S.C. § 4321 et seq.
[5] *Powertech*, LBP-15-16, 81 NRC at 653-57.

Historic Preservation Act[6] (NHPA).[7] The Board directed the Staff to file a monthly report to the Board on its progress in addressing the outstanding issues in Contentions 1A and 1B. The Board directed that the Staff's final monthly report "shall demonstrate that the [Final Supplemental Environmental Impact Statement (FSEIS)] complies with NEPA and with 10 C.F.R. Part 40 and include an agreement reflecting the parties' settlement of their dispute regarding the contentions or a motion for summary disposition of Contentions 1A and 1B."[8]

On August 3, 2017, in conjunction with this Motion, the Staff filed its final monthly report informing the Board and the parties that the Staff and the Oglala Sioux Tribe have not arrived at a settlement of the outstanding issues in Contentions 1A and 1B. The final monthly report demonstrates that the FSEIS complies with NEPA and with 10 C.F.R. Part 40.[9] As more fully set forth below, there is no genuine issue as to any material fact with respect to the outstanding issues identified by the Board concerning Contentions 1A and 1B. Further, the material facts demonstrate that the Staff has fulfilled its remaining responsibilities under NEPA and the NHPA with respect to Contentions 1A and 1B. Accordingly, the Board should find that the Staff is entitled to judgment as a matter of law, resolve the outstanding issues in Contentions 1A and 1B in favor of the Staff, and terminate this proceeding.[10]

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[6] 54 U.S.C. § 300101 et seq.
[7] *Powertech*, LBP-15-16, 81 NRC at 657-58.
[8] *Id.* at 710.
[9] *See supra* note 8.
[10] 10 C.F.R. § 2.1205(a) states that "motions for summary disposition may be submitted to the presiding officer by any party no later than 45 days before the commencement of hearing" and "must include a written explanation of the basis of the motion." Additionally, 10 C.F.R. § 2.323(a) specifies that motions must be filed no later than ten (10) days after the occurrence or circumstance from which the motion arises. This Motion is timely filed pursuant to 10 C.F.R. § 2.1205(a) and 10 C.F.R. § 2.323(a). The evidentiary hearing for Contentions 1A and 1B took place on August 19-21, 2014, and the Board's Partial Initial Decision ruling on the contentions admitted for hearing specified that a motion for summary disposition may accompany the Staff's final status report. *Powertech*, LBP-15-16, 81 NRC at 710. As the Staff has not reached a settlement with the Oglala Sioux Tribe to resolve the outstanding matters in Contentions 1A and 1B, the Staff submits this motion for summary disposition in accordance with the Board's ruling. Furthermore, this Motion has been filed within 10 days of the Staff's issuance of a letter to the Oglala Sioux Tribe conveying the Staff's position that further consultation with the Tribe is unlikely to result in a mutually acceptable settlement of the dispute regarding the outstanding contentions. *See infra* note 167.

PROCEDURAL HISTORY

I. Contentions 1A and 1B

Contention 1A, as admitted and migrated by the Board, asserted that the FSEIS "fail[ed] to meet applicable legal requirements regarding protection of historical and cultural resources."[11] Specifically, the intervenors[12] alleged that while 10 C.F.R. §§51.71(d), 51.45(b) and NEPA require the FSEIS to include an analysis of cultural impacts, "neither [the applicant nor the NRC Staff] has conducted an adequate and competent cultural resources survey, impacts analysis, or mitigation review."[13] Contention 1B, as admitted and migrated by the Board, asserted that the Staff "failed to involve or consult all interested Tribes as required by federal law."[14] The Oglala Sioux Tribe argued that the Staff failed to comply with the NHPA requirement to consult with "Indian Tribe[s] . . . that attach[ ] religious and cultural significance" to historic properties potentially affected by the Dewey-Burdock project and that the Staff failed to engage in government-to-government consultation "in a manner sensitive to the concerns and needs" of the Oglala Sioux Tribe.[15]

II. The Board's Ruling on Contentions 1A and 1B

On April 30, 2015, the Board issued its Partial Initial Decision on the admitted contentions. The Board resolved Contentions 1A and 1B in favor of the intervenors[16] and the remaining contentions in favor of the Staff and the licensee, Powertech (USA), Inc. (Powertech).[17]

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[11] *Powertech USA, Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-14-5, 79 NRC 377, 385, 401 (2014).
[12] Contention 1A was proffered by the Oglala Sioux Tribe and the Consolidated Intervenors. Contention 1B was proffered by the Oglala Sioux Tribe.
[13] *Powertech*, LBP-15-16, 79 NRC at 650 (quoting Oglala Sioux Tribe Post-Hearing Initial Brief at 13) (internal quotations omitted).
[14] *Powertech*, LBP-14-5, 79 NRC at 387, 401.
[15] *Powertech*, LBP-15-16, 79 NRC at 651.
[16] *Id.* at 653-57.
[17] *Id.* at 708-10.

In resolving Contention 1A, the Board found that, when considering how the Dewey-Burdock project may affect cultural resources, the Staff failed to meet the "hard look" standard of NEPA.[18] The Board did find that the Staff complied with the NHPA requirement to make a good faith and reasonable effort to identify properties eligible for inclusion in the National Register of Historic Places.[19] But the Board found that the information required to analyze impacts to sites of cultural, historic, or religious significance to the Oglala Sioux Tribe under NEPA is broader than that required under the NHPA and is obtainable only from the Tribe itself.[20] Based on its finding that the tribal surveys of the Powertech site "did not contain any tribal ethnographic studies, oral histories or a survey of sites of significance to . . . the Oglala Sioux Tribe," the Board concluded that the FSEIS was deficient under NEPA.[21]

In resolving Contention 1B, the Board found that the Staff failed to satisfy the consultation requirements of the NHPA, noting that the consultation process "broke down" as evidenced by the failure to agree on "the scope, techniques, or timing of the field surveys [or] alternatives to a field survey . . . ."[22] The Board found that the Oglala Sioux Tribe "does share some responsibility for the inadequacy of the FSEIS and the lack of meaningful consultation," and that "some of its demands to engage with the NRC Staff were patently unreasonable."[23] But the Board noted that "[e]ven after a thorough review of the record in this case, the Board is not able to decide definitively which party or specific actions led to the impasse preventing an adequate tribal cultural survey" and found the Staff "at least partly at fault for the failed consultation process."[24] Specifically, the Board found that the Staff did not hold a single government-to-government consultation session solely with the Oglala Sioux Tribe to resolve its

[18] *Id*. at 657.
[19] *Id*. at 654.
[20] *Id.* at 654-55.
[21] *Id.* at 655.
[22] *Id*. at 656.
[23] *Id.* at 655.
[24] *Id.* at 656.

concerns.[25] The Board found that neither the three meetings between the Staff and several tribes nor the "numerous letters . . . sent to the Oglala Sioux Tribe necessarily constituted meaningful or reasonable consultation under the NHPA."[26]

Given its finding that the Oglala Sioux Tribe bore some responsibility for the insufficient consultation and did not participate in the April 2013 cultural resources site survey, the Board declined to immediately suspend the license.[27] The Board ruled that the Staff could remedy the deficiencies identified by the Board "by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, if necessary,"[28] and retained jurisdiction of the case pending the Staff's curing of these deficiencies.[29] The Board further ordered the Staff to file monthly status reports describing its efforts to remedy the deficiencies, with the final report "includ[ing] an agreement reflecting the parties' settlement of their dispute regarding the contentions or a motion for summary disposition of Contentions 1A and 1B."[30]

III. The Commission's Resolution of Petitions for Review of the Board's Ruling on Contentions 1A and 1B

On May 26, 2015, each party submitted a petition for review to the Commission.[31] The Oglala Sioux Tribe and the Consolidated Intervenors challenged the Board's decision not to

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[25] *Id*. at 651.
[26] *Id*. at 656.
[27] *Id*. at 658.
[28] *Id.* at 657.
[29] *Id.* at 658.
[30] *Id.* at 710.
[31] Oglala Sioux Tribe's Petition for Review of LBP-15-16 and Decisions Finding Tribal Contentions Inadmissible (May 26, 2015) (ADAMS Accession No. ML15146A500) [hereinafter Oglala Sioux Tribe's Petition]; Consolidated Intervenors' Petition for Review of LBP-15-16 (May 26, 2015) (ADAMS Accession No. ML15147A069) [hereinafter Consolidated Intervenors' Petition]; Brief of Powertech (USA), Inc. Petition for Review of LBP-15-16 (May 26, 2015) (ADAMS Accession No. ML15146A495) [hereinafter Powertech's Petition]; NRC Staff's Petition for Review of LBP-15-16 (May 26, 2015) (ADAMS Accession No. ML15146A499) [hereinafter Staff's Petition].

admit certain contentions, the Board's resolution of several admitted contentions in favor of the Staff and Powertech, and the Board's decision to leave the license in place despite finding in favor of the Oglala Sioux Tribe and Consolidated Intervenors on Contentions 1A and 1B.[32] The Staff and Powertech petitioned for review of the Board's resolution of Contentions 1A and 1B in favor of the intervenors, as well as the Board's decision to retain jurisdiction over these contentions. Powertech further petitioned for review of the Board's imposition of a license condition regarding the location and abandonment of unplugged boreholes.[33]

On December 23, 2016, the Commission issued CLI-16-20, taking review of these petitions in part.[34] The Commission granted each party's petition with respect to the finality of the Board's ruling on Contentions 1A and 1B, finding that the contentions should be considered "final" for the purposes of the Commission's review of the Board's Partial Initial Decision.[35] However, the Commission denied each party's petition for review of the Board's ruling on Contentions 1A and 1B.[36] The Commission left in place the Board's ruling in favor of the intervenors on both contentions and, pursuant to its inherent supervisory authority over agency adjudications, left the proceeding open "for the narrow issue of resolving the deficiencies identified by the Board."[37] The Commission declined to take review of the aspects of the parties' petitions unrelated to Contentions 1A and 1B, with the exception of the Oglala Sioux Tribe's challenge of the Board's decision not to admit a contention regarding the scoping process, which the Commission affirmed.[38]

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[32] *See generally* Oglala Sioux Tribe's Petition and Consolidated Intervenors' Petition.
[33] *See generally* Staff's Petition and Powertech's Petition.
[34] *Powertech*, CLI-16-20, 84 NRC 219.
[35] *Id.* at 222, 262.
[36] *Id.*
[37] *Id.* at 222, 242; *see also id.* at 262. The Commission also affirmed the Board's direction to the Staff to submit monthly status reports and the Board's direction to file an agreement between the parties or a motion for summary disposition to resolve the deficiencies identified by the Board. *Id.* at 222, 251, 262.
[38] *Id.* at 222, 262.

LEGAL STANDARDS

I. Legal Standards Governing Motions for Summary Disposition

Summary disposition may be granted where the relevant documents demonstrate that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law.[39] The moving party carries the initial burden of demonstrating that summary disposition is appropriate, and must explain in writing the basis for the motion.[40] To support its motion, the moving party must also "attach a short and concise statement of material facts for which the moving party contends that there is no genuine issue to be heard." Where such facts are properly presented and are not controverted, they are deemed to be admitted.[41]

10 C.F.R. § 2.1205(c) states, "[i]n ruling on motions for summary disposition, the presiding officer shall apply the standards for summary disposition set forth in subpart G of this part." Subpart G, Section 2.710(d)(2), provides, "[t]he presiding officer shall render the decision sought if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." Once the moving party makes a proper showing for summary disposition, "if the party opposing the motion does not show that a genuine issue of material fact exists, the Board may summarily dispose of all arguments on the basis of the pleadings."[42]

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[39] *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 297, 298 (2010); *Advanced Med. Sys., Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-93-22, 38 NRC 98, 102-03 (1993), *reconsid. denied*, CLI-93-24, 38 NRC 187 (1993).
[40] *See, e.g.*, *Advanced Med. Sys., Inc.*, CLI-93-22, 38 NRC at 102 (1993); 10 C.F.R. § 2.1205(a). This proceeding is being conducted under the procedures in Subpart L of 10 C.F.R. Part 2.
[41] *Dairyland Power Cooperative* (La Crosse Boiling Water Reactor), LBP-82-58, 16 NRC 512, 520 (1982).
[42] *Advanced Medical Systems, Inc.*, CLI-93-22, 38 NRC at 102.

II. Legal Standards Applicable to the Identification of Adverse Effects to Sites of Traditional Religious and Cultural Importance to the Oglala Sioux Tribe

A. The National Historic Preservation Act

Congress enacted the NHPA in 1966 to "foster conditions under which our modern society and our historic property can exist in productive harmony."[43] In furtherance of this purpose, Section 106 of the NHPA requires a Federal agency to "take into account the effect of [any] undertaking on any historic property,"[44] including properties of cultural or religious significance to Indian tribes.[45] In order to accomplish this, Federal agencies "must engage in consultation with parties such as the [State Historic Preservation Officer] and any potentially affected Indian tribes ('Section 106 consultation') to determine whether historic properties or traditional cultural properties ('TCPs') exist in the area of the planned activity."[46] The Federal agency must also provide the Advisory Council on Historic Protection (ACHP) a reasonable opportunity to comment on the undertaking.[47] Section 106, like NEPA, is a "stop, look, and listen" provision that requires each federal agency to consider the effects of the projects it licenses on historic properties;[48] it does not mandate that the Federal agency take any particular measures to protect these properties.[49]

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[43] 54 U.S.C. § 300101(1).
[44] 54 U.S.C. § 306108.
[45] *Id.* §§ 306108, 302706(b). An undertaking is defined in the NHPA as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a Federal permit, license, or approval[.]" *Id.* § 300320.
[46] *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 459 F. Supp. 2d 1102, 1123 (D.N.M. 2006), *aff'd in part, vacated in part, rev'd in part*, 565 F.3d 683 (10th Cir. 2009) (citing *Pueblo of Sandia v. United States,* 50 F.3d 856, 859 (10th Cir. 1995)).
[47] 54 U.S.C. § 306108.
[48] *See Muckleshoot Indian Tribe v. U.S. Forest Serv.,* 177 F.3d 800, 805 (9th Cir.1999); *cf. United States v. 0.95 Acres of Land,* 994 F.2d 696, 698 (9th Cir.1993) ("NHPA is similar to NEPA except that it requires consideration of historic sites, rather than the environment.").
[49] *See CTIA-Wireless Ass'n v. FCC*, 466 F.3d 105, 106-07 (D.C. Cir. 2006) (citing *Davis v. Latschar*, 202 F.3d 359, 370 (D.C. Cir. 2000)).

1. Overview of the Section 106 Process

The ACHP promulgates the regulations necessary to implement Section 106.[50] These regulations set forth the "Section 106 process" a Federal agency must follow to satisfy Section 106 of the NHPA.[51] Under them, a Federal agency must first initiate the Section 106 process by determining whether the Federal agency action in question is an "undertaking"[52] having the potential to cause effects on historic properties.[53] If this is the case, the agency must identify and initiate consultation with the appropriate State Historic Preservation Officer (SHPO).[54] The agency is also required at this stage to identify any other appropriate consulting parties, which includes the obligation to "make a reasonable and good faith effort to identify any Indian tribes . . . that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties."[55]

After initiating the Section 106 process, a Federal agency's responsibility to implement the process proceeds in phases. The agency must first make "a reasonable and good faith effort" to identify historic properties[56] within the area of potential effects that may be affected by the undertaking, and gather sufficient information to evaluate the eligibility of these properties for the National Register of Historic Places.[57] For each identified property, the agency official, in consultation with the SHPO, must evaluate the property against the National Register criteria to determine its eligibility for inclusion.[58] If one or more historic properties are identified and are determined to be eligible for the National Register, the agency must then assess whether the

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[50] *See* 54 U.S.C. § 304108(a). These regulations "command substantial judicial deference." *McMillan Park Comm. v. Nat'l Capital Planning Comm'n*, 968 F.2d 1283, 1288 (D.C. Cir. 1992).
[51] *See* 36 C.F.R. Part 800, Subpart B—The Section 106 Process.
[52] 36 C.F.R. § 800.1(c).
[53] *Id.* § 800.3(a).
[54] *Id.* § 800.3(c).
[55] *Id.* § 800.3(f)(2).
[56] *Id.* § 800.4(b)(1).
[57] 36 C.F.R. § 800.4(b); *see also Pueblo of Sandia*, 50 F.3d at 859.
[58] *Pueblo of Sandia*, 50 F.3d at 859 (citing 36 C.F.R. § 800.4(c)). These criteria are found in 36 C.F.R. § 60.4.

undertaking will have an adverse effect on the historic property.[59] If an adverse effect is found, the agency must then consult to resolve the adverse effect.[60] This process may result in a memorandum of agreement memorializing agreed-upon methods to avoid, minimize or mitigate the adverse effects to the historic property, or, if such an agreement cannot be not reached, a decision to terminate consultation on the grounds that further consultation will not be productive.[61] Once this is done, the agency may move forward with decisionmaking.[62]

The Section 106 process must be completed "prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license."[63] However, under certain circumstances, such as where an undertaking's effects "cannot be fully determined prior to approval" of the project, an agency and the ACHP may instead "negotiate a programmatic agreement to govern the implementation of a particular program or the resolution of adverse effects[.]"[64] The Federal agency must consult with affected tribes during the negotiation of the programmatic agreement.[65] Once executed by the required signatories, the programmatic agreement binds the agency and "satisfies the agency's section 106 responsibilities for all individual undertakings of the program covered by the agreement until it expires or is terminated by the agency."[66] In accordance with 36 C.F.R. §§ 800.4(b)(2) and 800.14(b), the Staff finalized a programmatic agreement for the Dewey-Burdock project before issuing the license.[67]

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[59] *See generally* 36 C.F.R. § 800.5.
[60] 36 C.F.R. § CFR 800.5(d)(2); *see also generally* 36 C.F.R. § 800.6.
[61] *See* 36 C.F.R. §§ 800.6 and 800.7 for the steps an agency must follow under each scenario.
[62] *See id.*
[63] *Id.* § 800.1(c) (quotation marks omitted).
[64] *Id.* § 800.14(b). One such circumstances is where the agency or applicant has proposed a phased approach to developing a project, such as Powertech has proposed here. *See id.* § 800.4(b)(2).
[65] *Id.* § 800.14(b)(2)(I).
[66] *Id.* § 800.14(b)(2)(iii).
[67] Exhibits (Exs.) NRC-018-A through NRC-018-H. The Dewey-Burdock Programmatic Agreement documents the steps the NRC will take to protect currently identified historic properties and the approach to be used to protect properties potentially affected by future phases of the project. The signatories to the Programmatic Agreement include the NRC, Powertech, the ACHP, the South Dakota SHPO, and the Bureau of Land Management. The ACHP signed the Programmatic Agreement because "based on the background documentation, the issues addressed during consultation, and the processes established in the [Programmatic Agreement], [it] concluded that the content and spirit of the Section 106 process has been met by [the] NRC." Ex. NRC-031, Letter from John Fowler, Executive Director, ACHP, to Waste'

2. Standards Concerning Identification of Sites of Traditional Religious and Cultural Importance to Tribes

As explained above, the first phase of the Section 106 process requires a Federal agency to make a reasonable and good faith effort to carry out appropriate efforts to identify historic properties that may be affected by an undertaking.[68] "Historic properties" are defined in the NHPA as properties that are listed on or eligible for listing on the National Register.[69] Historic properties may include those of "traditional religious and cultural importance to an Indian tribe[.]"[70] The identification of these properties is a necessary threshold step in the Section 106 process, as only properties that a Federal agency has identified can be evaluated by the agency for their eligibility for the National Register (and thus be considered "historic properties" for the purposes of the NHPA); for potential adverse impacts from the project; or for measures to avoid, minimize or mitigate any such adverse impacts.

The expertise in identifying properties of traditional religious or historical significance to a group, such as an Indian tribe, resides primarily, if not exclusively, with the knowledgeable parties within that group.[71] "[I]n some cases such properties may not be discernible as such to

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Win Young, Standing Rock Sioux Tribe Historic Preservation Officer (April 7, 2014) (ADAMS Accession No. ML14115A448). Further, the Staff's record of consultation with tribes, including the Oglala Sioux Tribe, on the Programmatic Agreement – as required by 36 C.F.R. § 800.14(b)(2)(I) – is documented in its prior pleadings, testimony, and exhibits, herein incorporated by reference.

[68] 36 C.F.R. § 800.2(b)(1).

[69] "In this division, the term 'historic property' means any prehistoric or historic district, site, building, structure, or object *included on, or eligible for inclusion on, the National Register*, including artifacts, records, and material remains relating to the district, site, building, structure, or object." 54 U.S.C. § 300308 (emphasis added). The National Register of Historic Places, authorized by the NHPA, is the nation's official list of historic places worthy of preservation and is maintained by the National Park Service, a division of the U.S. Department of the Interior.

[70] 54 U.S.C. § 302706(a). A property of "traditional religious and cultural importance" to a Tribe is not *necessarily* a "historic property"; it must also meet the eligibility criteria for listing on the National Register to be considered a historic property for the purposes of Section 106.

[71] Exs. NRC-145-A and NRC-145-B, U.S. Department of the Interior, National Park Service, National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties, 7-10 (1998) [hereinafter Bulletin 38]. In 1990, the National Park Service – which administers the National Register program – issued National Register Bulletin 38, "Guidelines for Evaluating and Documenting Traditional Cultural Properties," as "an aid in determining whether properties thought or alleged to have traditional cultural significance are eligible for inclusion in the National Register," giving "special attention to properties of traditional cultural significance to Native American groups, and to discussing the place of religion in the attribution of such significance." *Id.* at 2, 3. Bulletin 38 provides the guidelines for identifying and evaluating traditional cultural properties, including properties that may be of traditional

anyone but a knowledgeable member of the group that ascribes significance to them; in such cases it may be impossible even to find the relevant properties, or locate them accurately, without the aid of such parties."[72] In other words, the fundamental difference between properties of traditional religious or historical significance to a Tribe, and other kinds of historic properties, is that their significance cannot be determined solely by research, archaeological field investigation, and other professional tools; instead, the existence and significance of such sites must be determined by the community that values it.[73] To this end, the ACHP's regulations require that the agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertaking[74] and "acknowledge that Indian tribes . . . possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them."[75]

3. Standards Concerning Section 106 Consultation with Tribes

A Federal agency's duty to consult with parties that may be affected by an undertaking is an intrinsic part of every phase of the Section 106 process. As noted above, the requirement to consult with affected Indian tribes, in particular, is made explicit in the NHPA and throughout the ACHP's regulations. The NHPA requires that, in carrying out the Section 106 process, a Federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertaking.[76] The ACHP's regulations likewise reflect this requirement.[77] The regulations direct that a Federal

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religious and cultural significance to an Indian tribe. *See, e.g.*, *Muckleshoot Indian Tribe*, 177 F.3d at 807 ("Bulletin 38 provides the recognized criteria for the Forest Service's identification and assessment of places of cultural significance").

[72] Bulletin 38 at 9.

[73] Patricia L. Parker, *Traditional Cultural Properties: What You Do and How We Think*, CRM, Vol. 16 (1993), at 4.

[74] 54 U.S.C. § 302706(b).

[75] 36 C.F.R. § 800.4(c)(1).

[76] 54 U.S.C. § 302706(b).

