

August 17, 2018

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket No. 40-8943-MLA-2
CROW BUTTE RESOURCES, INC.	)	
	)	ASLBP No. 08-867-02-OLA-BD01
(Marsland Expansion Area)	)	

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CROW BUTTE RESOURCES' INITIAL STATEMENT OF POSITION

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Tyson R. Smith  
Winston & Strawn LLP  
101 California Street  
San Francisco, CA 94111

COUNSEL FOR CROW BUTTE  
RESOURCES, INC.

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**CROW BUTTE RESOURCES' INITIAL STATEMENT OF POSITION**

**INTRODUCTION**

Pursuant to 10 C.F.R. § 2.1207(a)(1), Crow Butte Resources, Inc. (“Crow Butte” or “Applicant”) hereby submits this Initial Statement of Position on Contention 2. This Initial Statement of Position is supported by direct testimony from Crow Butte witnesses and the exhibits submitted concurrently. For the reasons set forth below, Crow Butte’s license amendment application (“LAA”) satisfies the Atomic Energy Act and the Commission’s regulations. In addition, the NRC Staff’s Environmental Assessment (“EA”) satisfies the requirements of the National Environmental Policy Act (“NEPA”). Contention 2 should be resolved in favor of Crow Butte and the NRC Staff.

**PROCEDURAL BACKGROUND**

On June 16 and 19, 2012, Crow Butte submitted an Application for Authorization to Operate a Satellite In Situ Uranium Recovery (“ISR”) Facility within the Marsland Expansion Area (“Marsland” or “MEA”), including an Environmental Report (“ER”) and a Technical Report (“TR”). On January 29, 2013, the Oglala Sioux Tribe (“OST”) submitted its Petition to Intervene and Request for Hearing, which included six initial contentions with regard to the ER. The Atomic Safety and Licensing Board (“Board”) issued a Memorandum and Order on May 10, 2013, admitting only two OST contentions, Contention 1 (Failure to Meet Applicable Legal

Requirements Regarding Protection of Historical and Cultural Resources) and Contention 2 (Failure to Include Adequate Hydrological Information to Demonstrate Ability to Contain Fluid Migration) (“LBP-13-6”). On October 22, 2014 the Board granted the Staff’s Motion for Summary Disposition of OST Contention 1.

Following the release of the Draft Environmental Assessment for the Marsland Expansion Area (“Draft EA”) on December 7, 2017, the NRC Staff filed a Motion to Deny Migration of Contention 2, which the Board granted in part and denied in part in its Memorandum and Order of March 16, 2018 (“LBP-18-02”). The NRC issued the Safety Evaluation Report (“SER”) in January 2018, and the Final Environmental Assessment (“Final EA”) on April 30, 2018. On May 21, 2018, the Board issued a Memorandum and Order establishing a May 30, 2018 for any New/Amended Contention Motion/Migration Declaration in response to the Final EA. The OST Final EA Contentions, including a Migration Declaration with respect to Contention 2 as well as fourteen proposed renewed and new contentions, were filed on May 30, 2018. In LBP-18-3, dated July 20, 2018, the Licensing Board denied admission of the new and renewed contentions, but permitted Contention 2 to migrate as a challenge to the final EA.

Migrated Contention 2 is as follows:

OST Contention 2: Failure to Include Adequate Hydrogeological Information to Demonstrate Ability to Contain Fluid Migration

The application and final environmental assessment fail to provide sufficient information regarding the geological setting of the area to meet the requirements of 10 C.F.R. Part 40, Appendix A, Criteria 4(e) and 5G(2); the National Environmental Policy Act; and NUREG-1569 section 2.6. The application and final environmental assessment similarly fail to provide sufficient information to establish potential effects of the project

on the adjacent surface and ground-water resources, as required by NUREG-1569 section 2.7, and the National Environmental Policy Act.<sup>1</sup>