[77] "Section [302706(b)] of the act requires the agency official to consult with any Indian tribe . . . that attaches religious and cultural significance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property. Such Indian tribe . . . shall be a consulting party." 36 C.F.R. § 800.2(c)(2)(ii)).

agency ensure that consultation provides the Indian tribe a reasonable opportunity to identify its concerns about historic properties, including those located off tribal lands; to advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance to it; to articulate its views on the undertaking's effects on such properties; and to participate in the resolution of adverse effects to such properties.[78]

The ACHP's regulations and guidance provide guidelines on the manner in which tribal consultation should be conducted, but do not provide specific direction to agencies on how to carry out their consultation responsibilities.[79] The ACHP's regulations state that consultation with Indian tribes should commence early in the planning process and be conducted in a sensitive manner respectful of tribal sovereignty.[80] Tribal consultation "must recognize the government-to-government relationship between the Federal Government and Indian tribes" and the agency must "consult with representatives designated or identified by the tribal government."[81] This consultation should be carried out "in a manner sensitive to the concerns and needs of the Indian tribe[.]"[82]

In 2000, President Clinton issued an Executive Order "to establish regular and meaningful consultation and collaboration with tribal officials" through "an accountable process" at each agency.[83] Independent regulatory agencies, including the NRC, were "encouraged to comply with the provisions of this order."[84] On January 9, 2017, the NRC published a Tribal Policy Statement, which consists of principles to guide the Staff's interactions with tribal governments, including government-to-government consultation.[85] It is intended to encourage

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[78] 36 C.F.R. § 800.2(c)(2)(ii)(A),(D).
[79] *See* Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook (June 2012), at 8-9, *available at* http://www.achp.gov/pdfs/consultation-with-indian-tribes-handbook-june-2012.pdf.
[80] 36 C.F.R. § 800.2(c)(2)(ii)(A)–(B).
[81] *Id.* § 800.2(c)(2)(ii)(C).
[82] *Id.*
[83] Exec. Order No. 13,175, 65 Fed. Reg. 67,249, 67,250 (Nov. 6. 2000).
[84] *Id.* at 67,251.
[85] Tribal Policy Statement, Fed. Reg. 2402 (Jan. 9, 2017).

and facilitate tribal involvement in activities under NRC jurisdiction and, among other things, expresses the agency's commitment to a government-to-government relationship with Indian tribes.[86] "Consultation" is defined in the statement of considerations to the Tribal Policy Statement as "efforts to conduct meaningful and timely discussions between the NRC and Tribal governments on the NRC's regulatory actions that have substantial direct effects on one or more Indian Tribes and those regulatory actions for which Tribal consultation is required under Federal statute."[87] The NRC's consultation process is intended to provide "opportunities for appropriate Tribal officials or representatives to meet with NRC management or staff to achieve a mutual understanding between the NRC and the Tribes of their respective interests and perspectives."[88]

Additionally, the NRC has adopted a Tribal Protocol Manual to guide the agency's interactions with Indian tribes.[89] In ruling on the petitions for review of the Board's Partial Initial Decision, the Commission stated that "in licensing reviews such as this one . . . we expect the Staff's actions to be guided by the principles outlined in the NRC's Tribal Protocol Manual."[90] The Tribal Protocol Manual states that in establishing a government-to-government relationship with federally recognized tribal governments, the NRC acknowledges the status of Tribes as domestic dependent sovereign nations, as being distinct from the status of special interest groups, stakeholders, non-governmental organizations, or members of the general public.[91] The Tribal Protocol Manual explains that government-to-government consultation with tribes "includes interactions between Tribal staff and to NRC staff, as well as interactions between

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[86] *Id.* at 2415, 2416.
[87] *Id.* at 2404.
[88] *Id.* The consultation process may include "providing for mutually-agreed protocols, timely communication, coordination, cooperation, and collaboration." *Id.*
[89] Tribal Protocol Manual, NUREG-2173 (Dec. 2014) (ADAMS Accession No. ML14274A014) [hereinafter Tribal Protocol Manual]. The Tribal Protocol Manual is currently under revision to conform its discussion of the NRC's trust responsibility to the revisions made in the *Federal Register* notice for the Tribal Policy Statement. *See* Staff Requirements Memorandum, SECY-16-0098, Tribal Consultation Policy Statement and Protocol (Dec. 2, 2016) (ADAMS Accession No. ML16337A035).
[90] *Powertech*, CLI-16-20, 84 NRC at 251 n.199 (citing Tribal Protocol Manual).
[91] Tribal Protocol Manual at 9.

staff and higher-level officials."[92] The NRC considers interactions between representatives of the Federal government and tribal governments on issues within the scope of their authority to be "government-to-government" consultation. "These interactions may include information-sharing meetings, presentations, preliminary discussions, introductory briefings, information-gathering sessions, teleconferences, written correspondence, and telephone conversations between staff-level employees."[93]

B. The National Environmental Policy Act

Congress enacted NEPA to ensure that Federal agencies make a "fully informed and well-considered decision"[94] on all "major Federal actions significantly affecting the quality of the human environment."[95] The Council on Environmental Quality (CEQ) promulgates regulations that provide guidance on agency compliance with NEPA. While these regulations are not binding on the NRC where the agency has not expressly adopted them, they are entitled to considerable deference.[96] The NRC has also promulgated its own regulations governing the agency's implementation of NEPA.[97] These regulations require that the Staff prepare an EIS in connection with a license issued under 10 C.F.R. Part 40 to possess and use source and 11(e)2 byproduct material for the purpose of in situ uranium recovery.[98] In accordance with 10 C.F.R. Part 51, the Staff prepared an FSEIS for the Dewey-Burdock project.[99]

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[92] *Id.* at 14.
[93] *Id.*
[94] *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 558 (1978).
[95] 36 C.F.R. § 800.4(b)(1).
[96] *See Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 725, 743 (3d Cir. 1989).
[97] *See generally* 10 C.F.R. Part 51.
[98] 10 C.F.R. § 51.10(b)(8).
[99] Exs. NRC-008-A-1 through NRC-008-B-2 [hereinafter FSEIS].

1. Requirement to Assess Effects on Dewey-Burdock Project on Cultural Resources

The CEQ's regulations state that the human environment "shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."[100] They further state that, "[w]hen an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment."[101] The "effects" that should be discussed include "aesthetic, historic, cultural, economic, social, or health" effects, "whether direct, indirect, or cumulative."[102] A guidance document developed jointly by the CEQ and the NHPA notes that the term "cultural resources" covers a wider range of resources than just "historic properties," and includes "sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections."[103] Therefore, in contrast to the NHPA, which requires Federal agencies to consider the effects of a proposed project on "historic properties," or those properties listed on or eligible for listing on the National Register, NEPA requires agencies to consider all aspects of the cultural environment – which may include properties not considered to be "historic properties" under the NHPA.[104]

2. NEPA's "Hard Look" Standard

While NEPA "does not mandate particular results,"[105] it provides the necessary process to ensure that a Federal agency takes a "hard look" at the potential environmental impacts of a

[100] 40 C.F.R. § 1508.14.
[101] *Id.*
[102] *Id.* § 1508.8.
[103] Ex. NRC-048, Council on Environmental Quality, Executive Office of The President, and Advisory Council on Historic Preservation, NEPA and NHPA: A Handbook for Integrating NEPA and Section 106 (Mar. 2013), at 4.
[104] *See USEC, Inc.* (American Centrifuge Plant), CLI-06-9, 63 NRC 433, 448-49 (2006).
[105] *Muckleshoot Indian Tribe*, 177 F.3d at 814 (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989)).

proposed action[106] and discloses those impacts before moving forward with a planned action.[107] This "hard look" is intended to "'foster both informed agency decision-making and informed public participation'" so as to ensure that an agency does not act upon "'incomplete information, only to regret its decision after it is too late to correct.'"[108] The "hard look" standard, however, is tempered by a "rule of reason," in that an agency's NEPA document need only contain "a reasonably thorough discussion of the significant aspects of the probable environmental consequences" of the proposed action.[109] Under NEPA's rule of reason, an agency need not address every environmental effect that could potentially result from the proposed action. Rather, the agency need only provide "[a] reasonably thorough discussion of the significant aspects of the probable environmental consequences[.]"[110]

While a Federal agency must analyze environmental consequences in its environmental review where it is "reasonably possible" to do so, NEPA's rule of reason acknowledges that in certain cases an agency may be unable to obtain information to support a complete analysis.[111] Under Commission precedent, "NEPA [']should be construed in the light of reason if it is not to demand[']virtually infinite study and resources."[112] Although the Staff can always gather more data in a particular area, it "must have some discretion to draw the line and move forward with decisionmaking."[113]

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[106] *See La. Energy Servs., L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 87-88 (1998).
[107] *Pogliani v. U.S. Army Corps of Engineers*, 306 F.3d 1235, 1237 (2d Cir. 2002) (citing *Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 100 (1983)).
[108] *Id.* at 88 (quoting *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371 (1989)).
[109] *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1166 (9th Cir. 2003).
[110] *Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974); *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017, 1026-27 (9th Cir. 1980).
[111] *Kern v. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002); *see also* 40 C.F.R. § 1502.22 (explaining how an agency should proceed when faced with incomplete or unavailable information).
[112] *Pilgrim*, CLI-10-11, 71 NRC at 315 (quoting *NRDC v. Hodel*, 865 F.2d 288, 294 (D.C. Cir. 1988) (footnotes omitted) (quoting *NRDC v. Morton* 458 F.2d 827, 837 (D.C. Cir. 1972) (NEPA "must be construed in the light of reason if it is not to demand what is, fairly speaking, not meaningfully possible, given the obvious, that the resources of energy and research – and time – available to meet the Nation's needs are not infinite.))).
[113] *Id.*

DISCUSSION

The Board has retained jurisdiction over the final resolution of the outstanding issues identified by the Board in its Partial Initial Decision concerning Contentions 1A and 1B.[114] The Staff submits that there is no genuine issue as to any material fact with respect to the outstanding issues identified by the Board concerning Contentions 1A and 1B. Further, as set forth below, the material facts demonstrate that the Staff has fulfilled its responsibilities under the NHPA and NEPA with respect to the outstanding issues in Contentions 1A and 1B. Accordingly, the Board should find that the Staff is entitled to judgment as a matter of law on Contentions 1A and 1B, and dismiss this proceeding.

I. The Staff Has Satisfied Its Responsibility Under the NHPA to Engage in Meaningful Consultation with the Oglala Sioux Tribe (Contention 1B)

In its Partial Initial Decision, the Board held that the consultation process between the Staff and the Oglala Sioux Tribe was inadequate. While the Board found that it was "not able to decide definitively which party or specific actions led to the impasse preventing an adequate tribal cultural survey,"[115] the Board found the Staff at least partially at fault, stating that the Staff "has not held a single consultation session, on a government-to-government basis, solely with members of the Oglala Sioux Tribe."[116] The Board acknowledged that the Staff sent numerous consultation letters to the Oglala Sioux Tribe and held several face-to-face meetings to which the Tribe was invited.[117] The Board found, however, that these efforts did not satisfy the NHPA, in part because the Staff did not hold individual meetings with the Oglala Sioux Tribe.[118] As a result, the Board concluded that "meaningful government-to-government consultation between the Oglala Sioux Tribe and the NRC Staff has not taken place."[119] The Board stated that

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[114] *Powertech*, LBP-15-16, 81 NRC at 710.
[115] *Id.* at 656.
[116] *Id.*
[117] *Id.*
[118] *Id.* at 656-58.
[119] *Id.* at 657.

additional consultation is required "to . . . satisfy the consultation requirements of the NHPA,"[120] and that, with respect to Contention 1B, the Staff "can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe that may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary."[121]

Under the NHPA, consultation between the Staff and the Oglala Sioux Tribe must afford the Tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[122] The threshold step in this process, however, is the *identification* of sites of cultural, historic, or religious significance to the Tribe. Until such sites have been identified, consultation between the Staff and the Oglala Sioux Tribe on adverse effects and mitigation measures *specific to such sites* would not be fruitful. Further, sites of cultural, historic, or religious significance to the Oglala Sioux Tribe cannot be identified without the participation of the Tribe.[123] Therefore, consultation between the Staff and the Oglala Sioux Tribe concerning the Dewey-Burdock project has focused on efforts to facilitate the Tribe's identification of cultural, historic or religious sites of significance to the Tribe.

A. The Staff Has Conducted Government-to-Government Consultation with the Oglala Sioux Tribe

The Staff's record of government-to-government consultation with the Tribe prior to the issuance of the Board's Partial Initial Decision is documented in its prior pleadings, testimony,

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[120] *Id.*
[121] *Id.* at 708.
[122] 36 C.F.R. § 800.2(c)(2)(ii)(A).
[123] Bulletin 38. *See also* Ex. NRC-064 (Letter from John Yellow Bird Steele, President of the Oglala Sioux Tribe) at 2 ("It is self-evident that each tribe will have expertise in recognizing its own sacred sites. The Oglala Sioux Tribe strongly objects to the use of persons without any expertise in Sioux TCP to identify Sioux TCP."). The Staff received similar input from other tribes.

and exhibits, herein incorporated by reference. Following the issuance of the Board's Partial Initial Decision, the Staff has diligently continued its efforts to consult on a government-to-government basis with the Oglala Sioux Tribe regarding the impacts of the Dewey-Burdock project on sites of cultural, historic, or religious significance to the Tribe. In accordance with the Board's Partial Initial Decision, on June 23, 2015, the Staff issued a letter to the President of the Oglala Sioux Tribe reiterating the Staff's ongoing commitment to consultation with the Tribe on the Dewey-Burdock project and extending an invitation for the Oglala Sioux Tribe to meet with the Staff on a government-to-government basis.[124] Consistent with guidance in the Tribal Protocol Manual,[125] the Staff identified the officials who would represent the NRC in a government-to-government meeting with the Tribe, and requested the identity of the Oglala Sioux Tribe individuals viewed by the Tribe as the appropriate representatives for government-to-government consultation with the NRC.[126]

By letter dated August 26, 2015, the Staff responded to a letter received on July 22, 2015, from the Oglala Sioux Tribe's then-Tribal Historic Preservation Officer (THPO), Mr. Dennis Yellow Thunder, which requested clarification of the roles and responsibilities of the Staff's consulting officials, as well as the Staff's plans to fulfill its responsibilities under the NHPA and NEPA.[127] In its response, the Staff provided an organizational chart of the responsible Staff office and clarified that the Staff intends to use any additional information it obtains from the Oglala Sioux Tribe to supplement both its NHPA and NEPA reviews.[128] The Staff also reiterated its invitation to the Tribe to meet with the Staff on a government-to-government basis, describing the purpose of such a meeting as introducing the Staff's new

[124] NRC Staff's Statement of Material Facts to Support Motion for Summary Disposition of Contentions 1A and 1B (Aug. 3, 2017) (Attachment 1), at ¶ 11 [hereinafter Statement of Material Facts].
[125] The Tribal Protocol Manual states that consultation often includes "identifying . . . staff level points of contact[.]" Tribal Protocol Manual at 14.
[126] Statement of Material Facts at ¶ 11.
[127] *Id.* at ¶¶ 12-13.
[128] *Id.* at ¶ 13.

management team to the Tribe and working with the Tribe to resolve the issues identified by the Board in its Partial Initial Decision.[129] The Staff requested that the Tribe provide possible meeting dates and locations for such a meeting by mid-September 2015.[130]

On September 24, 2015, the Staff received a letter from the Oglala Sioux Tribe's THPO expressing the Tribe's appreciation for the Staff's offer to help arrange a meeting to introduce the Staff's new management team and to work toward compliance with the Board's Partial Initial Decision.[131] The Tribe requested that such a meeting take place in Pine Ridge, South Dakota, and that the Staff provide a range of potential dates for such a meeting.[132] After receiving the Tribe's letter, the Staff attempted unsuccessfully to reach the Tribe's THPO by telephone and email to coordinate dates for the government-to-government meeting.[133] Between September and November 2015, the Staff continued its efforts to reach the Oglala Sioux Tribe by email, letter and telephone to further government-to-government consultation on the Dewey-Burdock project.[134] These attempts likewise did not elicit a response from the Oglala Sioux Tribe.[135] In its communications to the Tribe, the Staff reiterated its interest in holding a government-to-government meeting with the Oglala Sioux Tribe regarding the Dewey-Burdock project.[136]

On December 17, 2015, absent input from the Tribe regarding dates for the government-to-government meeting, the Staff issued a letter to the President of the Oglala Sioux Tribe

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[129] *Id.* *See also* Tribal Protocol Manual at 18 (The Staff should share its proposed agenda for government-to-government meetings with the consulting tribe).
[130] Statement of Material Facts at ¶ 13.
[131] *Id.* at ¶ 14.
[132] *Id.*
[133] *Id.* at ¶¶ 15-16; Affidavit of Kellee L. Jamerson Concerning the Staff's Motion for Summary Disposition of Contentions 1A and 1B (Aug. 3, 2017) (Attachment 2), at ¶ 3 [hereinafter Jamerson Declaration].
[134] The Staff's efforts included telephone calls placed to the Oglala Sioux Tribe's THPO office; emails sent to Mr. Yellow Thunder, the Tribe's THPO; a letter to the President of the Oglala Sioux Tribe, detailing the Staff's difficulty reaching the Tribe's THPO and reiterating the Staff's interest in meeting with the Tribe; and an email to Mr. Jeffrey Parsons and Mr. Travis Stills, counsel for the Oglala Sioux Tribe, conveying the aforementioned letter and emails and enquiring as to whether the Tribe's contact information had changed. Statement of Material Facts at ¶¶ 12-20; Jamerson Declaration at ¶ 4.
[135] On December 1, 2015, counsel for the Oglala Sioux Tribe responded to the Staff via email, stating that the Oglala Sioux Tribe THPO office was "very busy" and that he was not aware of the Staff providing any proposed dates for the government-to-government meeting. *Id.* at ¶ 21.
[136] *See, e.g.*, *id.* at ¶¶ 15, 18.

proposing holding the meeting with the Tribe in Pine Ridge, South Dakota, during the month of February 2016.[137] Acknowledging the difficulty of coordinating a date for the meeting that may be suitable for both parties, the Staff requested that the Tribe provide alternate dates if those presented were not convenient to the Tribe. The Staff reiterated its recognition of the need to meet the Oglala Sioux Tribe on a government-to-government basis, and stated that the purpose of such a meeting would be to introduce the Staff's management team responsible for the Dewey-Burdock project to the Tribe, as well as to work with the Tribe to resolve the issues identified by the Board in its Partial Initial Decision.[138] During the winter and spring of 2016, counsel for the Oglala Sioux Tribe and counsel for the Staff worked to coordinate dates for the government-to-government meeting between the Staff and the Tribe.[139]

On May 19, 2016, the Staff and the Oglala Sioux Tribe held a government-to-government meeting in Pine Ridge, South Dakota.[140] The meeting's participants included a member of the Oglala Sioux Tribe's Executive Committee, the Oglala Sioux Tribe's THPO, the Staff's Director of the Division of Fuel Cycle Safety, Safeguards and Environmental Review – Office of Nuclear Material Safety and Safeguards, and the Staff's project managers responsible for oversight of the Dewey-Burdock project.[141] In addition to serving to introduce the Staff to the Oglala Sioux Tribe's representatives, the meeting "constituted the first step and building block for moving forward with the consultation process to gather information about historic and cultural resources of significance to the Oglala Sioux Tribe that could be affected by the construction and operation of the Dewey-Burdock" project.[142] Among other matters, the Staff and the Tribe discussed the Tribe's objections to and concerns with the Programmatic Agreement, the

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[137] *Id.* at ¶ 22.
[138] *Id.*
[139] *Id.* at ¶ 23. During that time, counsel for the Oglala Sioux Tribe informed counsel for the Staff that the Tribe's Cultural Resources and Historic Preservation Office had undergone significant restructuring, and that Ms. Trina Lone Hill had replaced Mr. Yellow Thunder as the Oglala Sioux Tribe's THPO. *Id.*
[140] *Id.* at ¶ 24; Jamerson Declaration at ¶ 5.
[141] Statement of Material Facts at ¶ 24.
[142] *Id.*

continued effectiveness of Powertech's license, and the tribal survey of the Dewey-Burdock site conducted in 2013. The Oglala Sioux Tribe committed to providing the Staff with specific citations to tribal laws and ordinances prohibiting nuclear activities within tribal treaty lands, and the Staff committed to considering these laws and ordinances as part of the consultation process.[143]

On August 16, 2016, the Staff reached out to the Oglala Sioux Tribe's THPO to request the citations to the tribal laws and ordinances referenced in the government-to-government meeting. The Staff also requested that the Tribe telephone the Staff to discuss the Tribe's thoughts concerning conducting a further survey.[144] Later that month, the Staff attempted to contact the Tribe by phone to pursue the matters raised in the Staff's email.[145] During a teleconference with the Board and parties on November 7, 2016, counsel for the Staff reiterated the Staff's commitment to continuing to engage in government-to-government consultation with the Tribe, and to working with the Tribe to hold a survey of the Dewey-Burdock project area for sites of cultural, historic, or religious significance to the Tribe.[146]

On November 23, 2016, the Staff issued an invitation to the Oglala Sioux Tribe to engage in further consultation on the parameters of an additional survey of the Dewey-Burdock site.[147] The Staff proposed that a meeting should be held by teleconference in December 2016 or January 2017, or another timeframe suitable to the Tribe. The Staff also reiterated its willingness to consider as part of the consultation process the tribal laws and ordinances alluded to by the Tribe in the May 19, 2016 meeting.[148] In December 2016, the Staff attempted unsuccessfully to reach the Oglala Sioux Tribe's THPO by telephone and email regarding its

[143] *Id.*
[144] *Id.* at ¶ 25; Jamerson Declaration at ¶ 5.
[145] Statement of Material Facts at ¶ 26; Jamerson Declaration at ¶ 5.
[146] *Id.* at ¶ 28.
[147] *Id.* at ¶ 29; Jamerson Declaration at ¶ 6.
[148] Statement of Material Facts at ¶ 29.

invitation to participate in a teleconference with the Staff.[149] However, on January 13, 2017, the THPO for the Oglala Sioux Tribe responded to the Staff's letter, agreeing to a teleconference with the Staff that would entail, in addition to "government-to-government consultation between the Oglala Sioux Tribe and the United States," a discussion of "mechanisms to address issues concerning other parties with an interest in these issues in context of the NHPA/NEPA process" and "Powertech's stated unwillingness to meet its financial obligations for NRC Staff to complete its statutory mandates related to cultural resources" affected by the Dewey-Burdock project.[150]

On January 31, 2017, the Staff and the Oglala Sioux Tribe held a meeting by teleconference to discuss several issues relating to the identification of cultural resources at the Dewey-Burdock project site, including the perspectives of the parties concerning a proposed survey for tribal historic and cultural resources at the Dewey-Burdock site.[151] At that meeting, the Staff and the Oglala Sioux Tribe agreed to hold a teleconference tentatively scheduled for the beginning of April 2017 to continue consultation on a cultural resources survey. The Tribe committed to providing the Staff with information about a tribal survey approach by mid-March 2017 to aid in the discussion and establishment of such a survey.[152] In February 2017, the Staff reached out to the Oglala Sioux Tribe's THPO by email requesting the Tribe's availability in the beginning of April for a further teleconference.[153] On March 17, 2017, counsel for the Oglala Sioux Tribe informed the Staff that the Tribe was working to provide the Oglala Sioux Tribe's concept for a survey approach, as they committed, and a date in early April that would work for a teleconference.[154]

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[149] *Id.* at ¶¶ 30-31; Jamerson Declaration at ¶ 6.
[150] Statement of Material Facts at ¶ 32.
[151] *Id.* at ¶ 34; Jamerson Declaration at ¶ 7.
[152] Statement of Material Facts at ¶ 34; Jamerson Declaration at ¶ 7.
[153] Statement of Material Facts at ¶¶ 36-37.
[154] *Id.* at ¶ 38; Jamerson Declaration at ¶ 7. Counsel for the Tribe stated that they would let the Staff know "as soon as possible." Statement of Material Facts at ¶ 38.

On April 14, 2017, having received neither the promised input from the Tribe regarding a tribal survey approach, nor the Tribe's availability for a teleconference on that matter, the Staff issued an invitation to the Oglala Sioux Tribe to participate in a tribal site survey of the Dewey-Burdock project area on dates of the Tribe's selection between mid-May and the end of July 2017.[155] The Staff issued the survey invitation in order to maintain communication with the Oglala Sioux Tribe and to provide the Tribe with a broad window for selection of survey dates before the onset of unfavorable weather in early autumn, taking into account the Tribe's unavailability during the month of July due to the Sun Dance ceremonies.[156] In response to a notification by counsel for the Oglala Sioux Tribe that Ms. Lone Hill was no longer the Tribe's THPO, the Staff reached out to the Tribe, the ACHP, and the South Dakota SHPO, to determine who the Staff should contact regarding continuing consultation on the Dewey-Burdock project and other NRC projects.[157] In consequence of the Staff's understanding that Ms. Lone Hill had been absent from the position for approximately one week and had already been reinstated, the Staff reissued the survey invitation to the Oglala Sioux Tribe's THPO and President, and included an additional range of dates from which the Tribe could select for a tribal survey of the Dewey-Burdock project area.[158]

On May 31, 2017, the Oglala Sioux Tribe responded to the Staff's invitation to participate in a survey of the Dewey-Burdock site.[159] In its letter, the Tribe stated that for "the multiple reasons presented to NRC Staff on the record in the past, and reiterated in this letter," the Staff's "proposal remains unacceptable in its current form."[160] The Tribe described its objections to the survey opportunity offered by the Staff and referred to information from the administrative records for the Dewey-Burdock and Crow Butte license renewal proceedings that reflected the

[155] *Id.* at ¶ 39; Jamerson Declaration at ¶ 7.
[156] Statement of Material Facts at ¶ 46; Jamerson Declaration at ¶ 7.
[157] Statement of Material Facts at ¶ 41.
[158] *Id.* at ¶¶ 41-42.
[159] *Id.* at ¶ 45; Jamerson Declaration at ¶ 8.
[160] Statement of Material Facts at ¶ 45.

Oglala Sioux Tribe's position regarding the Staff's survey proposal.[161] The Tribe also asserted that "there must be an effort to coordinate the several different Lakota Sioux Tribes before designing and conducting a cultural resources survey."[162] The Tribe explained, "[w]hile the Office understands that NRC Staff is under an obligation to conduct consultation meetings with the Oglala Sioux Tribe specifically, and the Office wishes to take part in those, coordination of a cultural resources survey must include the other Lakota Sioux tribal governments at the earliest stages in order to be competent in its analysis of Lakota Sioux cultural resources."[163]

On July 24, 2017, the Staff responded to the Oglala Sioux Tribe's May 31, 2017 letter. The Staff acknowledged that the Tribe considered the Staff's offered site survey opportunity to be unacceptable and indicated that the Staff took this statement to convey the Tribe's rejection of the offer.[164] The Staff explained that in the teleconference meeting held on January 31, 2017, the Staff had presented the Tribe with a preliminary survey approach as a starting point for discussions regarding a mutually acceptable survey approach. During the teleconference meeting, the Tribe had expressed its disappointment regarding the preliminary survey approach and committed to providing specific information concerning the Tribe's desired parameters of a site survey by mid-March 2017 and to engage in further discussions with the Staff in the April 2017 timeframe concerning the Tribe's proposal. Throughout this period and thereafter, the Staff continued to seek this input from the Tribe, as well as information concerning the Tribe's availability for further discussions regarding the parameters of a site survey. The Staff explained that, in the absence of the specific input from the Oglala Sioux Tribe, the Staff had

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[161] *Id.*; *see also* Jamerson Declaration at ¶ 8.
[162] Statement of Material Facts at ¶ 45; *see also* Jamerson Declaration at ¶ 8.
[163] *Id.* The Oglala Sioux Tribe's response to the Staff's survey invitation contained other information and requests not further described in this Motion. For example, the Tribe requested that significant further discussion take place on a face-to-face basis, and requested that the Staff identify the decision-maker for its NHPA consultation process. *See id.*
[164] *Id.* at ¶ 46; *see also* Jamerson Declaration at ¶ 8.

offered the open site survey and honorarium to afford the Tribe the flexibility to select and use a survey methodology that it deemed acceptable for the identification of its own sites of cultural, historical, and religious significance.[165]

As explained the Staff's July 24, 2017 letter to the Tribe, the positions raised in the Oglala Sioux Tribe's May 31 letter – including but not limited to the length of the site survey, the survey methodology, and the requirement that the Staff coordinate with the governments of all Lakota Sioux Tribes before designing a cultural resources survey – appear to be far apart from the discussions in the May 19, 2016, government-to-government meeting, the January 31, 2017, teleconference, and the reasonable opportunity to identify cultural resources described in the Staff's letters to the Tribe dated April 14, 2017, and May 8, 2017.[166] In light of the Oglala Sioux Tribe's views regarding the design and conduct of a site survey, and the more than two years of consultation that have occurred since the Board's Partial Initial Decision, the Staff reluctantly recognizes that further consultation is unlikely to result in a mutually acceptable settlement of the dispute regarding the outstanding contentions.[167] Nevertheless, because the Staff has diligently and proactively consulted with the Tribe on a government-to-government basis to identify sites of cultural, historic, or religious significance to the Tribe that may be affected by the Dewey-Burdock project, in order to identify any adverse effects to such sites and implement appropriate mitigation measures, the Staff has satisfied its consultation responsibilities under Section 106 of the NHPA.

B. This Consultation Afforded the Oglala Sioux Tribe a Reasonable Opportunity to Identify Its Concerns About Impacts to Its Sites of Cultural, Historic, and Religious Importance

While the Section 106 consultation process did not ultimately result in a survey of the Dewey-Burdock project area by the Tribe, the Staff's efforts to consult with the Tribe have been

[165] *Id.*
[166] *See id.*; Jamerson Declaration at ¶ 8.
[167] *See* Statement of Material Facts at ¶ 46; Jamerson Declaration at ¶ 8.

both meaningful and reasonable. Throughout the consultation process, the Staff afforded the Oglala Sioux Tribe a reasonable opportunity to identify its concerns about the cultural, historic or religious sites of significance to the Oglala Sioux Tribe that may be impacted by the Powertech Dewey-Burdock project. As discussed below, there were several components to the Staff's efforts to fulfill its Section 106 consultation responsibilities, including taking part in government-to-government meetings with the Tribe; actively soliciting the Tribe's views regarding any Oglala Sioux cultural, historical or religious sites; and endeavoring to facilitate a survey of the Dewey-Burdock project area for sites of cultural, historic or religious importance to the Tribe.

Subsequent to the issuance of the Board's Partial Initial Decision, as described above, the Staff promptly reaffirmed its commitment to government-to-government consultation with the Oglala Sioux Tribe, and endeavored for nearly a year to arrange a meeting between the Staff and the Tribe to resolve the issues identified by the Board in its Partial Initial Decision.[168] In this meeting and in the subsequent teleconference between the Staff and the Oglala Sioux Tribe, the Staff listened to the concerns of the Tribe regarding the Dewey-Burdock project and sought the Tribe's input on a survey of the Dewey-Burdock site for cultural, historic or religious sites of significance to the Oglala Sioux Tribe.[169] The Staff attempted to continue its discussions with the Oglala Sioux Tribe on these matters in a further teleconference, but despite the Tribe's expressed commitment to participating in another teleconference with the Staff, the Staff was unable to obtain from the Tribe its availability for such a discussion in the timeframe discussed by the parties.[170]

In addition to seeking the Oglala Sioux Tribe's participation in meetings with the Staff to discuss the Tribe's concerns about the Dewey-Burdock project,[171] the Staff actively sought

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[168] *See* Statement of Material Facts at ¶¶ 11, 13, 15-20, 22-23; Jamerson Declaration at ¶¶ 3-5.
[169] *See* Statement of Material Facts at ¶¶ 24, 34.
[170] *See id.* at ¶¶ 35-39; Jamerson Declaration at ¶ 7.
[171] These concerns were not limited to the outstanding issues identified by the Board in its Partial Initial Decision with respect to Contentions 1A and 1B – *i.e.*, the inadequacy of the consultation record under the NHPA and the FSEIS's consideration of the Oglala Sioux Tribe's cultural, historic and religious

information from the Tribe about its views regarding any Oglala Sioux cultural, historical or religious sites that may be impacted by the Dewey-Burdock Project. The Staff reiterated its interest in considering any information the Tribe was willing to provide in its communications with the Tribe;[172] in its meetings with the Tribe;[173] and in the teleconference with the Board and parties, including the Tribe.[174] The Staff committed to using any information provided by the Oglala Sioux Tribe in its NEPA and NHPA reviews.[175]

Finally, the Staff endeavored to consult with the Tribe to facilitate a survey of the Dewey-Burdock project area for sites of cultural, historic or religious importance to the Oglala Sioux Tribe. In its May 19, 2016 meeting with the Staff, the Oglala Sioux Tribe expressed that the previous tribal site survey "was incomplete and the survey methodology lacked scientific integrity"[176] and that an additional survey of the Dewey-Burdock project area was necessary for the Oglala Sioux Tribe to identify its sites of cultural, historic or religious importance.[177] The Tribe expressed generally that other Lakota Sioux tribes should be involved in the development

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resources. The Tribe also expressed its concerns to the Staff about the continuing effectiveness of the license in light of the Board's ruling, as well as tribal laws and ordinances prohibiting nuclear activities within tribal treaty lands. *See* Statement of Material Facts at ¶ 24. By letter dated November 23, 2016, Staff responded to the Tribe's concerns regarding the continuing effectiveness of the license. *Id.* at ¶ 29. The Staff also committed to considering the Tribe's laws and ordinances as part of the consultation process; however, the Tribe did not provide the Staff any further information concerning these laws and ordinances. *See id.* at ¶ 24.

[172] *See id.* at ¶ 11 ("[T]he NRC staff renews its request for your views regarding any Sioux cultural, historical or religious sites that may be impacted by the Dewey-Burdock Project. Your response will ensure that relevant information is properly captured in the PA and considered during the development of mitigation measures."); ¶ 13 (The Staff "intends to use any additional information it obtains from the Oglala Sioux Tribe to supplement both our NHPA and NEPA reviews.").

[173] *See id.* at ¶ 34 (The Staff "asked the Tribe whether it would be willing to share information about known cultural and historic resources that may be impacted by the Dewey-Burdock project").

[174] *See id.* at ¶ 28 ("We are willing to take any information that the Oglala Sioux Tribe is willing to provide on . . . historic and cultural resources of interest to them. Anything that they are willing to provide, we would be thrilled to have"; "[T]he issue in this case is that we have not received anything . . . specific to the Oglala Sioux Tribe, and that's why we were not able to document it as a NEPA analysis, so any information would be of great value to us and would enable us to protect this through mitigation measures, through the programmatic agreement, et cetera.").

[175] *Id.* at ¶ 13.

[176] *Id.* at ¶ 24; *see also id.* at ¶ 45 (expressing the Oglala Sioux Tribe's views concerning the appropriate methodology for conducting a survey).

[177] *Id.*

and/or implementation of the survey.[178] The Tribe also expressed its desire for a contractor to facilitate and carry out the survey.[179]

Throughout its consultation efforts following the Board's Partial Initial Decision, the Staff has agreed that the Oglala Sioux Tribe should have another opportunity to conduct a survey of the Dewey-Burdock project area for its cultural resources.[180] In view of the Tribe's general expressions of concern about the methodology used to conduct a tribal survey and a desire to involve other tribal participants,[181] the Staff sought specific input from the Tribe regarding its views regarding a survey methodology and approach, the number of tribal representatives that should participate the survey, the terms of cost or reimbursement for the survey, and a survey timeframe, in order to further discussions with the Tribe on designing a mutually agreeable survey opportunity.[182] In the January 31, 2017, teleconference, the Tribe stated that its preferred approach was a survey methodology similar in nature to the Tribe's previous Makoche Wowapi survey proposal.[183] Nevertheless, the Tribe committed to providing the Staff with information on an acceptable tribal survey approach by mid-March 2017. Ultimately, when the Oglala Sioux Tribe did not provide this information, the Staff moved forward with an invitation to the Tribe to participate in a tribal site survey of the Dewey-Burdock project area.[184] As the Staff

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[178] *Id.* at ¶¶ 14, 24, 32, 45.
[179] Counsel for the Oglala Sioux Tribe informed counsel for the Staff, after the Staff had issued its invitation to participate in a tribal survey of the Dewey-Burdock site, that the Tribe expected to provide a response to the Staff "that will expand on the Tribe's stated position that key features of a survey should include a qualified contractor to coordinate a survey among the several interested Sioux Tribes based on accepted methodologies and professional standards to identify cultural, religious, and historic resources and the potential adverse effects to those resources." *Id.* at ¶ 40. In its May 31, 2017, response to the Staff's invitation to participate in a site survey, the Tribe stated that "the best manner to conduct a proper survey is to involve a contractor(s) with the necessary experience, training, and cultural knowledge to carry out and facilitate the survey." *Id.* at ¶ 45.
[180] *See, e.g.*, *id.* at ¶¶ 24, 25, 28, 34, 39, 42.
[181] *See, e.g.*, *id.* at ¶¶ 14, 24, 32, 34.
[182] *Id.* at ¶ 34; *see also* Jamerson Declaration at ¶ 7.
[183] *Id.* The Board found that "some of the [Oglala Sioux Tribe's] demands to engage with the NRC Staff were patently unreasonable," referring in part to "the funds requested to collect tribal cultural information" associated with the Makoche Wowapi proposal and comparable survey efforts. *Powertech*, LBP-15-16, 81 NRC at 656-57 & n.229 (citing Transcript of Proceedings at 807, 810).
[184] Statement of Material Facts at ¶ 39; Jamerson Declaration at ¶ 7.

had explained in its January 2017 teleconference with the Tribe, the Staff believed the open site approach provided the Oglala Sioux Tribe the flexibility of conducting a tribal survey using any survey methodology that the Tribe found acceptable to identify the cultural, historic, and religious sites of importance to the Tribe.[185]

By letter dated May 31, 2017, the Oglala Sioux Tribe stated that the Staff's survey offer was unacceptable to the Tribe.[186] The Tribe excerpted testimony from the Crow Butte license renewal proceeding, in which a former Oglala Sioux Tribe THPO had testified regarding the Tribe's position on the length and methodology of a survey for sites of cultural, historic, and religious significance to the Tribe.[187] With this letter, the Oglala Sioux Tribe also informed the Staff that the Staff must coordinate the participation of all of the Lakota Sioux tribes in the development of a survey approach as a precondition to moving forward with the Oglala Sioux Tribe on the development of a survey for sites of cultural, historic, and religious importance to the Oglala Sioux Tribe at the Dewey-Burdock site.[188] In view of the positions raised by the Tribe

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[185] Statement of Material Facts at ¶ 34; *see also* Jamerson Declaration at ¶ 7.
[186] Statement of Material Facts at ¶ 45; Jamerson Declaration at ¶ 8.
[187] For example, Mr. Michael Catches-Enemy, a former THPO of the Oglala Sioux Tribe, testified:

> So a TCP survey is quite extensive, and that's why I didn't want to limit to maybe even just one year. I would say a couple years. When you're talking about that large of an audience, as far as that many tribes to be involved, to get a good feel for the area, maybe in different seasons – maybe they want to be out there when the ground visibility is the best, or maybe there are ceremonies to be performed during that time at the elders' discretion.

Statement of Material Facts at ¶ 45.
[188] "[C]oordination of a cultural resources survey must include the other Lakota Sioux tribal governments at the earliest stages in order to be competent in its analysis of Lakota Sioux cultural resources." *Id.* In its email dated September 29, 2015, the Staff indicated its willingness to meet with other parties invited by the Oglala Sioux Tribe as part of the consultation process. *Id.* at ¶ 15. Ultimately, the Oglala Sioux Tribe informed the Staff that it would be willing to "conduct a meeting with only Oglala Sioux Tribe and NRC Staff representatives, followed by an opportunity to update other tribes that show interest." *Id.* at ¶ 23. The government-to-government meeting between the Staff and the Oglala Sioux Tribe was held without the participation of other Lakota Sioux tribes. *See id.* at ¶ 24. The subsequent January 31, 2017 teleconference between the Staff and the Oglala Sioux Tribe was also held without the participation of other Lakota Sioux tribes. *See id.* at ¶ 34. Although the stated purpose of the teleconference was to discuss the parameters of a tribal survey of the Dewey-Burdock site, *see id.* at ¶¶ 28, 29, 31, 33, the Tribe did not inform the Staff that the participation of all of the Lakota Sioux tribes was necessary for the purposes of this discussion, and in fact committed in that meeting to providing the Oglala Sioux Tribe's

in its May 31, 2017 letter, which appeared to the Staff to be increasingly far apart from the Staff's previous discussions with the Tribe and the offered survey opportunity, and recognizing the more than two years of consultation that have taken place since the Board's ruling, the Staff determined that further consultation with the Oglala Sioux Tribe would not be likely to result in a mutually acceptable settlement of the dispute regarding the outstanding contentions.[189]

The NHPA does not obligate the Staff to identify properties of traditional religious and cultural importance to a Tribe if such information cannot be obtained. Rather, the NHPA requires that the Federal agency consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertaking[190] and, in doing so, afford the Indian tribe a reasonable opportunity to identify its concerns about such properties.[191] Here, there is no genuine issue of material fact regarding the efforts of the Staff to conduct meaningful government-to-government consultation with Oglala Sioux Tribe over the last seven years. The material facts demonstrate that in accordance with the NHPA, the Staff has, through government-to-government consultation with the Oglala Sioux Tribe, afforded the Tribe a reasonable opportunity to identify its concerns about historic properties that may be affected by the Dewey-Burdock project and to advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance to the Tribe.[192] Since the consultation process has not resulted in the identification of any such properties, it has therefore not been possible for the Staff and the Oglala Sioux Tribe to consult to identify

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input on a tribal survey approach within two months to support a further teleconference on the development of the survey. *Id.* at ¶ 34.

[189] *Id.* at ¶ 46; Jamerson Declaration at ¶ 8.

[190] 54 U.S.C. § 302706(b); *see also* 36 C.F.R. § 800.2(c)(2)(ii).

[191] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[192] Moreover, in resolving Contention 1A, the Board held that the Staff satisfied its obligation under the NHPA to make a reasonable and good faith effort to identify historic properties in the Dewey-Burdock area. *Powertech*, LBP-15-16, 81 NRC at 654. Under the ACHP's regulations, historic properties *include* eligible properties of religious and cultural significance to consulting Indian tribes, such as those of the Oglala Sioux Tribe.

adverse effects specific to such identified properties or to adopt measures to avoid, minimize, or mitigate adverse effects to these properties.[193]

In summary, the Staff has satisfied its obligation under the NHPA to conduct meaningful consultation with the Oglala Sioux Tribe.[194] Accordingly, the Board should find that the Staff is entitled to judgment as a matter of law on Contention 1B.

II. The Staff Has Satisfied Its Responsibility Under NEPA to Take a Hard Look at the Impacts of the Dewey-Burdock Project on Cultural Resources (Contention 1A)

In its Partial Initial Decision, the Board held that the Staff had complied with the NHPA's requirement to make a good faith and reasonable effort to identify historic properties within the Dewey-Burdock project area.[195] However, the Board held that the Staff had not satisfied the requirement under NEPA to take a "hard look" at the impacts of the Dewey-Burdock project on Sioux cultural resources because the FSEIS did not adequately address the Oglala Sioux Tribe's cultural, historical, and religious sites or include mitigation measures sufficient to protect such sites.[196] The Board stated that additional consultation is required "to . . . satisfy the hard look at impacts required by NEPA, and to supplement the FSEIS, if necessary,"[197] and that, with respect to Contention 1B:

> The Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary. The FSEIS and Record of Decision in this case must be supplemented, if necessary, to include any cultural, historic or religious sites

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[193] Further, the Dewey-Burdock Programmatic Agreement sets forth the process the Staff must follow to complete the identification and evaluation of historic properties, assess adverse effects, and develop measures to avoid, minimize, or mitigate those effects. As the Staff implements the Dewey-Burdock Programmatic Agreement, it will do so in consultation with interested Tribes. Under the Programmatic Agreement, the Oglala Sioux Tribe will have the option of consulting with the Staff on the future identification and evaluation of historic properties, as well as the assessment of adverse effects and development of measures to avoid, minimize, or mitigate adverse effects to identified properties.
[194] *See Powertech*, LBP-15-16, 81 NRC at 657-58, 708. Further, as described in this Motion, the Staff has conducted its consultation activities consist with the guidance in the Tribal Protocol Manual.
[195] *Id.* at 654.
[196] *Id.* at 654-55, 57-58, 708.
[197] *Id.* at 657.

identified and to discuss any mitigation measures necessary to avoid any adverse effects.[198]

When preparing an EIS, the Staff must take a "hard look" at the environmental impacts of its proposed action.[199] The "hard look" standard is, however, subject to NEPA's "rule of reason."[200] Under NEPA's rule of reason, the Staff need not address every environmental effect that could potentially result from the proposed action. Rather, the Staff need only provide "[a] reasonably thorough discussion of the significant aspects of the probable environmental consequences[.]"[201] While the Staff must analyze environmental consequences in an EIS where it is "reasonably possible" to do so, NEPA's rule of reason acknowledges that in certain cases an agency may be unable to obtain information to support a complete analysis.[202] Under Commission precedent, "[a]n environmental impact statement is not intended to be 'a research document,'"[203] and the Staff is not required to analyze every conceivable aspect of a proposed project.[204] Although the Staff can always gather more data in a particular area, it "must have some discretion to draw the line and move forward with decisionmaking."[205]

Under NEPA's "hard look" standard, the proper inquiry is not whether the Staff obtained complete information on sites of cultural, historical, and religious to the Oglala Sioux Tribe, but whether the Staff made reasonable efforts to do so.[206] To obtain complete information on the Oglala Sioux Tribe's cultural resources, the Staff needed input from the Tribe itself.[207] The existence and significance of sites of cultural, historical, and religious importance to the Oglala

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[198] *Id.* at 708.
[199] *Methow Valley Citizens Council*, 490 U.S. at 350.
[200] *Ground Zero Ctr. for Non-Violent Action v. U.S. Dept. of the Navy*, 383 F.3d 1082, 1089-90 (9th Cir. 2004) (citing *NoGWEN Alliance of Lane County, Inc. v. Aldridge*, 855 F.2d 1380, 1385 (9th Cir. 1988)).
[201] *Trout Unlimited*, 509 F.2d at 1283; *Warm Springs Dam Task Force*, 621 F.2d at 1026-27..
[202] *Kern v. Bureau of Land Mgmt.*, 284 F.3d at 1072; see also 40 C.F.R. § 1502.22 (explaining how an agency should proceed when faced with incomplete or unavailable information).
[203] *Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 349 (2002).
[204] *Pilgrim*, CLI-10-11, 71 NRC at 315 (footnote omitted).
[205] *Id.*
[206] *Ground Zero Ctr. for Non-Violent Action*, 383 F.3d 1082 at 1089-90; *Warm Springs*, 621 F.2d at 1026-27; *Pilgrim*, CLI-10-11, 71 NRC at 315.
[207] *See* Bulletin 38 at 7-10.

Sioux Tribe must, necessarily, be determined by the Oglala Sioux Tribe, as the community that ascribes this significance to them.[208]

The Staff's efforts in the years prior to the Board's Partial Initial Decision to take a hard look at how the Dewey-Burdock project may affect Sioux cultural resources are documented in its prior pleadings, testimony, and exhibits, herein incorporated by reference. The Staff's subsequent efforts are detailed in the Staff's discussion relating to its resolution of the issues identified by the Board in Contention 1B, above. In short, in the more than two years since the issuance of the Board's Partial Initial Decision, despite these documented efforts of the Staff to engage in government-to-government consultation with the Oglala Sioux Tribe for the purpose of obtaining information on cultural, historic or religious sites of significance to the Tribe, the Tribe has not provided information on such sites to the Staff. Nor has the Oglala Sioux Tribe provided by any other means any information it may currently have regarding such sites, despite the Staff's repeated requests for any information the Tribe may be willing to provide so that it may be captured as part of the Staff's NEPA and NHPA reviews and considered during the development of mitigation measures. Finally, the Oglala Sioux Tribe has not availed itself of the offered opportunities to survey the Dewey-Burdock project site for such properties.

Having no specific information on the presence of cultural, historic or religious sites of significance to the Oglala Sioux Tribe in the Dewey-Burdock area, it has not been possible for the Staff to supplement the FSEIS or the Record of Decision to describe such sites, identify adverse effects to them, or adopt measures to mitigate impacts to them beyond those already described in the FSEIS for sites within the area of potential effects of the project. The Staff's inability to obtain such information resulted not from inaction on its part, but from the Oglala Sioux Tribe having declined to participate in opportunities to survey the Dewey-Burdock site for its sites of cultural, historic or religious significance, or to otherwise provide to the Staff any

[208] *Id.*; *see also supra* notes 73 & 123.

information it may have on such sites. Where, as here, it has not been reasonably possible to describe information because it cannot be obtained, the "hard look" standard is satisfied.

Notwithstanding the absence of specific information in the FSEIS concerning the cultural, historic or religious sites of significance to the Oglala Sioux Tribe, the Staff evaluated in its NEPA review information about Sioux cultural resources that it was able to obtain without the specific input of the Sioux Tribes. In Chapter 3 of the FSEIS, the Staff described various types of sites that could have been identified if the Sioux tribes provided field survey results.[209] The Staff described the cultural history of the Black Hills with reference to the Lakota Sioux' connection to the area, including the religious and cultural significance of the Black Hills to the Lakota.[210] In addition, in the FSEIS, the Staff evaluated how the Dewey-Burdock project might affect *all* sites within the area of potential effects, not merely those sites that were eligible for listing on the National Register.[211] The Staff presented its impact determinations in the FSEIS, along with its recommended measures to mitigate these impacts.[212] After the Staff completed its evaluations, it provided its impact assessments and mitigation recommendations to all consulting tribes for comment – including the Oglala Sioux Tribe – as it had committed to doing when it released the Draft SEIS.[213]

In summary, the Staff has satisfied its obligation under NEPA to take a "hard look" at Sioux cultural resources that may be impacted by the Dewey-Burdock project. Accordingly, the Board should find that the Staff is entitled to judgment as a matter of law on Contention 1A.

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[209] Ex. NRC-008-A-1, FSEIS, at 257-63.
[210] *Id.* at 247, 257-59.
[211] Ex. NRC-008-A-2, FSEIS, at 466-86.
[212] *Id.* at 474-86. In particular, in Tables 4.9-4 through 4.9-6, the Staff provided its determinations regarding both environmental impacts and National Register eligibility. In these tables the Staff also included a column titled "Management Recommendation/Comments," which lists its mitigation recommendations under both the NHPA and NEPA. *Id.*
[213] Exs. NRC-058 and NRC-061 through NRC-063.

CONCLUSION

The Board should grant the Staff's motion for summary disposition, resolve Contentions 1A and 1B in favor of the Staff, and terminate this proceeding.

Respectfully submitted,

/Signed (electronically) by/
Emily Monteith
Emily Monteith
Counsel for the NRC Staff

/Signed (electronically) by/
David M. Cylkowski
David M. Cylkowski
Counsel for the NRC Staff

Dated at Rockville, Maryland
this 3rd day of August 2017

Attachment 1

August 3, 2017

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH USA, INC.	)	Docket No. 40-9075-MLA
	)	
(Dewey-Burdock	)	
In Situ Uranium Recovery Facility)	)	

NRC STAFF'S STATEMENT OF MATERIAL FACTS TO SUPPORT MOTION FOR SUMMARY DISPOSITION OF CONTENTIONS 1A AND 1B

In support of its motion for summary disposition on Contentions 1A and 1B, the Nuclear Regulatory Commission (NRC) Staff submits this statement of material facts for which there is no genuine issue to be heard. In its accompanying motion, the Staff explains why, based on these facts, the Atomic Safety and Licensing Board should grant summary disposition on Contentions 1A and 1B as a matter of law.

I. Pre-Hearing and Hearing History

1. On February 25, 2009, Powertech (USA) Inc. (Powertech) applied for an NRC source and byproduct materials license to be used in connection with its proposed Dewey-Burdock in-situ uranium recovery (ISR) facility in Custer and Fall River Counties, South Dakota. On August 10, 2009, Powertech submitted revisions to its application. On October 2, 2009, the NRC Staff notified Powertech that it found the revised application acceptable for detailed technical and environmental review.

2. As part of its application, Powertech submitted a Class III archaeological survey of the Dewey-Burdock site. A Class III archaeological survey involves a professionally conducted thorough pedestrian survey of an entire target area to identify properties that may be eligible for inclusion on the National Register of Historic Places.

3. On March 8, 2010, the Consolidated Intervenors requested a hearing on Powertech's application for an NRC license. On April 6, 2010, the Oglala Sioux Tribe requested a hearing.

4. On February 8, 2013, the Staff invited 23 Tribes, including the Oglala Sioux Tribe, to participate in field surveys of the Dewey-Burdock site in order to identify traditional

cultural properties (TCPs) of cultural, historic, or religious significance to them.[1] Between April 2 and May 3, 2013, the Staff facilitated these tribal field surveys. While the Oglala Sioux Tribe initially announced its intention to participate in a survey, the Oglala Sioux Tribe withdrew its acceptance because the Tribal Council would not be briefed before the survey was scheduled to begin.[2]

5. On January 31, 2014, the Staff issued the Final Supplemental Environmental Impact Statement for the Dewey-Burdock project.[3]

6. On April 7, 2014, the Staff finalized the Programmatic Agreement (PA) for the Dewey-Burdock project, which discusses, among other matters, the process that will be used to develop measures to mitigate impacts to historic or cultural resources that may be affected by the Dewey-Burdock project.[4] The signatories to the PA include the NRC, Powertech, the Bureau of Land Management, the South Dakota State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP).

7. On April 8, 2014, the Staff issued Source Material License No. SUA-1600 to Powertech.[5] The Staff also issued a Record of Decision documenting the Staff's decision to issue the license.[6]

8. Prior to the evidentiary hearing in this proceeding, the Atomic Safety and Licensing Board (Board) admitted two contentions, proffered by the Oglala Sioux Tribe, related to cultural resources. Contention 1A, as admitted and migrated by the Board, asserted that the FSEIS "fail[ed] to meet applicable legal requirements regarding protection of historical and cultural resources."[7] Contention 1B, as admitted and migrated by the Board, asserted that the Staff "failed to involve or consult all interested Tribes as required by federal law."[8]

9. From August 19-21, 2014, the Board held an evidentiary hearing in this proceeding in Rapid City, South Dakota.

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[1] Exhibit (Ex.) NRC-068, Email from Haimanot Yilma, Project Manager, Environmental Review Branch, to Tribal Historic Preservation Officers (Feb. 8, 2013) (ADAMS Accession No. ML13039A336).
[2] Ex. NRC-148, Letter from Bryan V. Brewer, President, Oglala Sioux Tribe, to Kevin Hsueh, Chief, Environmental Review Branch (Mar. 22, 2013) (ADAMS Accession No. ML13141A362).
[3] Exs. NRC-008-A-1 through NRC-008-B-2, NUREG-1910 Supp. 4, "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota: Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Mining Facilities" (Jan. 31, 2014) (ADAMS Accession Nos. ML14024A477, ML14024A478).
[4] Exs. NRC-018-A through NRC-018-H, Final Programmatic Agreement for the Powertech (USA), Inc. Dewey-Burdock Project (Apr. 7, 2014) (ADAMS Accession Nos. ML14066A347, ML14066A350).
[5] Ex. NRC-012, NRC Source Material License No. SUA-1600 (ADAMS Accession No. ML14043A392).
[6] Ex. NRC-011, NRC Record of Decision for the Dewey-Burdock Uranium In-Situ Recovery Project in Custer and Fall River Counties, South Dakota (Apr. 8, 2014) (ADAMS Accession No. ML14066A466).
[7] *Powertech USA, Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-14-5, 79 NRC 377, 401 (2014).
[8] *Id.*

10. On April 30, 2015, the Board issued a Partial Initial Decision resolving Contentions 1A and 1B in favor of the Oglala Sioux Tribe.[9] The Board ruled that the Staff could remedy the deficiencies identified by the Board "by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, if necessary."[10] The Board retained jurisdiction of the case pending the Staff's curing of these deficiencies and ordered the Staff to file monthly status reports describing its efforts to remedy the deficiencies, with the final report "includ[ing] an agreement reflecting the parties' settlement of their dispute regarding the contentions or a motion for summary disposition of Contentions 1A and 1B."[11]

II. Planning and Conduct of Government-to-Government Meeting

11. On June 23, 2015, the Staff issued a letter to Mr. John Yellow Bird Steele, President of the Oglala Sioux Tribe, reiterating that the consultation process between the NRC and the Oglala Sioux Tribe is an ongoing effort. The letter stated that "the NRC Staff "renews its request for your views regarding any Sioux cultural, historical or religious sites that may be impacted by the Dewey-Burdock Project," noting that "[y]our response will ensure that relevant information is properly captured in the PA and considered during the development of mitigation measures."[12] The letter included "another invitation for the Oglala Sioux Tribe to meet with the NRC staff on a government-to-government basis." The Staff identified the officials who would represent the NRC in a government-to-government meeting with the Tribe and requested the identity of the Oglala Sioux Tribe individuals viewed by the Tribe as the appropriate representatives for government-to-government consultation with the NRC.[13]

12. On July 22, 2015, the Staff received a letter from the Oglala Sioux Tribe responding to the Staff's June 23, 2015 letter, "question[ing] whether the [Staff's] letter provides a good faith attempt to remedy the problems identified" by the Board's Partial Initial Decision and requesting that the NRC confirm "exactly what steps NRC Staff plans to take to meet its NEPA and NHPA duties as set out in the [Board's] ruling."[14] The Oglala Sioux Tribe further stated that the Staff's letter had come at a time in which the Oglala Sioux Tribe is preparing for and conducting ceremonial Sun Dances, and that the Sun Dance ceremonial season lasts through the month of July. The Tribe stated that it "[did] not expect to be able to engage in this process until the Sun Dance ceremonial season has completed."[15] The Tribe also requested clarification of "the roles, responsibilities, duties, and prior experience engaging in consultation under the NHPA, as well as past and

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[9] *Powertech USA, Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP 15-16, 81 NRC 618 (2015).
[10] *Id.* at 708.
[11] *Id.* at 710.
[12] Letter from Marissa G. Bailey, Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, to John Yellow Bird Steele, President, Oglala Sioux Tribe (June 23, 2015) (ADAMS Accession No. ML15175A411).
[13] *Id.* at 2.
[14] Letter from Dennis Yellow Thunder, Tribal Historic Preservation Officer, Oglala Sioux Tribe, to Marissa G. Bailey, Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review (July 22, 2015) (ADAMS Accession No. ML15203A108) at 1.
[15] *Id.* at 2-3.

anticipated future involvement each of the NRC Staff's proposed officiants with the proposed Dewey-Burdock project."[16]

13. On August 26, 2015, the Staff issued a letter responding to the Oglala Sioux Tribe's letter, clarifying that the Staff "intends to use any additional information it obtains from the Oglala Sioux Tribe to supplement both our NHPA and NEPA reviews." The Staff renewed its invitation to the Oglala Sioux Tribe to meet on a government-to-government basis in order to introduce the Staff's new management team and work toward remedying the deficiencies identified in the Board's Partial Initial Decision, and requested that the Oglala Sioux Tribe provide possible dates and locations for the meeting by September 18, 2015. The Staff also provided an organizational chart of the NRC's Office of Nuclear Material Safety and Safeguards (NMSS).[17]

14. On September 24, 2015, the Oglala Sioux Tribe issued a letter responding to the Staff's August 26, 2015 letter, stating its appreciation for the Staff's offer to help arrange a meeting to introduce the Staff's new management team and to work toward compliance with the Board's Partial Initial Decision. The Tribe stated its preference that such a meeting take place in the region of the proposed project, perhaps at Pine Ridge, and requested that the Staff provide a range of potential dates for such a meeting. The Tribe further stated that "any such meeting should accommodate not only time to discuss the relevant issues with representatives from the Oglala Sioux Tribe, but also with the other Sioux Tribes that have expressed similar concerns with the project . . . ."[18]

15. On September 29, 2015, the Staff responded to the Oglala Sioux Tribe's September 24, 2015 letter via email. The Staff agreed with the Oglala Sioux Tribe's suggestion to hold the meeting at the Pine Ridge Reservation, stated that it had no objection to the Oglala Sioux Tribe inviting other parties to the meeting, and requested that the Tribe share with the Staff potential dates in which the Oglala Sioux Tribe would be available for a meeting.[19]

16. On October 27, 2015, the Staff attempted to reach the Oglala Sioux Tribe THPO via phone. The Staff reached an Oglala Sioux Tribe representative who stated that the THPO, Mr. Dennis Yellow-Thunder, was away from the office for the week and that the Staff should contact him via email. The Staff verified with the Oglala Sioux Tribe representative that it had the correct email contact information for Mr. Yellow-Thunder.[20]

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[16] *Id.* at 2.
[17] Letter from Marissa G. Bailey, Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, to Dennis Yellow Thunder, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Aug. 26, 2015) (ADAMS Accession No. ML15239B341).
[18] Letter from Dennis Yellow Thunder, Tribal Historic Preservation Officer, Oglala Sioux Tribe, to Marissa G. Bailey, Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review (Sept. 24, 2015) (ADAMS Accession No. ML15267A377).
[19] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Dennis Yellow Thunder, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Sept. 29, 2015) (ADAMS Accession No. ML15273A145).
[20] Affidavit of Kellee L. Jamerson at ¶ 3.

17. On October 28, 2015, the Staff sent a follow-up email to the Oglala Sioux Tribe THPO. The Staff renewed its request for potential dates when the Oglala Sioux Tribe would be available for a government-to-government meeting.[21]

18. On October 30, 2015, the Staff issued a letter to Mr. John Yellow Bird Steele, President of the Oglala Sioux Tribe, informing him that the Staff had unsuccessfully attempted to reach the Oglala Sioux Tribe THPO via email and phone in order to coordinate the government-to-government meeting. The Staff "re-emphasize[d its] desire to meet and introduce the NRC team" and requested that the President's staff contact the NRC Staff.[22]

19. On November 24, 2015, the Staff twice attempted to reach the Oglala Sioux Tribe THPO via phone. The Staff was unable to reach an Oglala Sioux Tribe representative or leave a voicemail message.[23]

20. On November 30, 2015, having received no reply to its emails, letter, or phone calls, the Staff contacted counsel for the Oglala Sioux Tribe via email to determine whether any changes in contact information were the reason for the lack of reply.[24]

21. On December 1, 2015, counsel for the Oglala Sioux Tribe responded to the Staff via email, stating that the Oglala Sioux Tribe THPO office was "very busy" and that he was not aware of the Staff providing any proposed dates for the government-to-government meeting.[25]

22. On December 17, 2015, the Staff issued a letter to Mr. John Yellow Bird Steele, President of the Oglala Sioux Tribe, stating that the Staff "recognizes the need to meet with the Oglala Sioux Tribe on a government-to-government basis." The Staff stated that the purpose of such a meeting "would be to introduce the NRC management team responsible for this project and to work toward resolving the issues identified" in the Board's Partial Initial Decision. The Staff proposed dates in February 2016 for the government-to-government meeting and holding the meeting in Pine Ridge, South Dakota. The Staff acknowledged the difficulty of coordinating a date for the meeting that

[21] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Dennis Yellow Thunder, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Oct. 28, 2015) (ADAMS Accession No. ML15302A292).
[22] Letter from Marissa G. Bailey, Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, to John Yellow Bird Steele, President, Oglala Sioux Tribe (Oct. 30, 2015) (ADAMS Accession No. ML15302A316).
[23] Affidavit of Kellee L. Jamerson at ¶ 4.
[24] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Jeffrey C. Parsons and Travis E. Stills, Counsel for the Oglala Sioux Tribe (Nov. 30, 2015) (ADAMS Accession No. ML15303A279).
[25] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Dec. 1, 2015) (ADAMS Accession No. ML17209A078).

may be suitable for both parties and requested that the Tribe provide alternate dates if those presented were not convenient to the Tribe.[26]

23. Between February and April 2016, the Staff and the Oglala Sioux Tribe conferred to establish dates for a government-to-government meeting:

A. On February 10, 2016, counsel for the Staff sent an email to counsel for the Oglala Sioux Tribe asking whether counsel for the Tribe could provide insight regarding the Tribe's status with respect to coordinating a government-to-government meeting with the Staff.[27]

B. On February 16, 2017, counsel for the Oglala Sioux Tribe responded via email, stating that he had requested the Tribe's THPO to provide dates when the Tribe would be available for a meeting as soon as possible, and that this information, once received, would be relayed immediately to the Staff.[28]

C. On March 3, 2016, counsel for the Oglala Sioux Tribe sent an email to counsel for the Staff identifying April 25, 26, or 27, 2016, as potential dates for the government-to-government meeting.[29]

D. On March 11, 2016, counsel for the Staff responded via email confirming that the Staff could support those dates.[30]

E. On March 22, 2016, having received no reply, counsel for the Staff sent a follow-up email asking whether the Oglala Sioux Tribe could confirm any of those dates for the meeting.[31]

F. On March 24, 2016, counsel for the Oglala Sioux Tribe responded via email stating that the Oglala Sioux Tribe THPO was undergoing "significant restructuring" and that the Oglala Sioux Tribe could not support the April 2016 dates, suggesting the week of May 16, 2016 as a potential date for the government-to-government meeting.[32]

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[26] Letter from Craig G. Erlanger, Acting Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, to John Yellow Bird Steele, President, Oglala Sioux Tribe (Dec. 17, 2015) (ADAMS Accession No. ML15348A185).
[27] Because the distribution of this email was limited to just the legal representatives of the parties, it was not included in the Staff's mandatory disclosures.
[28] *See supra* note 27.
[29] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Christopher C. Hair, Counsel for the NRC Staff (Mar. 3, 2016) (ADAMS Accession No. ML16117A455 at 5).
[30] Email from Christopher C. Hair, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (Mar. 11, 2016) (ADAMS Accession No. ML16117A455 at 4-5).
[31] Email from Christopher C. Hair, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (Mar. 22, 2016) (ADAMS Accession No. ML16117A455 at 4).
[32] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Christopher C. Hair, Counsel for the NRC Staff (Mar. 29, 2016) (ADAMS Accession No. ML16117A455 at 3-4).

G. Counsel for the Staff responded via emails on March 31 and April 1, 2016, confirming the Staff's availability during the week of May 16, 2016.[33]

H. On April 18, 2016, having received no reply, counsel for the Staff sent a follow-up email requesting the status of the Oglala Sioux Tribe's availability during the week of May 16, 2016.[34]

I. On April 20, 2016, counsel for the Oglala Sioux Tribe responded via email that the Oglala Sioux Tribe was available on May 19, 2016, informing the Staff that Ms. Trina Lone Hill was instituted as the new Oglala Sioux Tribe THPO, and noting his suggestion to Ms. Lone Hill that "we may be able to conduct a meeting with only Oglala Sioux Tribe and NRC Staff representatives, followed by an opportunity to update other tribes that show interest."[35]

24. On May 19, 2016, the Staff and the Oglala Sioux Tribe held a government-to-government meeting in Pine Ridge, South Dakota.[36]

A. The meeting's participants included a member of the Oglala Sioux Tribe's Executive Committee, the Oglala Sioux Tribe's THPO, the Staff's Director of the NMSS Division of Fuel Cycle Safety, Safeguards and Environmental Review, and the Staff's project managers responsible for oversight of the Dewey-Burdock project.[37]

B. The meeting "constituted the first step and building block for moving forward with the consultation process to gather information about historic and cultural resources of significance to the Oglala Sioux Tribe that could be affected by the construction and operation of the Dewey-Burdock [ISR] project . . . ."[38]

C. The Staff introduced themselves, explained the reorganization of NMSS, and provided updates on the status of the Dewey-Burdock ISR project.[39]

D. Among other matters, the Staff and the Tribe discussed the Tribe's objections to and concerns with the PA, the continued effectiveness of Powertech's license, and the tribal survey of the Dewey-Burdock site conducted in 2013.[40]

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[33] Email from Christopher C. Hair, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (Mar. 31, 2016) (ADAMS Accession No. ML16117A455 at 3); Email from Christopher C. Hair, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (Apr. 1, 2016) (ADAMS Accession No. ML16117A455 at 2-3).
[34] Email from Christopher C. Hair, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (Apr. 18, 2016) (ADAMS Accession No. ML16117A455 at 2).
[35] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Christopher C. Hair, Counsel for the NRC Staff (Apr. 21, 2016) (ADAMS Accession No. ML16117A455 at 1-2).
[36] Summary of Meeting With the Oglala Sioux Tribe Regarding the Dewey-Burdock In Situ Uranium Recovery Project (May 19, 2016) (ADAMS Accession No. ML16182A069).
[37] *Id.* at 1.
[38] *Id.*
[39] *Id.* at 1-2.
[40] *Id.*

E. The Oglala Sioux Tribe stated that the tribal survey conducted in 2013 "was incomplete and the survey methodology lacked scientific integrity." The Oglala Sioux Tribe asked that additional comprehensive and meaningful surveys be conducted and that other Tribes should also be involved.[41]

F. The Staff "discussed the possibility of another survey opportunity," clarifying that site access would need to be coordinated with the licensee.[42]

G. The Oglala Sioux Tribe stated that "Tribal ordinances prohibit nuclear activities within Treaty lands and asked that these be taken into consideration, even if the project site is beyond the borders of the Tribe's reservation," and the Oglala Sioux Tribe THPO committed to provide to the Staff "specific citations to the ordinances regarding the prohibition of nuclear activities." The Staff stated that it would consider these laws and ordinances as part of the consultation process.[43]

III. Activities Leading to Teleconference with the Board

25. On August 16, 2016, the Staff sent an email to the Oglala Sioux Tribe THPO requesting the citations to the Tribal laws and ordinances referenced in the May 19, 2016 meeting. The Staff expressed a desire "to learn more about the Oglala Sioux Tribe's thoughts/plans to conduct another survey." The Staff noted again that a site survey would need to be coordinated with the licensee and requested that the THPO contact the Staff by phone for further discussion.[44]

26. On August 29, 2016, the Staff attempted to contact the Oglala Sioux Tribe THPO via phone to follow up on the August 16, 2016 email. The Staff was unable to reach an Oglala Sioux Tribe representative or leave a voicemail.[45]

27. On October 13, 2016, the Board issued a Memorandum and Order stating its intent to hold a teleconference to discuss the status of the ongoing consultation between the Staff and the Oglala Sioux Tribe.[46] On October 24, 2016, the Board issued an Order scheduling the teleconference for November 7, 2016.[47]

28. On November 7, 2016, the Board held a teleconference with the parties to discuss the status of the ongoing consultation between the Staff and the Oglala Sioux Tribe.

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[41] *Id.* at 2.
[42] *Id.*
[43] *Id.* at 2.
[44] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Aug. 16, 2016) (ADAMS Accession No. ML16298A257).
[45] Affidavit of Kellee L. Jamerson at ¶ 5.
[46] Memorandum and Order (Requesting Scheduling Information for Telephone Conference Call) (Oct. 13, 2016) (ADAMS Accession No. ML16287A631).
[47] Order (Scheduling Telephonic Status Conference) (Oct. 24, 2016) (ADAMS Accession No. ML16298A331).

A. Counsel for the Staff indicated that the Staff desired to hold a government-to-government meeting via teleconference with the Tribe to discuss the issues the Tribe raised in the May 19, 2016 meeting and to take further steps to effectuate a survey of the Dewey-Burdock site.[48] Counsel for the Staff noted that the Staff hoped to discuss the parameters of a site survey with the Tribe in such a teleconference.[49]

B. Counsel for the Staff stated that information on sites of cultural and historical importance to the Oglala Sioux Tribe can be obtained only from the Oglala Sioux Tribe itself.[50]

C. Counsel for the Staff stated: "We are willing to take any information that the Oglala Sioux Tribe is willing to provide on . . . historic and cultural resources of interest to them. Anything that they are willing to provide, we would be thrilled to have. . . . [T]he issue in this case is that we have not received anything . . . specific to the Oglala Sioux Tribe, and that's why we were not able to document it as a NEPA analysis, so any information would be of great value to us and would enable us to protect this through mitigation measures, through the programmatic agreement, et cetera."[51]

29. On November 23, 2016, the Staff issued a letter to the Oglala Sioux Tribe THPO inviting the Tribe to engage in further consultation on the parameters of an additional survey of the Dewey-Burdock site. The Staff proposed that a meeting should be held by teleconference in December 2016 or January 2017, or another timeframe suitable for the Tribe's schedule. The Staff also reiterated its willingness to consider as part of the consultation process the tribal laws and ordinances alluded to by the Tribe in the May 19, 2016 meeting. The Staff also responded to the Tribe's concerns regarding the continuing effectiveness of the license.[52]

30. On December 19, 2016, and again on December 21, 2016, the Staff, having received no response to its November 23, 2016 letter, attempted to reach the Oglala Sioux Tribe THPO via phone. The Staff was unable to reach the Oglala Sioux Tribe THPO and left a voicemail on each occasion.[53]

31. On December 22, 2016, the Staff sent an email to the Oglala Sioux Tribe THPO following up on the Staff's November 23, 2016 letter, reiterating its interest in participating in a teleconference to discuss an additional survey of the Dewey-Burdock

[48] Transcript of November 7, 2016 Teleconference (ADAMS Accession No. ML16314A843) at 17, 21, 35-36, 56.
[49] *Id.* at 43.
[50] *Id.* at 25, 35.
[51] *Id.* at 45-46.
[52] Letter from Jill Caverly, Acting Chief, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Nov. 23, 2016) (ADAMS Accession No. ML16327A549).
[53] Affidavit of Kellee L. Jamerson at ¶ 6.

ISR site and the Oglala Sioux Tribe's recommendations regarding the Dewey-Burdock PA.[54]

32. On January 13, 2017, counsel for the Oglala Sioux Tribe conveyed to the Staff a letter from the Oglala Sioux Tribe THPO suggesting dates for a conference call to continue the discussion of issues related to the proposed Dewey-Burdock.[55] In this letter, the Oglala Sioux Tribe THPO stated that, in addition to "government-to-government consultation between the Oglala Sioux Tribe and the United States," the Tribe "would like to discuss mechanisms to address issues concerning other parties with an interest in these issues in context of the NHPA/NEPA process" and "Powertech's stated unwillingness to meet its financial obligations for NRC Staff to complete its statutory mandates related to cultural resources" affected by the Dewey-Burdock project." The Oglala Sioux Tribe THPO further stated that in future discussions, "it is the Oglala Sioux Tribe's intent to seek to include cultural and historic preservation staff" from "several other Sioux tribes with cultural ties to the affected area."[56]

33. On January 18, 2017, the Staff sent an email to the Oglala Sioux Tribe THPO proposing several potential dates in January and early February 2017 for the teleconference and providing a list of topics for discussion, including a survey approach, methodology, parameters, participants, and report.[57] On January 25, 2017, counsel for the Oglala Sioux Tribe sent an email to the Staff offering January 31, 2017 as the date for the teleconference.[58] The Staff agreed to the date via email on January 26, 2017.[59]

34. On January 31, 2017, the Staff met with the Oglala Sioux Tribe THPO via teleconference:

    A. The Staff expressed its commitment to working with the Oglala Sioux Tribe to conduct a survey of the Dewey-Burdock site in the near future. The Staff offered its "preliminary tribal survey approach," consisting of (1) an open site survey of the license area; (2) an opportunity to conduct the survey as early as April or May 2017; (3) per diem and mileage reimbursement for up to three Tribal representatives conducting the survey; and (4) an honorarium of $10,000 paid to the Oglala Sioux Tribe. The Staff explained that it was offering an open site

[54] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Dec. 22, 2016) (ADAMS Accession No. ML16357A649).
[55] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Jan. 13, 2017) (ADAMS Accession No. ML17017A506).
[56] Letter from Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe, to Jill Caverly, Acting Chief, Environmental Review Branch (Jan. 13, 2017) (ADAMS Accession No. ML17017A505) at 1.
[57] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Jan. 18, 2017) (ADAMS Accession No. ML17018A437).
[58] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Jan. 25, 2017) (ADAMS Accession No. ML17030A356).
[59] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Jan. 26, 2017) (ADAMS Accession No. ML17030A368).

survey because "the open site approach provides the flexibility of conducting a tribal survey using any survey methodology that the Tribe finds acceptable to identify cultural sites of importance to them." [60]

B. The Oglala Sioux Tribe stated that it was disappointed with the Staff's proposal and that it was the same proposal rejected by the Oglala Sioux Tribe during the licensing review of the Dewey-Burdock ISR application. The Oglala Sioux Tribe stated that it would prefer a survey methodology similar in nature to the Makoche Wowapi proposal that was submitted in September 2012.[61]

C. The Staff "asked the Tribe whether it would be willing to share information about known cultural and historic resources that may be impacted by the Dewey-Burdock project."[62]

D. The Staff expressed interest in receiving information from the Oglala Sioux Tribe's on "the survey methodology/approach, number of tribal representatives to participate, cost/reimbursement, and timeframe." The Oglala Sioux Tribe committed to provide the Staff information about a tribal survey approach by mid-March 2017 to aid the discussion and establishment of a survey.[63]

E. The Staff and the Oglala Sioux Tribe agreed to hold another teleconference, tentatively scheduled for the beginning of April 2017, to continue consultation on a cultural resources survey.[64]

IV. Activities Following January 2017 Teleconference Meeting

35. On February 8, 2017, the Staff sent an email to the Oglala Sioux Tribe THPO with a draft summary of the January 31, 2017 teleconference. The Staff requested that the Oglala Sioux Tribe provide any comments on the draft summary by February 22, 2017.[65]

36. On February 23, 2017, having not received a reply from the Oglala Sioux Tribe, the Staff sent a follow-up email to the Oglala Sioux Tribe THPO and requested comments on the draft meeting summary by February 27, 2017. The Staff also requested that the Oglala Sioux Tribe provide its availability during the week of April 3, 2017, to support the next teleconference.[66]

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[60] Summary of Teleconference with the Oglala Sioux Tribe Regarding the Dewey-Burdock In Situ Uranium Recovery Project (Jan. 31, 2017) (ADAMS Accession No. ML17060A260) at 1.
[61] *Id.*
[62] *Id.* at 2.
[63] *Id.*
[64] *Id.*
[65] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Feb. 8, 2017) (ADAMS Accession No. ML17059D523).
[66] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Feb. 23, 2017) (ADAMS Accession No. ML17060A280) at 2.

37. On February 27, 2017, counsel for the Oglala Sioux Tribe sent an email to the Staff stating that the Oglala Sioux Tribe expected to send edits on the draft meeting summary later that day, and that the Oglala Sioux Tribe was "in the process of pinning down dates in early April that work for another meeting."[67] Counsel for the Oglala Sioux Tribe sent the edits on the meeting summary later that day.[68] On February 28, 2017, the Staff sent an email to the Oglala Sioux Tribe THPO stating that the meeting summary had been revised in response to the Oglala Sioux Tribe's edits and that the Staff looked forward to hearing from the Oglala Sioux Tribe regarding its availability in early April for the next teleconference.[69]

38. On March 17, 2017, counsel for the Oglala Sioux Tribe sent an email to the Staff stating that the Oglala Sioux Tribe was "working on getting you all information on the Tribe's concepts for a survey approach, as we committed – as well as a date in early April that works for another call," and that the Tribe "will let you know as soon as possible."[70] The Staff responded with an acknowledgement email the same day.[71]

39. On April 14, 2017, having not received information from the Oglala Sioux Tribe regarding survey parameters or its availability for another teleconference, the Staff issued a letter to the Oglala Sioux Tribe THPO offering specific arrangements for a survey of the Dewey-Burdock site and requesting the Oglala Sioux Tribe's acceptance or rejection of the offer by May 5, 2017.[72]

40. On April 28, 2017, counsel for the Oglala Sioux Tribe sent an email to counsel for the Staff regarding the Staff's April 14, 2017 letter:

    A. Counsel for the Oglala Sioux Tribe stated that "Ms. Lone Hill is no longer Tribal Historic Preservation Officer of the Oglala Sioux Tribe," and that "this change in the Tribe's lead staff will necessarily result in some delay as new personnel are put in place and brought up to current." Counsel for the Oglala Sioux Tribe stated that the Oglala Sioux Tribe would therefore not be able to respond to the Staff's letter by May 5, 2017.[73]

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[67] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Feb. 27, 2017) (ADAMS Accession No. ML17060A280) at 1-2.
[68] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Feb. 27, 2017) (ADAMS Accession No. ML17060A280) at 1.
[69] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Feb. 28, 2017) (ADAMS Accession No. ML17060A280) at 1.
[70] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Kellee L. Jamerson, Project Manager, Environmental Review Branch (Mar. 17, 2017) (ADAMS Accession No. ML17086A142) at 1.
[71] Email from Kellee L. Jamerson, Project Manager, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Mar. 17, 2017) (ADAMS Accession No. ML17086A142) at 1.
[72] Letter from Cinthya I. Román, Chief, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (Apr. 14, 2017) (ADAMS Accession No. ML17103A500).
[73] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Emily L. Monteith and David M. Cylkowski, Counsel for the NRC Staff (Apr. 28, 2017) (ADAMS Accession No. ML17118A259) at 1.

B. Counsel for the Oglala Sioux Tribe stated that the Oglala Sioux Tribe's forthcoming response to the Staff's letter would "expand on the Tribe's stated position that key features of a survey should include a qualified contractor to coordinate a survey among the several interested Sioux Tribes based on accepted methodologies and professional standards to identify cultural, religious, and historic resources and the potential adverse effects to those resources."[74]

41. On May 8, 2017, counsel for the Staff sent an email to counsel for the Oglala Sioux Tribe explaining that following receipt of the April 28, 2017 email, the Staff had contacted the ACHP, South Dakota SHPO, and Oglala Sioux Tribe Natural Resources Regulatory Agency in an effort to identify the appropriate point of contact for the Oglala Sioux Tribe, and that it was the Staff's understanding that Ms. Lone Hill was again serving as the Oglala Sioux Tribe THPO after not holding the position for approximately one week. Counsel for the Staff informed counsel for the Oglala Sioux Tribe that the Staff planned to reissue the survey opportunity to the Oglala Sioux Tribe that day.[75]

42. Also on May 8, 2017, the Staff sent a letter to the Oglala Sioux Tribe THPO, copied to the President of the Oglala Sioux Tribe, reissuing the offer of arrangements for a survey of the Dewey-Burdock site and extending the available dates for a site survey to include August 2017. The Staff requested the Oglala Sioux Tribe provide its acceptance or rejection of the offer by May 19, 2017.[76]

43. On May 17, 2017, counsel for the Oglala Sioux Tribe sent an email to counsel for the Staff stating that his understanding was that "Ms. Lone Hill was out of the THPO position starting April 12 and only this week has had her office emails and phone systems re-established." Counsel for the Tribe further stated that because the Oglala Sioux Tribe's resources were currently committed to preparing comments on the Environmental Protection Agency's draft Underground Injection Control permits for the Dewey-Burdock project, the Oglala Sioux Tribe's response to the Staff's May 8, 2017 letter would be delayed until May 31, 2017.[77]

44. On May 22, 2017, counsel for the Staff sent an email to counsel for the Oglala Sioux Tribe acknowledging the May 17, 2017 email and stating that the Staff looked forward to hearing from the Oglala Sioux Tribe by May 31, 2017, regarding the Oglala Sioux Tribe's acceptance or rejection of the offered survey opportunity.[78]

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[74] *Id.*
[75] Email from David M. Cylkowski, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (May 8, 2017) (ADAMS Accession No. ML17144A221) at 1.
[76] Letter from Cinthya I. Román, Chief, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (May 8, 2017) (ADAMS Accession No. ML17128A076).
[77] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to David M. Cylkowski, Counsel for the NRC Staff (May 17, 2017) (ADAMS Accession No. ML17144A233) at 1.
[78] Email from Emily L. Monteith, Counsel for the NRC Staff, to Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe (May 22, 2017) (ADAMS Accession No. ML17144A240) at 1.

45. On May 31, 2017, counsel for the Oglala Sioux Tribe conveyed to the Staff via email a letter from the Oglala Sioux Tribe THPO to the Staff.[79] The letter articulated the following positions:

A. The letter "seeks to make a positive contribution to the discussion initiated at the in-person meeting on May 19, 2016 at the Pine Ridge Reservation" and "outlines the basis for further discussions with the NRC Staff in carrying out the NRC's statutory duties and government-to-government consultations."[80]

B. For "the multiple reasons presented to NRC Staff on the record in the past, and reiterated in this letter," the Staff's "proposal remains unacceptable in its current form," and the Oglala Sioux Tribe continues to object to an open site approach to any survey.[81]

C. The Staff must make "an effort to coordinate the several different Lakota Sioux Tribes before designing and conducting a cultural resources survey. . . . "[w]hile the Office understands that NRC Staff is under an obligation to conduct consultation meetings with the Oglala Sioux Tribe specifically, and the Office wishes to take part in those, coordination of a cultural resources survey must include the other Lakota Sioux tribal governments at the earliest stages in order to be competent in its analysis of Lakota Sioux cultural resources."[82]

D. The letter stated that "the best manner to conduct a proper survey is to involve a contractor(s) with the necessary experience, training, and cultural knowledge to carry out and facilitate the survey."[83]

E. The letter cited several excerpts of testimony in this and the Crow Butte License Renewal evidentiary hearings,[84] including the testimony of a former Oglala Sioux Tribe THPO, who testified that a TCP survey could take up to two years to complete: "'So a TCP survey is quite extensive, and that's why I didn't want to limit to maybe even just one year. I would say a couple years. When you're talking about that large of an audience, as far as that many tribes to be involved, to get a good feel for the area, maybe in different seasons – maybe they want to be out there when the ground visibility is the best, or maybe there are ceremonies to be performed during that time at the elders' discretion.'"[85]

F. "The methodologies, protocols, and timing need to account for the cultural needs of the Lakota Sioux – including the ability to use tribal elders and other experts as

[79] Email from Jeffrey C. Parsons, Counsel for the Oglala Sioux Tribe, to Cinthya I. Román, Chief, Environmental Review Branch (May 31, 2017) (ADAMS Accession No. ML17152A112) at 1.
[80] Letter from Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe, to Cinthya I. Román, Chief, Environmental Review Branch (May 31, 2017) (ADAMS Accession No. ML17152A109) at 1.
[81] *Id.* at 1-2.
[82] *Id.* at 3-4.
[83] *Id.* at 4.
[84] *Id.* at 3-9.
[85] *Id.* at 5-6 (quoting Transcript of Evidentiary Hearing in *Cameco Resources, Inc.* (Crow Butte License Renewal), Docket No. 40-8943-OLA, at 2275-76).

resources in a coordinated fashion with other tribal historic preservation offices," and the Oglala Sioux Tribe "wishes to engage NRC Staff in a much more detailed discussion of how these components can be incorporated into a cultural resources survey approach."[86]

G. The letter requested "that significant further discussion take place on a face-to-face basis" and that the Staff travel to the Pine Ridge Reservation to discuss the letter, the Staff's April 14, 2017 survey offer, and the PA.[87]

H. The letter requested that the Staff specifically confirm the identity of the NRC "decision maker for how the NHPA consultation process will be conducted."[88]

46. On July 24, 2017, the Staff issued a letter to the Oglala Sioux Tribe THPO responding to the May 31, 2017 letter:

A. The Staff explained the roles and responsibilities of the Staff personnel responsible for consultation activities[89] and enclosed an NMSS organizational chart.[90]

B. The Staff acknowledged that the Tribe considered the Staff's offered site survey opportunity to be "unacceptable" and indicated that the Staff took this statement to convey the Tribe's rejection of the offer.[91]

C. The Staff noted that in the teleconference meeting held on January 31, 2017, the Staff had presented the Tribe with a preliminary survey approach as a starting point for discussions regarding a mutually acceptable survey approach. The Staff stated that during the teleconference meeting, the Tribe had expressed its disappointment regarding the preliminary survey approach and committed to providing specific information concerning the Tribe's desired parameters of a site survey by mid-March 2017 and to engage in further discussions with the Staff in the April 2017 timeframe concerning the Tribe's proposal.

D. The Staff stated that throughout this period and thereafter, the Staff continued to seek this input from the Tribe, as well as information concerning the Tribe's availability for further discussions regarding the parameters of a site survey.

E. The Staff explained that, the Tribe having not provided this information, the Staff issued the survey invitation in order to maintain communication with the Tribe

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[86] *Id.* at 8.
[87] *Id.*
[88] *Id.* at 9.
[89] Letter from Cinthya I. Román, Chief, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (July 24, 2017) (ADAMS Accession No. ML17205A063) at 2.
[90] Organizational Chart of the Office of Nuclear Material Safety and Safeguards (May 31, 2017) (ADAMS Accession No. ML17205A067).
[91] Letter from Cinthya I. Román, Chief, Environmental Review Branch, to Trina Lone Hill, Tribal Historic Preservation Officer, Oglala Sioux Tribe (July 24, 2017) (ADAMS Accession No. ML17205A063) at 1.

and to provide the Tribe with a broad window for selection of survey dates, taking into account the timeframes for the Sun Dance ceremonies and the onset of unfavorable weather.

F. The Staff further stated that, in the absence of the specific input from the Tribe, it had offered the open site survey and honorarium to afford the Tribe the flexibility to select and use a survey methodology that it deemed acceptable for the identification of its own sites of cultural, historical, and religious significance.

G. The Staff noted that the positions expressed in the May 31, 2017 letter regarding the length and methodology required for an adequate site survey and the requirement that the Staff coordinate with the governments of all Lakota Sioux Tribes before designing any survey "appear to be far apart from the discussions in the May 19, 2016, government-to-government meeting, the January 31, 2017, teleconference, and the reasonable opportunity to identify cultural resources described in the NRC staff's letters dated April 14, 2017, and May 8, 2017."[92]

H. The Staff stated that in light of the positions expressed by the Oglala Sioux Tribe in the May 31, 2017 letter and the more than two years of consultation that have occurred since the Board's Partial Initial Decision, the Staff "reluctantly recognizes that further consultation is unlikely to result in a mutually acceptable settlement of the dispute regarding the outstanding contentions."[93]

Respectfully submitted,

/Signed (electronically) by/
Emily Monteith
Emily Monteith
Counsel for the NRC Staff

/Signed (electronically) by/
David M. Cylkowski
David M. Cylkowski
Counsel for the NRC Staff

Dated at Rockville, Maryland
this 3rd day of August 2017

[92] *Id.* at 2.
[93] *Id.*

Attachment 2

August 3, 2017

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH USA, INC.	)	Docket No. 40-9075-MLA
	)	
(Dewey-Burdock	)	
In Situ Uranium Recovery Facility)	)	

AFFIDAVIT OF KELLEE L. JAMERSON CONCERNING THE NRC STAFF'S MOTION FOR SUMMARY DISPOSITION OF CONTENTIONS 1A AND 1B

I, Kellee L. Jamerson, hereby state as follows:

1. I am an Environmental Scientist in the Nuclear Regulatory Commission's (NRC) Office of Nuclear Material Safety and Safeguards (NMSS), Division of Fuel Cycle Safety, Safeguards and Environmental Review (FCSE), Environmental Review Branch. I have served as Project Manager for the environmental review of the Dewey-Burdock in-situ uranium recovery facility since 2014. In that role, I have been responsible for consultation efforts between the NRC and the Oglala Sioux Tribe pursuant to the NRC's obligations under the National Historic Preservation Act and National Environmental Policy Act.

2. In this declaration, I present my recollection, to the best of my knowledge, information, and belief, of certain attempted or completed communications with representatives of the Oglala Sioux Tribe pursuant to the Staff's continued efforts to consult regarding the identification of sites of cultural, historic, or religious significance to the Oglala Sioux Tribe that may be present at the Dewey-Burdock site.

3. On September 29, 2015, I sent an email to Mr. Dennis Yellow Thunder, the Tribal Historic Preservation Officer (THPO) for the Oglala Sioux Tribe, as part of ongoing communications with the Oglala Sioux Tribe to coordinate a government-to-government

meeting. On October 27, 2015, having received no response to the September 29, 2015 email, I attempted to follow up with Mr. Yellow Thunder via phone. I reached an individual in the Oglala Sioux Tribe's Tribal Historic Preservation Office and informed her that I was attempting to follow up with Mr. Yellow Thunder. The individual stated that Mr. Yellow Thunder was away from the office for the week and advised that I attempt to follow up with him via email. I confirmed with the individual that I had Mr. Yellow Thunder's current and correct email address. I sent Mr. Yellow Thunder a follow-up email the next day, on October 28, 2015.

4. On October 30, 2015, Ms. Marissa Bailey, Director of FCSE, issued a letter to Mr. John Yellow Bird Steele, President of the Oglala Sioux Tribe, informing him that the Staff had unsuccessfully attempted to reach the Oglala Sioux Tribe THPO via email or phone in an effort to coordinate the government-to-government meeting. On November 24, 2015, with the understanding that the Staff had received no response to the recent emails or letter and no communication from the Oglala Sioux Tribe since September 24, 2015, I placed two phone calls to the Oglala Sioux Tribe THPO in an attempt to follow up. Both calls went unanswered, and I was not able to leave a voice message on either occasion.

5. On May 19, 2016, the Staff and the Oglala Sioux Tribe held a government-to-government meeting in Pine Ridge, South Dakota. On August 16, 2016, I sent an email to Ms. Trina Lone Hill, who was serving as THPO for the Oglala Sioux Tribe, to follow up on tribal ordinances that were discussed at the government-to-government meeting. On August 29, 2016, having received no response to the August 16, 2016 email, I attempted to contact the Oglala Sioux Tribe THPO via phone to follow up. The call went unanswered and I was not able to leave a voice message.

6. On November 23, 2016, Ms. Jill Caverly, Acting Chief of the Environmental Review Branch, issued a letter to Ms. Lone Hill with an invitation to participate in a teleconference to discuss the parameters of a potential survey of the Dewey-Burdock site for sites of cultural, historic, or religious significance to the Oglala Sioux Tribe. On December 19,

2016, with the understanding that the Staff had received no response to the November 23, 2016 letter, I placed a phone call to the Oglala Sioux Tribe THPO in an attempt to follow up. The phone call went unanswered and I left a voice message. On December 21, 2016, having received no response to the December 19, 2016 voice message, I placed another phone call to the Oglala Sioux Tribe THPO in an attempt to follow up. This phone call also went unanswered, and I left another voice message.

7. On January 31, 2017, the Staff and the Oglala Sioux Tribe THPO participated in a teleconference and discussed potential parameters for a survey of the Dewey-Burdock site. In that teleconference, the Oglala Sioux Tribe committed to provide its views on survey methodology, the number of Oglala Sioux Tribe representatives that would participate in a survey, cost and reimbursement factors, and the timeframe for a survey, as well as available dates for a follow-up teleconference in early April 2017, to the Staff by mid-March 2017. On March 17, 2017, Mr. Jeffrey Parsons, counsel for the Oglala Sioux Tribe, sent me an email stating that the Oglala Sioux Tribe was working on sending its views on survey parameters and available dates for a follow-up teleconference. By mid-April 2017, the Staff had yet to receive this information from the Oglala Sioux Tribe. Therefore, on April 14, 2017, Ms. Cinthya Román, Chief of the Environmental Review Branch, issued a letter inviting the Oglala Sioux Tribe to participate in a survey of the Dewey-Burdock site and outlining specific survey parameters. The Staff issued this letter at this time due to the length of time that had passed since the date by which the Oglala Sioux Tribe had committed to providing its views on survey parameters and dates for a follow-up teleconference and the limited timeframe remaining in 2017 in which to conduct a survey, due to the Oglala Sioux Tribe's unavailability during the Sun Dance ceremonies and the expected onset of winter weather. The Staff understood the survey parameters in the April 14, 2017 letter to provide a reasonable opportunity to identify sites of cultural, historic, and religious significance to the Oglala Sioux Tribe.

8. On May 31, 2017, Ms. Lone Hill issued a letter to Ms. Román in response to the offered survey opportunity. The letter stated that the offered survey opportunity was "unacceptable," which I understood to be a rejection of the offer. The letter cited to testimony from the evidentiary hearing in the Crow Butte License Renewal adjudicatory proceeding, stating that a survey should take up to "a couple years" to complete. The letter also stated that the Staff must coordinate the governments of the several Lakota Sioux Tribes prior to designing any survey. I understood these positions to be far apart from the discussions in the May 19, 2016 government-to-government meeting, the January 31, 2017 teleconference, and the April 14, 2017 survey invitation. Based on this understanding, I did not and do not believe that the Staff and the Oglala Sioux Tribe are likely to reach consensus on acceptable survey parameters. On July 24, 2017, Ms. Román issued a letter to Ms. Lone Hill informing her that "further consultation is unlikely to result in a mutually acceptable settlement of the dispute regarding the outstanding contentions."

9. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

Kellee L. Jamerson

Executed in Rockville, MD
this 3rd day of August 2017

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02- MLA-BD01
	)	
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	Date: August 3, 2017
	)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I hereby certify that copies of the "NRC STAFF'S MOTION FOR SUMMARY DISPOSITION OF CONTENTIONS 1A AND 1B" in this proceeding have been served via the Electronic Information Exchange (EIE), the NRC's E-Filing System, this 3rd day of August, 2017. Counsel for the Staff served those representatives exempted from filing through the EIE with copies of its update by electronic mail, also on August 3, 2017.

/Signed (electronically) by/
Emily Monteith

_____

Emily Monteith
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of:	)	
	)	Docket No.: 40-9075-MLA
POWERTECH (USA), INC.	)	
	)	Date: June 22, 2015
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	
	)	

BRIEF OF POWERTECH (USA), INC. IN OPPOSITION TO THE OGLALA SIOUX TRIBE'S PETITION FOR REVIEW OF LBP-15-16

I. INTRODUCTION

Pursuant to 10 CFR § 2.1212 and 2.341(b)(4), the licensee Powertech (USA), Inc. (Powertech) hereby submits this Brief in Opposition to the Oglala Sioux Tribe's (hereinafter the "Tribe") Petition for Review of the Atomic Safety and Licensing Board's (Licensing Board) Partial Initial Decision in LBP-15-16[1] dated April 30, 2015, and earlier Licensing Board decisions on contention admissibility regarding Powertech's United States Nuclear Regulatory Commission (NRC)-licensed Dewey-Burdock *in situ* leach uranium recovery (ISR) project in the State of South Dakota. This administrative proceeding involved seven (7) admitted contentions, two (2) of which were decided by the Licensing Board in a manner adverse to Powertech and NRC Staff (Contentions 1A and 1B). For the reasons discussed below, Powertech respectfully requests that the Commission deny the Tribe's Petition for Review in its entirety and find that Powertech's NRC License SUA-1600 should be upheld.

[1] *See Powertech (USA), Inc.* (Dewey-Burdock ISR Project), LBP-15-16, 81 NRC __ (April 30, 2015) (slip op.).

under Section 106. *See* Exhibits NRC-018-A-(18-H). More specifically, the execution statement of the PA specifically states that NRC Staff took into account the effect of the undertaking:

> "Execution of this PA by the NRC, BLM, SD SHPO, ACHP, and Powertech and the implementation of its terms is evidence the NRC and BLM *have taken into account the effects of this Undertaking* on historic properties and afforded the ACHP an opportunity to comment."

Ex. NRC-018-A at 14 (emphasis added).

Additionally, the ACHP's execution of the PA and its conclusion that NRC Staff met the content and spirit of the Section 106 process indicates that the Staff met the Section 106 requirements.[19] Thus, the Tribe's allegation here does not rest on valid legal ground and should be dismissed.

C. Claims on Contention 2

On Contention 2, the Tribe alleges that the Licensing Board's determination on the adequacy of groundwater quality data was in error, because LBP-15-16 did not properly address regulatory requirements for collection and analysis of "baseline" groundwater quality data. *See* Tribe Petition at 19-20. But, the Tribe's Petition is rife with legal and factual errors, as well as gross mischaracterizations of the administrative record, and is not adequate to support a reversal of LBP-15-16.

Initially, the Tribe inaccurately states that the "ASLB committed additional error and abused its discretion in endorsing the NRC Staff position that 'it was unnecessary to account for past mining activity in its baseline water quality data.'"[20] Tribe Petition at 20, *citing* LBP-15-16 at 48. The Tribe also alleges that the "Board even ignored evidence from the EPA Preliminary Assessment (Tribe Exhibit OST-026)(ML14311B007) confirming the lack of meaningful data as to the impacts

[19] *See* NRC Staff Exhibit NRC-031 at 3. This issue is also addressed in detail in Powertech's and NRC Staff's May 26, 2015, Petitions for Review.

[20] The Tribe's Petition misapplies 10 CFR Part 40, Appendix A, Criterion 5 as requiring "complete" baseline data. Tribe Petition at 19. The Commission's requirements for pre-license issuance groundwater quality data and analysis are found at 10 CFR Part 40, Appendix A, Criterion 7. The Tribe also mischaracterizes Criterion 7 as to what requires "additional data gathering in the future." Tribe Petition at 20. Criterion 5B(5) represents the Commission's requirements for post-license issuance groundwater quality and determination of Commission-approved background (CAB).

associated with historic mining at the site and how that impacts current water quality and future impacts from the Dewey-Burdock project." *Id.* at 20. These statements mischaracterize NRC Staff's position and the Licensing Board's findings on this issue, as its expert witnesses testified that the affected environment evaluated in the FSEIS and for the proposed license is the baseline groundwater quality as it exists *today* in order that changes from current baseline levels resulting from the project may be detected and corrected, while impacts from historical mining, although not directly relevant to the license application, nevertheless were considered under the FSEIS' cumulative impact sections. *See* LBP-15-16 at 50-51, *citing* NRC Staff Ex. NRC-001 at 19-20. These statements also mischaracterize NRC Staff's evaluation of the EPA Preliminary Assessment, as it determined, based on EPA's assertions in the document that it has a different objective than NRC uranium recovery and 10 CFR Part 51 NEPA regulations. Under the latter, the site's current baseline is important in assessing potential future impacts. *See* LBP-15-16 at 55. Further, the EPA document is nothing more than a "preliminary" assessment and provides no hard and fast conclusions upon which the Tribe can base its claims. The Tribe offers no information from the EPA document demonstrating that the Licensing Board did not make a reasonable factual finding regarding the adequacy of "baseline" groundwater quality data. Therefore, the Tribe's allegations on this issue should not result in reversal of LBP-15-16.

The Tribe also levies a number of claims pertaining to NRC Staff's application of uranium recovery guidance documents and premises to the Dewey-Burdock ISR Project. First, the Tribe claims that NRC Staff improperly relied on Regulatory Guide 4.14 in requiring wells to be sampled within two (2) kilometers of future wellfields and states that such reliance is "unsupportable in the context of ISR mining." Tribe Petition at 20. However, as explained by NRC Staff in its expert testimony, such guidance is applied "as appropriate" to ISR projects, such as the Dewey-Burdock ISR Project, by assuming that each wellfield is a "temporary source area" of groundwater contamination during the production and restoration phases. *See* NRC Staff Exhibit NRC-001 at 29-

30. NRC Staff also testified that the temporary nature of ISR operations in a given wellfield does not represent the same threat to groundwater as a continuing source of contamination at a mill tailings facility. *Id*. NRC Staff further testified that the two (2) kilometer distance, "is in fact a conservative distance for assessing impacts related to ISR projects." *Id.* at 35. The Licensing Board based its conclusions in LBP-15-16 on this testimony and made a reasonable finding that supported NRC Staff use of this guidance "as appropriate." Thus, given that the Tribe offers no evidence to the contrary, the Licensing Board's factual finding here was reasonable and does not approach the level of a clear factual error.

The Tribe further presses the issue on the aforementioned 2 kilometer radius by claiming that there is "unrebutted evidence in the record that the 2 kilometer radioactive plume 'rule' is inapplicable to and unreliable in the context of ISR." Tribe Petition at 21, *citing* LBP-15-16 at 52. It is further alleged that the Licensing Board did not find a specific mention of a "2 kilometer radius" in NRC Staff's exhibits.[21] *See id.* at 21, *citing* LBP-15-16 at 53, fn. 284. The Tribe also alleges that the Licensing Board erred when "finding that NRC Staff properly relied on 35-year old, pre-UMTRCA, conventional milling guidance for setting 2 kilometer limits on baseline water quality data collection." *Id*. None of these allegations represent a clear error on a factual finding that would result in a reversal of LBP-15-16.

First, NRC Exhibit NRC-076 describes the "anomalous long outlier" plume associated with the Konigstein mine in Germany, which used a sulfuric acid leaching solution that is not, in any way, analogous to the Dewey-Burdock ISR Project or any other current NRC-licensed ISR project. *See* NRC Staff Exhibit NRC-076 at 25-26. In contrast, the Exhibit shows that the Crow Butte ISR project has a maximum plume length of 0.63 kilometers, which is considerably less than the 2

[21] The Tribe's statement here fails to acknowledge that the Licensing Board's findings on this issue did not apply to NRC Staff's exhibits generally, but rather they apply to one (1) NRC Staff exhibit (NRC Staff Exhibit NRC-075) which documents NRC's finding that there has never been a documented off-site impact to groundwater from an ISR facility.

kilometer sampling radius specified in Regulatory Guide 4.14. *See id.* at 26. The Licensing Board also did not accept NRC Staff's use of this "2 kilometer rule" simply because it is listed in the guidance; but rather, because it found that it "has been shown to be sufficient based on historical and current monitoring data from NRC licensed sites." *See* LBP-15-16 at 53, *citing* NRC Staff Exhibits NRC-001 at 29-30 & NRC-075. As stated above, NRC Staff also testified that application of this guidance to ISR facilities is conservative as compared with conventional mills due to a wellfield being a temporary source of potential contamination and the requirement to maintain a net inward hydraulic gradient during operations.[22] Since the Commission has determined that NRC Staff guidance is to be accorded "special weight," NRC Staff's use of Regulatory Guide 4.14 here should be treated as such and the Licensing Board's determination that the application of this guidance was appropriate should be upheld. *See e.g., Nextera Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC 301, 314, n.78 (2012); *see also In the Matter of Private Fuel Storage* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264 (2001). Therefore, the Tribe has not offered any argument sufficient to demonstrate a clear factual error in LBP-15-16 and, thus, the Licensing Board's determinations on Contention 2 should be upheld.

D. Claims on Contention 3

With respect to Contention 3, the Tribe challenges the Licensing Board's findings with respect to potential fluid migration from Project wellfields to adjacent water sources. Given that the Tribe offers multiple allegations on this issue, Powertech will address each allegation in turn below.

First, the Tribe claims that "no analysis was presented in the FSEIS or otherwise that details the impacts and effects associated with the abandoned boreholes on lixiviant migration and

[22] The requirement for a net inward hydraulic gradient is a mandatory requirement per license condition. Since the Commission has determined that it is presumed that a licensee will not violate its license conditions, this requirement controls and is an adequate basis for the Licensing Board's factual conclusions. *See Private Fuel Storage* (Independent Spent Fuel Storage Installation), 53 NRC 232, 235-36 (2001); *see also GPU Nuclear Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-06, 51 NRC 193, 207 (2000).

Mendiola, Doris

From: Hanley.James@epamail.epa.gov
Sent: Wednesday, March 03, 2010 5:59 PM
To: LostCreekISRSEIS Resource; MooreRanchISRSEIS Resource; NicholsRanchISRSEIS Resource
Cc: Bubar, Patrice; Swain, Patricia; Hsueh, Kevin
Subject: NUREG – 1910, Supplements 1, 2, and 3 [Draft SEIS for three Wyoming Uranium ISR Projects]
Attachments: DSEIS comments_CEQ#20090421.pdf

Importance: High

Greetings Patrice Bubar, Kevin Hsueh, and Patty Swain:

EPA is submitting comments on the subject reports for consideration by the NRC staff. I look forward to working with Kevin and Patty to discuss the response to comments.

(See attached file: DSEIS comments_CEQ#20090421.pdf)

Respectfully,

James Hanley
US EPA Region 8
NEPA Compliance and Review Program
303.312.6725 (direct)
720.279.4125 (pager)

10/11/09
74FR 65804 — (19) 40-9068
74FR 65806 — (13) 40-9073
74 FR 65808 — (17) 40-9067

SUNSI Review Complete
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Cc = A. Bjorsen (9660)
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MAR 0 9 2010

Ref: 8EPR-N

Michael Lesar
Chief, Rulemaking and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop TWB-05-B01
Washington, D.C. 20555-0001

Re: NUREG – 1910, Supplements 1, 2, and 3
Draft SEIS for three Wyoming Uranium ISR Projects
Lost Creek ISR Project CEQ# 20090425
Moore Ranch ISR Project CEQ # 20090421
Nichols Ranch ISR Project CEQ# 20090423

Dear Mr. Lesar:

The United States Environmental Protection Agency Region 8 (EPA) has reviewed the Draft Supplemental Environmental Impact Statements (SEISs), prepared by the U.S. Nuclear Regulatory Commission (NRC), for each of three new source material licenses proposed for the following in-situ uranium recovery (ISR) facilities: (1) Lost Creek ISR, LLC in Sweetwater County, (2) Energy Metals Corporation for Moore Ranch in Campbell County, and (3) Uranerz Energy Corporation for Nichols Ranch in Campbell-Johnson Counties, Wyoming (Projects). NRC determined that some impacts would be generic or essentially the same for all in-situ uranium recovery (ISR) facilities, while other impacts would be facility-specific, thus requiring further site-specific analysis. The 2009 Generic Environmental Impact Statement (GEIS) provided a starting point for these SEISs. EPA's review and comments are provided in accordance with our responsibilities under the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, et.seq., and Section 309 of the Clean Air Act (CAA), 42 U.S.C. § 7609.

During 2009, EPA participated in multiple teleconferences with NRC regarding the draft SEISs. Throughout EPA's review of these projects, we have emphasized the critical need for the SEISs to adequately assess an appropriate range of reasonable alternatives for disposal of contaminated wastewater. EPA also stressed the need for site specific information in the analysis of all potential environmental impacts associated with these projects. We remain concerned that, individually, the draft SEIS for each project does not provide adequate information to effectively address these key issues.

The primary concerns EPA has with the draft SEISs are the following: (1) the narrow range of the wastewater disposal alternatives analysis along with the limited discussion regarding waste management impacts; and (2) the lack of information regarding air pollutants and the impacts of those emissions. These concerns are the basis for the EPA rating at the conclusion of

this letter. Additional concerns include the potential establishment of alternative concentration limits (ACLs) as groundwater restoration targets prior to completion of adequate restoration efforts, and the information concerning climate change and greenhouse gas emissions.

Wastewater Disposal Analysis

Generally, liquid waste from these projects will be composed of process water, production bleed water, and restoration water. These wastewaters are classified as "byproduct material" under the Atomic Energy Act. Most of these wastes will be contaminated with metals and radionuclides. Under the Underground Injection Control (UIC) program, byproduct material falls under the definition of "radioactive waste," but not under the definition of "hazardous waste," even though it can contain constituents in quantities ordinarily qualifying as hazardous waste. See 40 C.F.R. § 144.3. Consequently, disposal of wastewater from these projects has the potential for significant environmental impacts.

For each of these projects, deep Class I injection well disposal is the only wastewater disposal method analyzed. For example, the draft SEIS for the Lost Creek project states that impacts from Class I wells are small because of the depth of the geologic formation receiving the injected wastewater and proposes that four Class I injection wells be constructed to inject the wastewater at a depth of approximately 8,400 feet. The Safe Drinking Water Act's UIC regulations require that Class I wastes be injected below the lowermost underground source of drinking water (USDW). 40 C.F.R. § 144.6(a). This may be difficult for these types of projects located in Region 8.

In many areas of Wyoming, USDWs are known to occur at great depths, which can significantly limit the areas where injection below the lowermost USDW is feasible. In the area of the Lost Creek Project the Great Divide Basin contains up to 20,000 feet of sedimentary rocks, including two major aquifers which occur below 8,400 feet (the proposed Class I injection depth), the Tensleep Formation and the deeper Madison Formation. Both are known to be USDWs in parts of Wyoming and are currently used as public water supply sources in some areas of the state. Formations below the Madison generally have very low hydraulic conductivity and, therefore, are not likely to be suitable for injection of the volumes of fluids associated with the proposed facility. In order to inject into a Class I well, the injection zone cannot be a USDW, and all underlying formations cannot be USDWs. This situation is very similar for the Moore Ranch and Nichols Ranch project areas. Moore Ranch proposes injection in the area of the Teapot-Teckla-Parkman formation at a depth of 7,916 to 9,610 feet. Waste is also expected to be injected into the Lance formation at depths ranging from 3,700 to 7,500 feet. Nichols Ranch also proposes to inject into the Lance formation several thousand feet below the production zones occurring between 300-700 feet below ground surface.

Determination of USDW/non-USDW status can be difficult and proposed aquifer exemptions are subject to public comment, with final approval by the EPA. Based on these factors, there is significant uncertainty whether Class I injection well disposal will be available at these sites. Consequently, the fact that these draft SEISs evaluate only Class I UIC injection wells as the waste disposal method is inadequate.

Wastewater disposal alternatives that EPA believes need to be analyzed include the following: (1) treatment and disposal via a Class V injection well[1]; (2) treatment and discharge to surface waters under an NPDES permit; and (3) other potential methods such as land disposal and evaporation ponds.

In a related matter, the Lost Creek draft SEIS does not accurately estimate the amount of wastewater that will be generated by the project. A better estimate of the total volume of liquid waste that will require disposal is needed. The GEIS states that ISR facilities operate at a flow rate of 4,000 to 9,000 gpm and that approximately 2 to 3% (80 to 270 gpm) (7 to 138 million gallons per year) of this flow rate will be disposed of as bleed water. The draft SEIS states that only bleed water and elution circuit bleed would be disposed of via Class I wells. There is no information regarding how the other liquid wastes will be disposed of, nor is there an estimated annual volume for the other liquid wastes. This is also an issue with each of the other draft SEISs.

Potential impacts from disposal of non-radioactive contaminants (barium, cadmium, mercury, selenium) in liquid wastes are not adequately addressed given the anticipated volumes and available methods. An analysis should be presented that includes discussion of the following: (1) treatment of the waste stream to applicable Wyoming Groundwater Class of Use standards (i.e. quality) prior to injection or discharge, (2) evaluation of radioactive contaminant removal, (3) arrangements for off-site commercial, licensed land disposal of the treatment residual, (4) use of evaporation ponds with double-liners and leak detection systems, and (5) costs to remove other potentially harmful constituents such as metals, oxides, and chlorides before injection to mitigate or prevent subsurface environmental degradation of any nearby USDWs or cause surface water impacts.

Air Quality Impacts

The SEIS analysis of air quality impacts associated with these projects is not adequate to allow the assessment of the environmental impacts of the projects. These projects will likely result in deterioration of air quality due to emissions from drill rig engines, fugitive emissions and emissions from processing operations, yet these emissions are not presented in the draft SEISs. They lack emission inventories for construction and operational sources and fail to analyze the potential sources of air emissions associated with these projects. Additionally, without a detailed emission inventory we cannot evaluate the proposed CAA determinations made in the NEPA documents, including the emissions sources included in these projects, and whether they comply with applicable CAA permit requirements. Projects similar in scope to these facilities require hundreds of injection/production wells and multiple deep injection wells. Without a complete air quality analysis, EPA's experience from the review of similar projects has shown that these projects are likely to have significant adverse local air quality impacts and also may adversely impact nearby Federal Class I areas, which require special protection of air quality and air quality related values (AQRVs), such as visibility. Of particular concern are the

[1] Class V disposal wells are those not included in Classes I, II, III, and IV. Most relevant for ISR disposal purposes: Class V disposal may include disposal into shallower formations than those below the lowermost USDW if the waste meets certain criteria.

air emissions that will result from the truck-mounted diesel drilling rigs and the drilling of hundreds of wells in each project area. This level of development may have cumulative emission rates in excess of several hundred tons per year of NO_x, PM_{10} and other priority air pollutants. These levels of emissions could adversely affect the AQRVs in Class I and sensitive Class II areas and increase nearby ambient concentrations of ozone, PM_{10}, NO_2, and other pollutants. Detailed emission inventories for the proposed projects need to be included in revised SEISs. We also request that a near field air analysis be conducted to determine direct air impacts. A screening analysis should also be conducted on emissions from the projects to identify far field impacts including visibility parameters for Class I and sensitive Class II air sheds. Prior to any modeling, a draft air quality modeling protocol should be circulated among the interested air quality stakeholders for comment. Finally, with respect to the potential use of evaporation ponds for uranium by-product material, the NEPA analysis needs to estimate radon emissions, and analyze compliance with applicable CAA requirements for such emissions, which could be significant.

Additional Issues

Groundwater Restoration Targets

The draft SEISs do not fully assess the operational requirements and constraints associated with the restoration activities that are critical for achieving groundwater restoration goals. Although they appropriately state that the water quality goal in the portion of the aquifer where extraction occurs is pre-ISR baseline conditions, the same paragraphs conclude with a statement that there will be a demonstration of restoration that complies with the requirements of 10 C.F.R. Part 40, Appendix A. Appendix A allows for restoration target values which can fall short of the pre-ISR baseline. Data from the ISR Christensen Ranch Mine Unit 2, for example, indicate that NRC has approved target restoration values for groundwater constituents as alternative concentration limits (ACLs). Although EPA standards for uranium extraction facilities in 40 C.F.R. Part 192 do allow NRC to utilize this practice, ACLs are above baseline or MCL values.

Without further elaboration in the final GEIS and these SEISs on how often NRC, or its Agreement States, approve ACLs, or the ACL concentrations which have been approved previously by NRC or its Agreement States, this raises an issue of whether the draft SEISs' characterization of the potential permanent degradation of groundwater quality as "small" is accurate. As such, the draft SEISs do not evaluate the potential effects that non-attainment of baseline groundwater restoration would have on surrounding USDWs.

Studies cited in the GEIS[2] concluded that, for sites that were reviewed, aquifer restoration took longer and required more aquifer pore volume flushing than originally planned. The draft SEISs should evaluate the alternative methods that could be used to meet restoration goals of baseline conditions for all constituents mobilized during ISR recovery operations; and whether

[2] (USGS Open File Report 2009-1143 Groundwater Restoration at Uranium In-Situ Recovery Mines, South Texas Coastal Plain, and Report on Findings Related to the Restoration of Groundwater at In-Situ Uranium Mines in South Texas)

the six month post-restoration 'stability period' proposed for these projects is sufficient to achieve baseline values or MCLs and prevent any long-term remobilization of contaminants. There should also be an explanation concerning at what point in the process NRC would make the decision to set ACLs, as well as a discussion of whether there will be a further public process associated with any decision by NRC to approve ACLs.

The Lost Creek draft SEIS section 4.5.2.1.2.2 only briefly describes the excursions of lixiviant or chemical tracers that have occurred at NRC-licensed ISR facilities. It does not provide adequate detail about the cause of these excursions and how they affected the SDWA-protected aquifers outside the exempted uranium recovery zones. The uranium ore body at Lost Creek occurs within the Battle Springs/Wasatch Formation, which is an important aquifer /USDW. Each of the SEISs have similar discussions and therefore should provide a thorough analysis of the potential environmental impacts that an excursion may present, including effects on groundwater restoration estimates.

Climate Change and Greenhouse Gas Emissions

EPA suggests that the SEISs include an expanded discussion of greenhouse gas (GHG) emissions and climate change, including the following:

1. Discuss projected regional climate change impacts relevant to the action area, consider any future needs and capacity of the proposed action to adapt to projected climate change effects, and if appropriate, identify effects from the action that may be exacerbated by projected climate change.
2. Characterize and quantify the expected annual and total project lifetime cumulative GHGs.
3. Briefly discuss the link between GHGs and climate change and the potential impact of climate change.
4. Discuss potential means to mitigate project-related emissions.

EPA's Rating

Based on our review of the draft SEISs and consistent with our responsibilities under NEPA and section 309 of the Clean Air Act, EPA is rating each of the draft SEISs as "Inadequate" (Category 3). This rating indicates EPA's belief that these draft SEISs do not meet the purposes of NEPA and should be formally revised and made available for public comment in a supplemental or revised SEIS. If we are unable to resolve our concerns, this matter would be a candidate for referral to the Council on Environmental Quality for resolution.

We will be contacting you to resolve these significant concerns. EPA will also be providing you with detailed comments regarding each of the SEISs. If you have any questions

before that time, please contact Larry Svoboda, Director of the EPA Region 8 NEPA Compliance and Review Program. Mr. Svoboda can be reached at (303) 312-6004.

Sincerely,

Carol L. Campbell for

Carol Rushin
Acting Regional Administrator

Enclosure: Summary of EPA Rating System

cc: Patrice Bubar (NRC)
Andrea Koch (NRC)

SUMMARY OF EPA RATING SYSTEM

Rating the Environmental Impact of the Action

- LO (Lack of Objections) The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.

- EC (Environmental Concerns) The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.

- EO (Environmental Objections) The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental objections can include situations:

    1. Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;
    2. Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;
    3. Where there is a violation of an EPA policy declaration;
    4. Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or
    5. Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.

- EU (Environmentally Unsatisfactory) The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:

    1. The potential violation of or inconsistency with a national environmental standard is substantive and/or will occur on a long-term basis;
    2. There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or
    3. The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.

COUNCIL ON ENVIRONMENTAL QUALITY
EXECUTIVE OFFICE OF THE PRESIDENT
AND
ADVISORY COUNCIL ON HISTORIC PRESERVATION

NEPA and NHPA

A Handbook for Integrating NEPA and Section 106

MARCH 2013

I. INTRODUCTION

The environmental review process initiated with the passage of the 1966 National Historic Preservation Act (NHPA) (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470) by Congress ushered in a new approach to Federal project planning. The passage of the National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321) in December 1969 and its subsequent signing into law on January 1, 1970, expanded environmental reviews and formally established environmental protection as a Federal policy. NEPA and NHPA require Federal officials to "stop, look, and listen" before making decisions that impact historic properties and the human environment.

NEPA and NHPA each created agencies to implement major environmental programs that shape Federal project planning. The Advisory Council on Historic Preservation (ACHP) and the Council on Environmental Quality (CEQ) administer regulations viewed as the cornerstones of the Federal environmental review procedures. The CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act,* (40 C.F.R. Parts 1500-1508) (CEQ regulations) encourage integration of the NEPA process (NEPA review) with other planning and environmental reviews, such as Section 106 of NHPA (Section 106). The regulations that implement Section 106, *Protection of Historic Properties* (36 C.F.R. Part 800), encourage agencies to plan Section 106 consultations coordinated with other requirements of other statutes, as applicable, such as NEPA. The concepts of "coordination" and "integration" are found in both the CEQ regulations and Section 106 regulations, because they provide efficiencies, improve public understanding, and lead to more informed decisions.

This handbook provides advice on implementing provisions added to the Section 106 regulations in 1999 that address both "coordination" of the Section 106 and NEPA reviews and the "substitution" of the NEPA reviews for the Section 106 process. Coordination, addressed in 36 C.F.R. § 800.8(a), *"Coordination With the National Environmental Policy Act,"* encourages agencies to coordinate compliance with Section 106 with any steps taken to meet NEPA review requirements. Substitution,

WHAT IS A "HISTORIC PROPERTY?"

"Historic property" means any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places maintained by the Secretary of the Interior (National Park Service). This term includes artifacts, records, and material remains that are related to and located within such properties. Properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register.
[36 C.F.R. § 800.16(l)(1)]

For more information on the National Register of Historic Places and its eligibility requirements, see: http://www.nps.gov/history/nr

WHAT IS A "CULTURAL RESOURCE?"

Effects considered under NEPA include cultural and historic. [40 C.F.R. § 1508.8]
The term "cultural resources" covers a wider range of resources than "historic properties," such as sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections.

See the DEFINITIONS AND TRANSLATIONS in Attachment A.

- Supports broad discussion of effects to the human environment and integrates the consideration of historic properties with other environmental factors.
- Facilitates the development of a comprehensive environmental review schedule that helps agencies reduce litigation risk by ensuring that requirements under both statutes and their implementing regulations are met in a timely manner.
- Provides agencies with opportunities to save time and expense by gathering information and developing public engagement strategies and documents that meet the statutory requirements of NEPA and NHPA with less duplication of agency effort.
- Enhances public engagement by providing State Historic Preservation Officer (SHPO); Tribal Historic Preservation Officer (THPO); applicants; tribal, state, and local governments; and other interested parties with opportunities to engage under both statutes at the same time.
- Helps ease potential duplication and time consuming processes for potential applicants.
- Promotes transparency and accountability in Federal decision making, and more informed, better decisions.

As agencies pursue project planning for more complex and expansive activities that have the potential to affect a myriad of resources, collaboration of NEPA and Section 106 practitioners and involvement of appropriate stakeholders early in project planning can inform the development and analysis of alternatives and the assessment and resolution of effects that meet the purpose and intent of Section 106 and the NEPA reviews. When the NEPA review and Section 106 are integrated, whether through coordination or substitution, an agency assesses ways to avoid, minimize, or mitigate adverse effects while identifying alternatives and preparing NEPA documentation. It is important for agencies to consider ways to avoid affecting historic properties before assessing potential mitigation measures to resolve adverse effects. If the proposed undertaking would have an adverse effect on a historic property and that effect cannot be avoided, then the agency can focus its consultation on the development of specific mitigation measures for that historic property.

WHAT IS CONSULTATION IN SECTION 106?

Consultation means the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process.

For more information, see: http://www.achp.gov and http://www.nps.gov/hps/fapa_110.htm

STATE HISTORIC PRESERVATION OFFICER (SHPO) AND TRIBAL HISTORIC PRESERVATION OFFICER (THPO)

Pursuant to the NHPA, the SHPO and the THPO advise and assist, as appropriate, Federal agencies in carrying out their historic preservation responsibilities.
16 U.S.C. 470a(b)(3)(E) and (d)(2).

WHAT IS A SIGNIFICANT IMPACT IN NEPA?

Under NEPA, significance is determined based on context and intensity. Impacts are analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. Intensity refers to the severity of effect, which includes factors such as the magnitude, geographic extent, duration, and frequency of the effect.
[40 C.F.R. § 1508.27]

WHAT IS AN ADVERSE EFFECT IN 106?

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the property's integrity. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.
[36 C.F.R. § 800.5(a)(1)]

See the DEFINITIONS AND TRANSLATIONS in Attachment A.

Most Federal agencies have their own implementing regulations or administrative protocols for implementing NEPA or approved program alternatives for Section 106. The advice provided in this handbook should serve as a foundation from which Federal agencies may develop or revise their own procedures or protocols to best suit their agencies' missions, their agencies' frameworks for implementing their programs, and their agencies' approaches to specific undertakings to satisfy the requirements of both Section 106 and NEPA.

Recently enacted legislation and administrative policies encourage agencies to seek new efficiencies in the environmental review process. Implementing the advice and recommendations made in this handbook can help agencies achieve these goals. It is important to recognize, however, that special circumstances may impact how an agency proceeds through NEPA and Section 106 compliance. For example, new legislation can change what an agency is required to do, litigation may inform agency procedures and policies, an agency may need to revisit determinations or decisions, or circumstances may dictate expedited timelines. These special situations can challenge agency decision makers in determining the best way forward. As such, CEQ and the ACHP are available to provide advice to agencies on a case by case basis as these situations arise.

III. RELATIONSHIP OF NEPA AND SECTION 106 REVIEWS

NEPA and Section 106 reviews may be triggered by a Federal or Federally funded, licensed, or permitted action and apply whether that action is on Federal, private, state, or tribal land. They share the goal of more informed agency decisions with respect to environmental consequences, including the effects on historic and cultural properties. Both encourage coordination with other environmental reviews.

NEPA and Section 106 implementation are overseen by Federal agencies that have promulgated regulations implementing the statutory procedures. The CEQ oversees 40 C.F.R. Parts 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. The ACHP oversees 36 C.F.R. Part 800, Protection of Historic Properties. These regulations are similar in several respects. Both regulatory procedures:

- Authorize development of agency-specific alternative procedures provided those procedures meet certain standards and approval requirements.
- Require agencies to gather information on the potential effects of the proposed action on historic properties and consider alternatives that may avoid or minimize the potential for adverse effects.
- Vary depending on the scope of the proposed action and its potential to have environmental effects.
- Emphasize the importance of initiating the environmental review process early in project planning.
- Emphasize notifying the public about the proposed Federal actions and involving the public in the decision making process.
- Require the process to be completed prior to a Federal decision.

Distinctions exist between the NEPA and Section 106 reviews in terms of the types, scope, and geographical area of environmental review procedures, the nature of public engagement and tribal consultation, information requirements, procedures for developing alternatives,

documentation, and timing. These distinctions are important for understanding opportunities for coordination and for following the substitution process.

A. Action and Undertaking

An environmental review under NEPA is required for all "Federal actions" which include projects, plans, policies, and programs financed, assisted, conducted, regulated, or approved by Federal agencies. Federal agencies must comply with Section 106 for all "undertakings," defined as "a project, activity or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval."[5] Under Section 106, if the agency determines that the undertaking is a type of activity that does not have the potential to cause effects on historic properties, then there is no further Section 106 responsibility.

TIP:
When a Federal agency makes its initial determination under Section 106, it considers whether the project is the type of activity that could affect historic properties, assuming such properties were present. This evaluation must be independent of the real context (e.g., actual location) for the activity. The Federal agency should never proceed on the assumption that the potential to affect historic properties is absent based on location, previous disturbance, or because no historic properties are believed to be present in the area. Such findings should be subject to the Section 106 notification and consultation provisions.
36 C.F.R. § 800.3(a)(1)

B. Type of Review

Compliance procedures for NEPA and Section 106 vary depending on the potential of the proposed action to cause environmental effects. Federal agencies determine the type of NEPA review they will undertake for a proposed action based on the context and intensity of its impacts.[6] Context is defined as the geographic and social context in which the effect will occur, while intensity refers to the severity of the impact. Agencies may meet their responsibilities with a Categorical Exclusion (CE), Environmental Assessment that results in a Finding of No Significant Impact, or Environmental Impact Statement and Record of Decision. CEs are agency-specific and require consideration of whether there are "extraordinary circumstances" in which a normally excluded action may have a significant environmental effect that will then require further analysis in an EA or an EIS.

If a project, activity, or program is categorically excluded from NEPA review under an agency's NEPA procedures, the agency official shall determine if it still qualifies as an undertaking requiring review under Section 106.
36 C.F.R. § 800.8(b)

Under Section 106, a Federal agency considers the potential effects of its undertaking on historic properties. When a Federal agency has found that an undertaking may adversely affect historic properties, it must develop and consider alternatives or measures to avoid, minimize, or mitigate such effects.[7] The Section 106 process

TIP:
NEPA and NHPA are statutory requirements that can be waived only by specific provision in an Act of Congress. Unless a waiver has been authorized in legislation, the administrative record for each Federal project or program should document compliance with NEPA and NHPA.

NEPA REVIEW AND TIERING

The NEPA regulations at 40 C.F.R. §§ 1502.4(c), 1502.20, and 1508.28, and CEQ guidance ("Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act") encourage agencies to tier their EAs and EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review. Whenever a broad EA or EIS has been prepared, such as a program or policy statement, and a subsequent EIS or EA is then prepared on an action included within the entire program or policy, such as a site specific action, the subsequent EIS or EA need only summarize the issues discussed in the broader EIS or EA by incorporation by reference and shall concentrate on the issues specific to the subsequent action. Materials incorporated by reference must be briefly described and appropriately cited, and available for review by interested parties.

For more information, see CEQ's Memorandum for Heads of Federal Departments and Agencies, "Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act" (March 6, 2012), *available at* http://ceq.hss.doe.gov/current_developments/docs/Improving_NEPA_Efficiencies_06Mar2012.pdf.

SECTION 106 AGREEMENTS

A Memorandum of Agreement is used to resolve adverse effects to historic properties and conclude the Section 106 process when implementing a discrete project with identified adverse effects. A Programmatic Agreement is a program alternative that may be used to implement the Section 106 process for a complex project situation. Programmatic Agreements can be developed on a national, statewide, or regional scope for similar or repetitive undertakings, for undertakings with repetitive effects on historic properties, or for situations where the effects to historic properties cannot be fully determined prior to the approval of an undertaking.

normally concludes with an agency finding of "no historic properties affected," "no adverse effect," or "adverse effects" resolved through avoidance, minimization, or mitigation. For undertakings with adverse effects, the Federal agency usually executes a legally binding document, a Memorandum of Agreement (MOA) or Programmatic Agreement (PA), that stipulates the resolution of adverse effects agreed to by the signatories. In those rare circumstances where there is a failure to reach an agreed-upon solution, the ACHP issues formal advisory comments to the head of the agency. The head of the agency must then take into account and respond to those comments.[8]

C. Scope of Review

Environmental review under NEPA includes a description of the affected human environment and the environmental consequences of the proposed action on that environment. NEPA regulations require NEPA documents to list all Federal permits, licenses, and other entitlements and to integrate to the fullest extent possible its information gathering and analyses with other Federal environmental review laws and executive orders—such as the Endangered Species Act (ESA), Clean Air Act General Conformity Rule, and the Marine Mammal Protection Act. As a result, NEPA is sometimes referred to as "an umbrella law." Nevertheless, agencies must still fulfill the requirements under those independent statutes, including the NHPA. Both NEPA and Section 106 require agencies to consider historic properties and effects to them. The affected human environment reviewed under NEPA includes aesthetic, historic, and cultural resources as these terms are commonly understood, including such resources as sacred sites. Section 106 is concerned exclusively with impacts to historic properties, defined in NHPA[9] as properties that are listed, or may be eligible for listing, in the National Register of Historic Places (National Register).[10] These may include prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious and cultural importance to an Indian tribe or a Native Hawaiian organization, that meet the National Register criteria.[11] Cultural resources that are not eligible

for or listed in the National Register may be considered as part of the NEPA review.

D. Study Area and Area of Potential Effects

The NEPA review's study area will vary depending on the extent of the potential impacts associated with the alternative courses of action. If reasonable alternatives exist, NEPA requires agencies to rigorously explore and objectively evaluate them.[12] Agencies should give a similar level of attention to historic properties as that given to other resources for all alternatives to establish a baseline of information to consider during consultation and review. Section 106 requires agencies to identify historic properties within the area of potential effects[13] for the proposed undertaking. In practice, the preferred alternative in a NEPA review may be considered equivalent to the proposed undertaking under Section 106. Early in the Section 106 review process, the Federal agency determines the area of potential effects for its undertaking. The area of potential effects is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The Section 106 process does not require agencies to identify and evaluate historic properties in the area of potential effects for all NEPA alternatives; however, the preferred alternative may not be selected until late in the NEPA review, or may change during that review. In addition, Section 106 may require additional identification of historic resources as part of an effort to develop and evaluate alternatives to the proposed undertaking to avoid or mitigate adverse effects. Agencies should therefore establish the schedule, geographic area, and specifications for specialized studies, including historic property surveys, for more than the preferred alternative when there are adverse effects, to have the information they need in each step of the NEPA and Section 106 processes.

Section 106 allows the identification and evaluation of historic properties and assessment of effects to be phased for large land areas or in cases of restricted access. In some circumstances, the agency may defer identification, evaluation, and assessment of effects through a formal agreement, such as a PA. As specific aspects or locations

The Department of Veterans Affairs (VA) lost its Veterans Medical Center in New Orleans as a result of Hurricanes Katrina and Rita in 2005. It proposed to replace the facility with a new facility, adjacent to the proposed replacement for the public Charity Hospital, which would be partially funded by the Federal Emergency Management Agency (FEMA). VA, FEMA, and the City of New Orleans (as the responsible entity for NEPA under HUD delegation) cooperated to conduct a programmatic (or tier 1) Environmental Assessment (PEA) for siting the two hospitals together in the Mid-City Historic District. Since the agencies did not wish to identify a preferred alternative prior to issuing the PEA, the Section 106 Programmatic Agreement was developed to address the potential adverse effects of each of the alternatives under study.

Since the approval of the programmatic Finding of No Significant Impact (FONSI) in 2007, each of the agencies have completed their own site-specific (or tier 2) Environmental Assessments.

VA issued a mitigated FONSI in November 2008, and reports that its effort to satisfy the Programmatic Agreement is roughly 90 percent complete as of February 2013.

For more information and updates, go to:

http://www.neworleans.va.gov/Project_Legacy.asp

http://www.fema.gov/environmental-planning-and-historic-preservation-program/environmental-documents-public-notices-2

TIP:
An "effect" under Section 106 means an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places. A Federal agency must assess the effects of the proposed undertaking on historic properties prior to applying the criteria of adverse effect.

PARTICIPANTS IN THE SECTION 106 REVIEW PROCESS

The regulations implementing Section 106, "Protection of Historic Properties" (36 C.F.R. Part 800), require Federal agencies to consult–seek, discuss, and consider the views and seek agreement with–the following stakeholders:

- State and Tribal Historic Preservation Officers (SHPOs/THPOs)
- Federally recognized Indian tribes, including Native villages, Regional Corporations or Village Corporations, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act, and Native Hawaiian organizations (NHOs)
- Local governments
- Applicants for Federal permits, licenses, or assistance
- The National Park Service, if a National Historic Landmark may be affected by the undertaking
- The ACHP, if historic properties may be adversely affected or other circumstances warrant its participation

Federal agencies may also invite other consulting parties with a legal or economic relation to the undertaking or affected properties or concern with the undertaking's effects on historic properties.

The views of the public are also essential to informed Federal decision making in the Section 106 process.

For more information, go to: http://www.achp.gov

of an alternative are refined or access is gained, the agency should complete its efforts to identify and evaluate the potential effects to historic properties.

E. Stakeholder and Public Involvement

CEQ's NEPA regulations require agencies to "make diligent efforts to involve the public in preparing and implementing their NEPA procedures" and "to provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents."[14] The extent will vary with the level of review. CEs provide limited opportunities for public and tribal involvement. Where an EA is prepared, the type and extent of public involvement is at the discretion of the authorized officer. For an EIS, scoping involves notification and opportunities for comments on a proposed action by other agencies, organizations, tribes, local governments, and the public for the purpose of determining the scope of issues and identifying significant issues related to the proposed action. Agencies are required to make the draft EIS available for public review, invite comments, and respond to any comments submitted. In addition, a Federal, state, local, and tribal government with jurisdiction or special expertise may be offered a special role as a "cooperating agency."

Section 106 requires that agencies "provide the public with information about an undertaking and its effects and seek public comment."[15] The manner in which the agency official is to seek and consider the views of the general public should reflect "the nature and complexity of the undertaking and its effects on historic properties, the likely interest of the public in the effects on historic properties, confidentiality concerns of private individuals and businesses, and the relationship of the Federal involvement in the undertaking."[16]

Agencies should plan public involvement appropriate to the scale of the undertaking and scope of Federal involvement.[17] Section 106 encourages agencies to use their own procedures implementing NEPA or other programs to satisfy the Section 106 general public outreach requirements, provided they include adequate opportunities for public involvement.[18]

In addition to requiring public involvement, Section 106 is a consultative process that "seeks to accommodate historic preservation concerns with the needs of the Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties."[19] Consulting parties include other Federal, state, and local agencies, Indian tribes, Native Hawaiian organizations, applicants, and the interested public. Consultation is defined in the Section 106 regulations as "the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process."[20] The consultation process is used to identify and evaluate historic properties potentially affected by an undertaking, assess effects, and seek ways to avoid, minimize, or mitigate any adverse effects on those properties. Consulting parties are provided a more active role in these steps than the general public.

An agency should consider the implications for their communications strategy when determining whether to use coordination or substitution. When agencies plan to fulfill NEPA requirements for a proposed action through the preparation of CEs or EAs, Section 106 may require more public involvement than that afforded by the NEPA review. More public involvement may also be required when preparing an EIS, particularly when using the substitution process. Effective communications plans for engaging stakeholders and the public should satisfy all the NEPA review and Section 106 public involvement and consultation requirements.

F. Tribal Consultation

Under NEPA, Federal agencies are encouraged to consult with Indian tribes early in the planning process, and to invite Indian tribes to be cooperating agencies in preparation of an EIS, when potential effects are on a reservation or affect tribal interests.[21] Tribal consultation under NEPA can include effects to treaty, trust, and other natural resource issues, as well as to cultural resources in general, whether or not they meet the specific definition of historic property under the NHPA. The NEPA review may also include the government's responsibilities under Executive Order (EO) 12898,

FEDERALLY RECOGNIZED INDIAN TRIBES
The Federal Government has a unique relationship with Indian tribes derived from the Constitution of the United States, treaties, Supreme Court decisions, and Federal statutes. Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes, and should be conducted in a sensitive manner respectful of tribal sovereignty.
[36 C.F.R. § 800.2(c)(2)(ii)(B) and (C)]

NATIVE HAWAIIAN ORGANIZATION
An Native Hawaiian organization is any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are culturally significant to Native Hawaiians. The term includes, but is not limited to, the Office of Hawaiian Affairs of the State of Hawaii and Hui Malama I Na Kupuna O Hawai'i Nei, an organization incorporated under the laws of the State of Hawaii. The NHPA requires the agency official to consult with any Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by an undertaking.
[36 C.F.R. § 800.2(c)(2)(ii) and § 800.16(s)(1)]

TIP:
The development of consultation protocols or communication agreements between a Federal agency and an Indian tribe or Native Hawaiian organization may help focus consultation and create common expectations.

INVOLVING CONSULTING PARTIES IN NEPA

A Section 106 review should begin prior to a Federal agency's identification of a preferred alternative under NEPA. While many SHPOs, THPOS, Indian tribes, and NHOs may find early involvement in the NEPA process challenging, it is important that agencies engage these Section 106 consulting parties early in project planning. Their involvement in the development of alternatives and consideration of historic preservation issues will benefit both the NEPA and the Section 106 processes. The development of alternatives which resolve adverse effects and prevent the need to review or revisit previously eliminated alternatives advances environmental reviews.

ENVIRONMENTAL JUSTICE

Environmental justice issues encompass a broad range of impacts covered by NEPA, including impacts on the natural or physical environment and interrelated social, cultural, and economic effects. In Section 106 consultations, representatives of affected communities may also raise environmental justice issues. Such issues which can be addressed through historic preservation considerations may contribute to the agency's overall environmental justice compliance.

Section 304 of the NHPA provides that the head of a Federal agency or other public official receiving grant assistance pursuant to the act, after consultation with the Secretary of the Interior, shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may cause a significant invasion of privacy, risk harm to the historic property, or impede the use of a traditional religious site by practitioners.

36 C.F.R. § 800.11(c)(1)

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; EO 13175, Consultation and Coordination with Indian Tribal Governments; the American Indian Religious Freedom Act; and related statutes and policies that have a consultation component.

Under the NHPA, consultation with Indian tribes and Native Hawaiian organizations is mandatory. It focuses on identifying and evaluating historic properties, assessing effects, and, where appropriate, resolving adverse effects to those properties. Consultation is required with any Indian tribe or Native Hawaiian organization that may attach religious and cultural significance to historic properties that may be affected by a proposed undertaking, regardless of whether the property is located on or off tribal lands.[22]

G. Information Requirements

The CEQ regulations require agencies to describe the environment, including cultural resources, likely to be affected by the proposed action and alternatives, and to discuss and consider the environmental effects of the proposed action and alternatives, so decision makers and the public may compare the consequences associated with alternate courses of action. Data and analysis vary depending on the importance of the impact, and the description should be no longer than necessary to understand the effects of the alternatives, with less important material summarized, consolidated, or referenced.[23]

Section 106 requires agencies to make a reasonable and good faith effort to identify historic properties. The level of effort is determined in consultation with the SHPO or the THPO. Agencies take into account information provided by consulting parties, individuals, organizations, tribes, and Native Hawaiian organizations about the location, character, and ownership of historic properties. They also consider past planning efforts and research, the magnitude and nature of the undertaking, the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects. Information about the location, character, or

ownership of historic properties, may be subject to the confidentiality provisions of Section 304 of the NHPA. Further, it may be necessary to withhold protected business analysis where the project sponsor or applicant wants to keep competitive information confidential. The request for confidentiality is often made early in the consultation process. It is important for an agency to carefully review solicitations and information that would be released or made available to the general public to ensure confidential information is protected as appropriate.

H. Documentation

At the end of the NEPA and Section 106 reviews, Federal agencies select an alternative to implement. The NEPA review may conclude with documentation of a CE, a FONSI for EAs, or a ROD for EISs, or a No Action decision. Only the ROD is a decision document under the CEQ regulations.[25] The Section 106 process normally concludes with documentation of one of three findings: "no historic properties affected;" "no adverse effect;" or "adverse effect" to historic properties that the Federal agency has resolved through the measures they have agreed to in an MOA or PA.[26] In rare circumstances, an agency is unable to resolve adverse effects, terminates consultation, and requests the ACHP to issue formal advisory comments.[27] The agency head then concludes the process by providing the ACHP with a summary of its decision and evidence of consideration of the ACHP's comments prior to reaching a final decision on the undertaking.[28] Copies of the agency's response and summary are provided to consulting parties and made available to the public. By statute, Federal agencies must conclude the Section 106 process before approving the expenditure of funds on an undertaking or before the issuance of any license, permit, or approval for an undertaking to proceed.[29] This requirement does not apply to the use of funds for non-destructive planning, provided that such actions do not restrict the subsequent consideration of alternatives to avoid, minimize, or mitigate the undertaking's adverse effects on historic properties.[30]

Applicants are likely to carry out a significant amount of the work including the following: gathering and providing baseline information on resources that may be impacted by the proposed action; administrative and technical facilitation of public engagement and tribal consultation; and helping to prepare or review draft documentation. Officials may authorize an applicant to initiate consultation with the SHPO/THPO and other consulting parties with the exception of Indian tribes by notifying the SHPO/THPO.[31] This delegation authority does not extend to an agency's government-to-government relationship with Indian tribes. The Federal agency alone is responsible for all findings and determinations under Section 106, and for government-to-government consultation with Indian tribes.

V. ROAD MAP FOR SUBSTITUTION

A. Choosing Substitution

Substitution under 36 C.F.R. § 800.8(c) permits agencies to use the NEPA review to comply with Section 106 as an alternative to the process set out in 36 C.F.R. §§ 800.3-800.6. The use of a substitution approach allows agencies to use the procedures and documentation required for the preparation of an EA/FONSI or EIS/ROD to comply with the Section 106 procedures. To do so, the agency must notify the ACHP and SHPO/THPO in advance that it intends to do so and meet certain specified standards and documentation requirements as set forth in 36 C.F.R. § 800.8(c)(1). Substitution is appropriate for a proposed action for which an EA or EIS will be prepared, but not for a categorically excluded action. Those projects using a CE must follow the normal Section 106 procedures at 36 C.F.R. §§ 800.3-800.6 or an applicable program alternative.[49]

There are instances where the substitution approach might not work as well as the coordinated approach. For instance, where a project involves multiple, complicated impacts on many different types of resources, but Section 106 issues appear to be minor and straightforward, it may be more efficient to fulfill the requirements of Section 106 in a concurrent but parallel manner to avoid complicating a single review process. In addition, where a high level of public controversy or complex procedural issues have emerged over the potential impacts to historic properties, an agency might recognize the benefit of keeping the review processes separate so that attention can be focused on managing and resolving discrete controversies. The decision to substitute NEPA for Section 106 purposes may also be influenced by factors stemming from an agency's compliance with other environmental laws, such as the ESA and the Clean Water Act. The ACHP, CEQ, and other agency decision makers, as appropriate, can assist with the decision to use substitution. Prior agency experience with similar actions or projects within the same geographic area can also help to guide the decision.

The National Park Service (NPS) proposed a General Management Plan (GMP) that will provide a comprehensive direction for resource preservation and visitor use, direction for management of the Site, and a basic foundation for decision making for Abraham Lincoln Home National Historic Site for the next 15 to 20 years. The selected alternative focuses on providing visitors the opportunity to experience the historic Lincoln neighborhood as Lincoln knew it during his residence in Springfield, Illinois. This goal would be accomplished in part through rehabilitation and restoration of historic buildings and new construction within the National Historic Site. The implementation of all projects and programs stemming from the GMP is contingent upon congressional funding.

The NPS used the NEPA process to fulfill its Section 106 responsibilities in accordance with 36 C.F.R. § 800.8(c). Through Section 106 consultation, the NPS found that the GMP, as a plan without appropriated funding to implement the projects, would not affect historic properties. Consulting parties, however, anticipate the infrastructure projects stemming from the GMP to have the potential to adversely affect historic properties. Accordingly, NPS committed in its Record of Decision to meet the requirements of Section 106 when planning any of the individual projects or programs that might stem from the GMP. (Image: NPS)

To learn more about the General Management Plan and review the combined NEPA/106 documentation, go to:

http://parkplanning.nps.gov/projectHome.cfm?projectID=13436

The Federal Transit Administration (FTA) proposed a grant to the Regional Transportation District (RTD) of Denver, Colorado, for the construction of the Gold Line, an 11.2-mile electric commuter rail transit line. FTA notified the ACHP and the Colorado State Historic Preservation Office (SHPO) of its intent to use the NEPA process for Section 106 purposes in accordance with 36 C.F.R. § 800.8(c). Through Section 106 consultation, the FTA found that the preferred alternative would adversely affect several historic properties. FTA also found it was necessary to phase the identification, evaluation, and assessment of effects to archaeological sites on properties inaccessible prior to the approval of the grant. FTA documented its commitment to phased identification and mitigation measures in a Section 106 Memorandum of Agreement (MOA). The Record of Decision was approved in 2009, and the project is currently under construction. (Image: RTD)

For more information, go to:

http://www.rtd-fastracks.com/gl_3

An agency official may use the process and documentation required for the preparation of an EA/FONSI or an EIS/ROD to comply with Section 106 in lieu of the procedures in §§ 800.3—800.6 if the agency official has notified in advance the SHPO/THPO and the ACHP that it intends to do so and the...standards are met [as provided in 36 C.F.R. §800.8(c)(1)].
36 C.F.R. § 800.8(c)

Early in the project planning stage, an agency should consider the following questions when determining whether substitution under 36 C.F.R. § 800.8(c) is appropriate:

- Will the Federal agency be actively involved in the development of the NEPA document (as opposed to an applicant, project sponsor, or contractor) and therefore be able to ensure its consultation responsibilities are being met?
- Are the agency delegations of authority and staff and other resources well positioned to support the substitution process?
- Will a single participation process enhance public engagement?
- Will substitution enhance the opportunity to resolve adverse effects because resource conflicts are related, or will it complicate other analyses?

Agencies will generally be able to answer "yes" to the majority of these questions for projects that make good candidates to the substitution approach.

The substitution approach requires advance planning to ensure that the NEPA review will meet the standards set forth in 36 C.F.R. § 800.8(c)(1). The substitution approach can clearly save time and documentation where an agency's undertaking would have adverse effects on multiple historic properties and cultural resources and the agency is preparing an EIS. The agency may document the final resolution of adverse effects in the ROD and if the ROD is used in this way, then the agency is not required to develop a separate Section 106 agreement document to conclude the Section 106 process.[50]

B. Meeting the Substitution Procedural Requirements and Standards

The substitution process requires that during the preparation of an EA or EIS, agencies must meet certain procedural requirements set out in 36 C.F.R. § 800.8(c) (1), (2), (3), and (4) and the four "standards," set out in 36 C.F.R.§ 800.8(c)(i)-(iv). The requirements and standards of the substitution process and advice on how to meet them during a NEPA review are outlined below. Attachment C to this handbook provides a checklist for

practitioners to use in preparing or reviewing a draft EIS or EA used for Section 106 purposes. This checklist should be particularly helpful for those practitioners working through the substitution approach for the first time.

1. Notification (36 C.F.R. § 800.8(c))

An agency must provide advance notice to the ACHP and SHPO/THPO that it intends to use the process and documentation for preparing an EA/FONSI or EIS/ROD to comply with Section 106 in lieu of 36 C.F.R. § 800.3 through § 800.8. Agencies may prepare a comprehensive project schedule and communication plan at this time to assist with internal coordination and timely completion of all substitution requirements. Roles and responsibilities should be clearly specified. This is also a good opportunity to ensure that agency decision making authority and staff and other resources are aligned to support successful execution of the plan.

2. Identifying Consulting Parties (36 C.F.R. § 800.8(c)(1)(i))

Section 106 is predicated on the active involvement of consulting parties. Agencies must keep them informed and engaged. An agency intending to use 36 C.F.R. §800.8(c) must identify consulting parties (standard 36 C.F.R. § 800.8(c)(1)(i)) during NEPA scoping consistent with the comprehensive project schedule and communication plan. Identifying and engaging diverse consulting parties (as defined in 36 C.F.R. § 800.2(c)) at this time is vital to explain the structure and context of the substitution process and to avoid potential confusion about the forthcoming NEPA process and documentation. Stakeholders may be unfamiliar with the substitution process, and agencies should explain the opportunities for enhancing stakeholder participation, as well as the efficiencies for the agency, and be prepared to respond to questions. The agency must ensure all consulting parties are included in any notification and distribution lists for NEPA documents, and that the ACHP is included in the notification and distribution when the agency is preparing a draft EIS and EIS.[51]

3. Identifying Historic Properties (36 C.F.R. § 800.8(c)(1)(ii)) & Involving the Public (36 C.F.R. § 800.8(c)(1)(iv))

As an agency develops its alternatives for an EA or EIS, it must determine its area of potential effects and make a reasonable and good faith effort to identify historic properties in the area of potential effects.[52] This effort must include consultation with consulting parties. Agencies may phase the scope and timing of their identification efforts to synchronize with their consideration of alternatives in the NEPA process, provided consideration of historic properties is commensurate with the assessment of other environmental factors. Where large land areas or large corridors are involved, final identification and evaluation of properties may be deferred through execution of a PA or in the ROD. When an agency defers completion of final identification of historic properties, it should establish the likely presence of historic properties for each alternative through background research, consultation, and the appropriate level of field identification, taking into account the number of alternatives, the magnitude of the undertaking and its likely effects, and the views of the SHPO/THPO and any other consulting party.[53]

The results of the agency's identification and evaluation efforts must be clearly identified in the NEPA documents so that agencies may effectively use draft NEPA documents as a way to share information with the public[54] and consulting parties during public comment periods. If draft documents are not normally made available for public review and comment (such as preliminary draft EISs or draft EAs), agencies will need to consider how they will provide that information to the public and consulting parties. Providing the public the opportunity to review NEPA documents without an opportunity to provide comments will typically not be sufficient to satisfy Section 106 public involvement requirements.

4. Consulting on Effects (36 C.F.R. § 800.8(c)(1)(iii))

The NEPA documentation must clearly state the agency's determination of effect, and this information must be provided to the SHPO/THPO and other consulting parties for their review and comment. To focus and help expedite the consulting party's review, the agency can send a draft or final NEPA document to the consulting parties and inform them where the relevant Section 106 information is located and how the NEPA document does or will address Section 106 findings and determinations. Where the Section 106 process can be concluded with a finding that no historic properties are affected or that there are no adverse effects, the agency must clearly state that finding in the final NEPA document (EA or EIS).

5. Resolving Adverse Effects (36 C.F.R. § 800.8(c)(1)(v))

Where the assessment of effects finds that there are potential adverse effects to historic properties, the agency consults to develop alternatives and proposed measures that might avoid, minimize, or mitigate those adverse effects. Substitution does not relieve an agency of its Section 106 responsibility to resolve adverse effects to historic properties through consultation. Alternatives and proposed measures that are developed through that consultation must be described in the EA, draft EIS (DEIS), or EIS. The description in the NEPA document should not be the first time the consulting parties see the measures proposed for resolving adverse effects.

6. Providing Opportunity for Review and Objection (36 C.F.R. §§ 800.8(c)(2-3))

Agencies must submit the EA, DEIS, or EIS to the SHPO/THPO and other consulting parties for review. A DEIS or final EIS must also go to the ACHP for review.[55] During or prior to the time allowed for public review and comment during the EA or EIS process or the review required by Section 800.8(c)(2)(i) (if these do not coincide), a consulting party may report an objection to the agency that the process has not met the standards of Section 800.8(c)(1) or that the resolution of adverse effects is inadequate.[56] Consequently, the comprehensive project schedule must include sufficient time for the opportunity for review and the possibility of an objection. Agencies planning to publish a Record of Decision 30 days after the publication of the final EIS should note that the opportunity for review and objection must occur prior to publication of the final EIS.

If there is an objection, the agency shall refer the objection to the ACHP for its opinion, which the ACHP has 30 days to provide.[57] If the ACHP does not agree with the objection or does not respond within 30 days, the agency may proceed to conclude its NEPA and Section 106 reviews. When the ACHP agrees with the objection, the agency takes the ACHP opinion into account in reaching a final decision regarding the issue following the process set out at 36 C.F.R. § 800.8(c)(3)(i).

7. Terminating the Substitution Process

If, as the result of an objection under 36 C.F.R. § 800.8(c)(2)(ii) or during consultation to resolve adverse effects, disagreement reaches a point where the substitution process is no longer prudent, then agencies may return to the appropriate step in the standard Section 106 process with notification to consulting parties. This notification must be in writing and state how previous steps met the standard procedural requirements and how the agency intends to meet the remaining Section 106 procedural requirements. If such a situation arises, the agency should consider meeting with all consulting parties to explain the specifics of complying with Section 106 and how it will continue to engage consulting parties. It is also helpful for the agency to develop a comprehensive project schedule to avoid unnecessary delays. The agency can still make use of opportunities to coordinate the remaining steps in the Section 106 process with the remaining NEPA review process, as outlined earlier in this handbook.

8. Concluding the Substitution Process (36 C.F.R. § 800.8(c)(4))

Following review of the EA, DEIS, or EIS and resolution of any objections under 36 C.F.R. § 800.8(c)(3) and before approving the undertaking, the agency must conclude the Section 106 substitution process. If, during preparation of the EA or EIS, an agency found there were no adverse effects to historic properties from the

proposed undertaking, it documents this in the EA or EIS.

When the agency is preparing an EA and there are adverse effects to historic properties, then the agency will have to develop an MOA (or a PA under 36 C.F.R. § 800.14(b)) or consider formal ACHP comments to conclude the Section 106 process before making the decision whether to proceed with the proposed action. A FONSI should make it clear that adverse effects have been resolved and an MOA, PA, or formal ACHP comment process was concluded. Use of a mitigated FONSI does not replace the requirement and procedures in the regulations implementing Section 106 to conclude the process with an MOA, PA, or ACHP comment.

If during preparation of an EIS, an agency finds there would be adverse effects from the proposed undertaking, it must document the resolution of those effects in one of the following ways: (1) incorporating a description of the agency's binding commitment to measures to avoid, minimize, or mitigate such effects in the ROD, if such measures were proposed in the DEIS or EIS and available for the consulting parties' review and opportunity to object; (2) executing an MOA in compliance with 36 C.F.R. § 800.6(c); or (3) receiving ACHP formal comments under 36 C.F.R. § 800.7 and responding to them. When an agency makes a binding commitment to mitigation measures in the ROD, the ROD should be specific regarding who will do what. The ROD should also include such administrative provisions as a process for any continued consultation during implementation, timelines for implementation, procedures for post-review discoveries, a dispute resolution process, and a provision addressing future changes to the undertaking as described in 36 C.F.R. § 800.8(c)(5).

A final point to consider is whether the proposed action is a program or complex action occurring in stages. For example, when a programmatic EA or EIS is being completed and there will be subsequent project specific NEPA documents, a PA may be used to conclude the Section 106 process for the programmatic EA or EIS. A PA will document the agreement of signatories on a process for ongoing or future Section 106 responsibilities. In instances where an agency believes that future flexibility may be needed, a PA can include amendment and dispute resolution procedures.

C. Challenges of the Substitution Process

The timing of the decision to pursue a substitution approach is extremely important. This decision must be made very early in the planning process and before either the Section 106 or NEPA review is substantively underway.[58]

At that early stage, agencies should devise a strategy for involving the SHPO, THPO, and consulting parties and for meeting the requirements of 36 C.F.R. § 800.8(c)(1)-(2). A good working relationship with the relevant SHPO or THPO will help the substitution approach move forward more smoothly. Consider any agency-specific policies or practices that might complicate the process, such as delegation to local governments or applicants to act in the Federal agency's stead. In addition, take into consideration those responsibilities, including government-to-government consultation with Indian tribes that cannot be delegated. Finally, consider whether the SHPO is involved in a state environmental review, in which case the scope of their state role and authority needs to be taken into consideration. This could include a state environmental review with overlapping requirements that have distinct provisions.

AUDIT REPORT

Audit of NRC's Compliance With 10 CFR Part 51 Relative to Environmental Impact Statements

OIG-13-A-20 August 20, 2013

All publicly available OIG reports (including this report) are accessible through NRC's Web site at:
http:/www.nrc.gov/reading-rm/doc-collections/insp-gen/

C. NRC Not in Full Compliance With Scoping Regulations

NRC did not fully comply with scoping regulations for in-situ uranium recovery EISs that tier off of a generic EIS. NRC regulations require scoping when preparing an EIS and specify actions the agency must take during the scoping process. NRC did not fully comply with the scoping regulations because there is an incorrect understanding of the regulations related to scoping for EISs that tier off of a generic EIS. Thus, NRC is not in compliance with its regulations. By not fully complying with the regulations, NRC may exclude some interested persons who wish to participate in the process. Additionally, NRC undermines its extensive efforts to be clear, open, and transparent.

NRC Regulations Require Scoping

Scoping Requirements

NRC is required to conduct an appropriate scoping process and publish a Notice of Intent when preparing an EIS, and NRC regulations specify actions the agency must take during the scoping process. Regulations for scoping enumerated in 10 CFR Part 51 describe a formal process initiated by the publication of a Notice of Intent to prepare the EIS. During the scoping process, the agency shall define the proposed action and receive input from stakeholders about the significant issues on which the EIS analysis should focus. A public meeting is one way to receive input, but is not required. The formal scoping process must be open to anyone who expresses an interest in participating. The formal scoping process concludes with the publication of a scoping summary report. This report characterizes and responds to all the input received during the formal scoping process and communicates to all participants what the agency learned in scoping and how scoping results will shape the environmental review.

NRC's regulations governing scoping for an EIS are summarized in Table 4.

Table 4: NRC Scoping Regulations

NRC Scoping Regulations in 10 CFR Part 51	
51.26(a)	When an EIS will be prepared, requires preparation of a Notice of Intent and conduct an appropriate scoping process
51.26(d)	Scoping not required for a supplement as defined in 10 CFR 51.92
51.27	Defines content of a Notice of Intent, including description of proposed scoping process; address and deadline for written comments; and whether, where, and when a public meeting will be held
51.28	Defines scoping participants
51.29	Defines scoping for an EIS and its objectives
51.29(b)	Requires preparation of a scoping summary report

Source: OIG analysis of 10 CFR Part 51

Exception for Supplements

The regulations carve out certain exceptions to the requirement to conduct a formal scoping process when preparing an EIS. One exception is when a supplement to a final EIS is prepared when the proposed action considered in the final EIS has not been taken. A supplement to the final EIS will be prepared if:

- "There are substantial changes in the proposed action that are relevant to environmental concerns; or,

- There are new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."[9]

The scope of the supplemental EIS must be limited to the new information or change in the proposed action. A formal scoping process need not be conducted.

Tiering

NRC regulations provide for a practice known as tiering. In 10 CFR Part 51, Appendix A, tiering is defined by referring directly to and quoting the Council on Environmental Quality definition. As a result, the Council on Environmental Quality regulation[10] applies directly to NRC. Council on Environmental Quality regulations define tiering as the development of a broad or programmatic EIS that assesses the scope and impact of the environmental effects that would be associated with an action at numerous sites. Tiering is encouraged by Council on Environmental Quality regulations and guidance and is intended to reduce repetitive analyses and increase meaning for the public in EISs for similar actions. When conducting subsequent environmental reviews of individual sites within the program, the agency can concentrate on the unique, site-specific features and impacts. If review of site-specific conditions shows that the programmatic conclusions are applicable, relevant parts of the broader, programmatic EIS can be incorporated by reference into the site-specific document. According to the Council on Environmental Quality, scoping should be performed whenever an EIS is prepared, including for the subsequent, site-specific EISs that tier off of the programmatic EIS.

[9] A supplement to an EIS is defined in NRC regulations at 10 CFR 51.92.

[10] The Council on Environmental Quality regulations regarding tiering are found at 40 CFR 1502.20 and 40 CFR 1508.28.

Additionally,

> "[s]coping may or may not include meetings, but the process should involve interested parties at all levels of government, and all interested private citizens and organizations. [11]

NRC refers to a programmatic EIS as a generic EIS.

NRC Did Not Fully Comply With Scoping Regulations

NRC did not fully comply with scoping regulations for in-situ uranium recovery EISs that tier off of a generic EIS. Two NRC program offices currently use a generic EIS and tiering in environmental reviews:

- NRR published a generic EIS for the renewal of operating reactor licenses.
- FSME published a generic EIS for in-situ uranium recovery facilities.

Tiering by NRR

When NRR prepares an EIS for renewal of an operating reactor license, the review includes a formal scoping process. The following steps are included:

- The Notice of Intent is published to meet the requirements of 10 CFR 51.27.
- A public meeting is held.
- Written comments are received through e-mail or in hard copy.

[11]Bear, Dinah, "NEPA at 19: A Primer on an 'Old' Law with Solutions to New Problems," Environmental Law Reporter, 1989, available on Council on Environmental Quality's guidance Web page at http://ceq.hss.doe.gov/nepa/regs/iii-11.pdf. Bear was the General Counsel for the Council on Environmental Quality, and her article outlines NEPA's purposes, scope, and implementation procedures.

- A scoping summary report is prepared, distributed to scoping participants, and included as an appendix to the draft and final EISs.

NRC's 1996 rule that codified the findings of the generic EIS for operating reactor license renewal specifically required a formal scoping process be conducted when preparing the EIS for a license renewal application.

Tiering by FSME

By contrast, when NRC prepares site-specific EISs for applications for new in-situ uranium recovery operations, the agency does not seek broad public comment and specifically does not open a formal scoping period. Notices of Intent to prepare EISs were published for six applications received since publication of the generic EIS for in-situ uranium recovery. Although one application has since been put on hold, NRC has published final or draft EISs for five projects. Final EISs have been published for three in-situ uranium recovery projects, and draft EISs have been published for two proposed projects. Table 5 summarizes the information regarding early public input as described in the six published Notices of Intent.

Table 5: Notices of Intent to Prepare EISs for New In-Situ Uranium Recovery Applications

Notices of Intent for New In-Situ Uranium Recovery Applications			
Facility	**Date Published**	**Information Provided by NRC**	**Actions Omitted**
Nichols Ranch (complete)	August 5, 2009	NRC staff met with Federal, State, and local government agencies and public organizations in January 2009 as part of a site visit to gather site-specific information. Staff also "contacted potentially interested tribes and local public interest groups via email and telephone."	• No formal scoping process opened. • No invitation for broad public comment.
Antelope-Jab (on hold)	August 14, 2009	NRC staff planned to place ads in newspapers requesting information and comments from the public regarding the proposed action; also planned to "meet with and gather information from" local agencies and public interest groups during a visit to the proposed site. "No public scoping meetings" would be held.	• No formal scoping process opened. • No invitation for broad public comment.
Moore Ranch (complete)	August 21, 2009	NRC staff met with Federal, State, and local government agencies and public organizations in January 2009 as part of a site visit to gather site-specific information. Staff also "contacted potentially interested tribes and local public interest groups via email and telephone."	• No formal scoping process opened. • No invitation for broad public comment.
Lost Creek (complete)	September 3, 2009	NRC staff met with Federal, State, and local government agencies and public organizations in January 2009 as part of a site visit to gather site-specific information. Staff also "contacted potentially interested tribes and local public interest groups via email and telephone."	• No formal scoping process opened. • No invitation for broad public comment.
Dewey-Burdock (draft)	January 20, 2010	NRC staff planned to place ads in newspapers requesting information and comments from the public regarding the proposed action. Also staff were "consulting" with various Federal and State agencies, tribal entities, and potentially interested public interest groups.	• No formal scoping process opened. • No invitation for broad public comment.
Ross (draft)	November 16, 2011	NRC staff planned to place ads in newspapers requesting information and comments from the public regarding the proposed action. Also "met with and gathered information from" local agencies and public interest groups during a visit to the proposed site.	• No formal scoping process opened. • No invitation for broad public comment.

Source: OIG analysis of NRC Notices of Intent

The Notices of Intent depict a range of approaches for seeking input for site-specific environmental reviews. In four cases, NRC staff met with State and local governments and other stakeholders before the Notice of Intent was published. In the other two cases, however, the Notice of Intent indicates that NRC staff planned to conduct such meetings. NRC staff referred to these meetings with agencies, known tribes, and previously-identified public interest groups as "targeted information gathering."

Beyond the meetings that were part of "targeted information gathering," for three projects – Nichols Ranch, Moore Ranch, and Lost Creek – no additional public comment was sought to develop the scope of the site-specific EIS. Notices of Intent for three other projects state that staff planned to place advertisements in local media seeking public comment, although no address or deadline for submitting comments was included in any of the Notices of Intent. Two of the environmental reviews for which advertisements were placed received some public comments. In one draft EIS, these comments were referred to as "scoping" comments, although neither a formal opening nor closing date of the scoping process was included in the Notice of Intent.

Figure 2: Public comments at a scoping meeting.
Source: NRC

In several of the Notices of Intent, NRC asserted that "NRC regulations do not require scoping," but then described activities normally conducted by staff as part of the scoping process. These activities were conducted without the opening of a formal scoping process, which would have included in the Notice of Intent an invitation for broad public comment and the publication of an address and deadline for submission of comments.

In practice, the site-specific review and assessment of impacts occurred without a complete site-specific scoping process. The three completed EISs reviewed by OIG and one of the drafts state that NRC staff considers "the scope of the generic EIS to be sufficient for the purposes of defining the scope" of the EIS for the specific site. The most recent draft EIS

states that "NRC conducted scoping activities for the purposes of defining the scope of the GEIS [generic EIS] and any future" EISs for specific sites that tier off of the generic EIS. Thus, for the in-situ uranium recovery EISs that have tiered off of the generic EIS to-date, NRC has determined the scope of the site-specific EIS by using the generic EIS and has omitted some opportunities for broad public comment.

Further, in the absence of a formal scoping process, NRC did not publish a scoping summary report to characterize and respond to the comments received from stakeholders. Also, there was no summary characterization of or response to comments received during "targeted information gathering" in face-to-face meetings, teleconferences, or as a result of advertisements in local media.

Incorrect Understanding of Scoping Regulations

NRC did not fully comply with the scoping regulations because of incorrect understanding of the regulations related to scoping for EISs that tier off of a generic EIS. Specifically, NRC staff refer to the tiered site-specific EIS as a "supplement" to the generic EIS, leading to the belief that the exception in 10 CFR 51.26(d) applies to tiered EISs. Some NRC managers assert that the public scoping process for the generic EIS for in-situ uranium recovery suffices for subsequent, site-specific uranium recovery applications.

However, during that generic EIS scoping process in 2007, NRC staff emphasized in response to public comments that all applications would receive a site-specific review. Staff also emphasized that there would be a request for public input on scoping through a "scoping meeting" on site-specific issues if an EIS were prepared for a future application. In this way, NRC did not give public notice that the public scoping for the generic EIS would serve as the scoping process for later EISs. The public, defined broadly, was not able to comment on issues of significance for specific sites because specific applications were not yet under consideration during the scoping process for the generic EIS.

Limiting Scoping Undermines NRC Transparency

NRC is not in compliance with its regulations for scoping in 10 CFR 51.26-29. Public comment at an early stage in the environmental review enables NRC to determine the scope of the issues to be addressed in the EIS, as required by the regulations. By not seeking broad public comment, NRC may not fully develop the scope of the issues to be addressed in the EIS. Also, less opportunity for involvement and input may exclude some interested persons who wish to participate in the process. As one NRC staff member noted, "There are different issues that people really need for the NEPA process to address and it is up to those in NRC responsible for NEPA to report what they see and respond to what they are presented with."

For future EISs that tier off of an already-finalized generic EIS, the scoping conducted during the generic EIS may become out-of-date. The scoping conducted for the generic EIS for in-situ uranium recovery is more than 5 years old. Over time, methods of analysis and human communities change. As a result, generic scoping becomes less meaningful.

Failure to conduct scoping and enhance public participation undermines the agency's extensive efforts to be clear, open, and transparent. Although the level of public interest in proposed actions under NRC review may vary, opening a formal scoping process to written comments and preparing a scoping summary report remain important steps in the NEPA process that are compatible with NRC's objectives of providing opportunities for meaningful public involvement. For members of the public with an interest in or concerns about NRC-licensed projects, such opportunities are valuable. When the opportunities are not available, public skepticism is heightened. For example, one public commenter about the generic EIS for in-situ uranium recovery reported feeling "a little dubious" about the generic EIS because it appeared to be "a way to streamline a process, and to keep the public out."

Moreover, without ensuring correct understanding of scoping requirements for EISs that tier off of a generic EIS, NRC might not conduct scoping for site-specific EISs that tier off of a future generic EIS, based on the precedent set.

Recommendations

OIG recommends that the Executive Director for Operations:

5. Develop agencywide guidance for all offices that prepare EISs to ensure that scoping is performed for all EISs that tier off of a generic EIS.

6. Implement the agencywide guidance to ensure that scoping is performed for all EISs that tier off of a generic EIS.

Summary and Conclusion

The two major purposes of the NEPA process are better informed decisions and citizen involvement. In recent years, NRC has taken steps to enhance its NEPA reviews and procedures. However, through lack of compliance with 10 CFR Part 51, the agency has made it difficult for stakeholders to access information developed in environmental reviews and may have omitted opportunities for public participation in certain environmental reviews. This lack of compliance fosters public skepticism and undermines the agency's extensive efforts to be clear, open, and transparent.

In-situ recovery uranium mining in the United States: Overview of production and remediation issues

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In 2007, in-situ recovery (ISR) methods produced about 95% of U.S. production of 4.53 million pounds. Eleven new and five expansion ISR applications or letters of intent were filed with the U.S. Nuclear Regulatory Commission for the period from 2007-2009. ISR mining can be conducted in water-saturated, permeable, hydrologically confined sandstone beds where the uranium is soluble. Contamination of ground water during and after ISR operations has become a major issue for nearby residents, and for local, county and state governments. Colorado has raised ISR mining requirements and established a burden of proof that operations can return water quality to baseline conditions. Similar concerns are affecting mining plans in Wyoming, Texas, New Mexico, South Dakota, and Nebraska. Major issues affecting restoration at ISR mining operations include the following:

- Baseline water quality: Is the water presently potable or suitable for livestock or irrigation? What parts of the local aquifer should be sampled to establish baseline? What sampling methods are required to establish water quality conditions?
- Control of fluid flow during operations: How much hydrologic understanding of the ore zone is necessary to avoid flow problems?
- Ground-water restoration: To what standard should the ground water be restored? How long should monitoring occur after mining is completed?
- Ground-water restoration:What technologies work or might work?

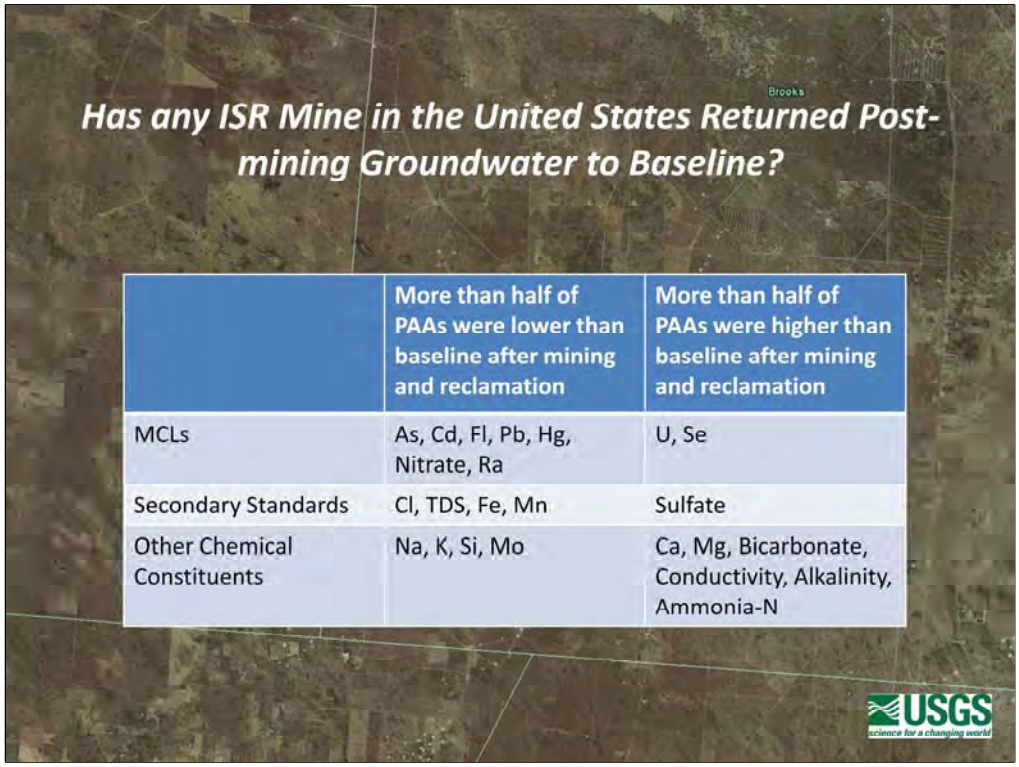
To date, no remediation of an ISR operation in the United States has successfully returned the aquifer to baseline conditions. Often at the end of monitoring, contaminants continue to increase by reoxidation and resolubilization of species reduced during remediation; slow contaminant movement from low to high permeability zones; and slow desorption of contaminants adsorbed to various mineral phases. New remediation technologies are being examined, including bioremediation and monitored natural attenuation. Bioremediation can occur through addition of a carbon source such as acetate or molasses to augment the natural bacterial population which can induce simultaneous reduction and precipitation of uranium in solution. Bioremediation experiments are presently being conducted at U.S. Department of Energy sites in western states. Monitored natural attenuation suggest that ground-water flow that created the deposit moved from an oxidized zone through the orebody to a reduced zone. Re-establishment of ground-water flow after mining should move contaminants from the mined orebody into the reduced zone where natural processes can reduce the contaminants and remove them from the ground water. Questions: 1) Is current ground-water hydrology suitable? 2) What is the reducing capacity of the reduced zone? 3) Do kinetics of reduction reactions in the reducing zone vs. speed of ground water flow? 4) Effects of heterogeneity in mining zone and reducing zone? 5) Can all analytes of concern be attenuated? 6) Monitored attenuation- can the limited time frame preferred by operators be achieved?

Groundwater Restoration at Uranium In-Situ Recovery Mines, South Texas Coastal Plain

By Susan Hall

Open-File Report 2009–1143

U.S. Department of the Interior
U.S. Geological Survey



	More than half of PAAs were lower than baseline after mining and reclamation	More than half of PAAs were higher than baseline after mining and reclamation
MCLs	As, Cd, Fl, Pb, Hg, Nitrate, Ra	U, Se
Secondary Standards	Cl, TDS, Fe, Mn	Sulfate
Other Chemical Constituents	Na, K, Si, Mo	Ca, Mg, Bicarbonate, Conductivity, Alkalinity, Ammonia-N

Conclusions

Can we answer the question: "Has any ISR mine in the United States returned post-mining groundwater to baseline?"
Answer: Not based upon analysis of the Texas database because "final value" records were found for only 22 of 77 PAAs (13 of 36 mines).

We can conclude that in Texas, ISR mines are characterized by high baseline arsenic, cadmium, lead, selenium, radium, and uranium. After mining and restoration, for those well fields that reported "final values" in TCEQ records, more than half of the PAAs had lowered levels of many elements, including some that dropped below MCL.

Of those elements for which MCL is established, the majority of PAAs showed increases in uranium and selenium after mining and restoration and decreases in arsenic, cadmium, fluoride, lead, mercury, nitrate, and radium to below baseline for the majority of well fields.

Analytes for which secondary standards have been established show that sulfate is the only constituent that increased in the majority of well fields after mining and remediation, whereas chloride, TDS, iron, and manganese decreased. Chemical constituents for which no MCL or secondary standards were set are higher than baseline for calcium, magnesium, bicarbonate, conductivity, alkalinity, and ammonia. Sodium, potassium, silica, and molybdenum were lower than baseline in the majority of well fields after mining and remediation.

CERTIFICATE OF SERVICE

I, Jeffrey C. Parsons, hereby certify that the foregoing Joint Appendix was served on all counsel of record in case number 17-1059 through the electronic filing system (CM/ECF) of the U.S. Court of Appeals for the District of Columbia Circuit.

/s/ Jeffrey C. Parsons

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