The Board indicated that the scope of the safety and environmental concerns encompassed by Contention 2 include the following: (1) the adequacy of the descriptions of the affected environment for establishing the potential effects of the proposed MEA operation on the adjacent surface water and groundwater resources; (2) exclusively as a safety concern, the absence in the applicant's technical report, in accord with NUREG-1569 section 2.7, of a description of the effective porosity, hydraulic porosity, hydraulic conductivity, and hydraulic gradient of site hydrogeology, along with other information relative to the control and prevention of excursions such as transmissivity and storativity; (3) the failure to develop, in accord with NUREG-1569 section 2.7, an acceptable conceptual model of site hydrology that is adequately supported by site characterization data so as to demonstrate with scientific confidence that the area hydrogeology, including horizontal and vertical hydraulic conductivity, will result in the confinement of extraction fluids and expected operational and restoration performance; and (4) whether the final EA contains unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones.

### **APPLICABLE LEGAL STANDARDS**

#### **A. National Environmental Policy Act**

Portions of Contention 2 raise environmental issues under the National Environmental Policy Act ("NEPA"). NEPA does not mandate substantive results; rather, it imposes procedural restraints on agencies, requiring them to take a "hard look" at (and disclose)

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<sup>1</sup> LBP-18-3, 88 NRC \_\_, \_\_ (slip op. at 43) (July 20, 2018).

the environmental impacts of a proposed action and reasonable alternatives to that action.<sup>2</sup> This “hard look” is subject to a “rule of reason.”<sup>3</sup> This means that an “agency’s environmental review, rather than addressing every impact that could possibly result, need only account for those that have some likelihood of occurring or are reasonably foreseeable.”<sup>4</sup>

As the Commission has explained, “NEPA also does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts.”<sup>5</sup> When faced with uncertainty, NEPA only requires “reasonable forecasting.”<sup>6</sup> There is no NEPA requirement to use the best scientific methodology, and NEPA should be construed in the light of reason if it is not to demand virtually infinite study and resources.<sup>7</sup> A NEPA document is not intended to be a “research document,” reflecting the frontiers of scientific methodology, studies, and data.<sup>8</sup> Nor must the discussion of the impacts be encyclopedic in scope or detail. Likewise, NEPA analyses

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<sup>2</sup> See *Louisiana Energy Servs., L.P.* (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 87-88 (1998); see also *Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97-98 (1983) (holding that NEPA requires agencies to take a “hard look” at environmental consequences prior to taking major actions).

<sup>3</sup> *Louisiana Energy Servs.* (National Enrichment Facility), LBP-06-8, 63 NRC 241, 258-59 (2006) (citing *Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836 (1973)); see also *Dep’t of Transp. v. Pub. Citizen*, 541 U.S. 752, 767-69 (2004) (stating that the rule of reason is inherent in NEPA and its implementing regulations).

<sup>4</sup> *LES*, LBP-06-8, 63 NRC at 258-59 (citing *Shoreham*, ALAB-156, 6 AEC at 836).

<sup>5</sup> *Louisiana Energy Servs.* (Nat’l Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005).

<sup>6</sup> *Scientists’ Inst. for Pub. Info., Inc. v. AEC*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

<sup>7</sup> *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC \_\_\_, slip op. at 37 (Mar. 26, 2010) (citations omitted).

<sup>8</sup> *Id.*

often must rely upon imprecise and uncertain information, which should be judged on its reasonableness.<sup>9</sup>

The Commission has also stated that the principal goals of the NEPA review are “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.”<sup>10</sup> “[I]t is now well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process.”<sup>11</sup> Thus, the NRC Staff need only include in its NEPA evaluation sufficient information to satisfy one of NEPA’s essential functions—to provide the public and the decision maker with accurate information comparing the proposed action and its alternatives.<sup>12</sup> Licensing boards also do not sit to “flyspeck” the EA or to add minor details or nuances to the analysis.<sup>13</sup> It is enough that the EA discusses the significant aspects of the probable environmental impacts of the proposed action.<sup>14</sup>

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<sup>9</sup> *Louisiana Energy Servs.* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 355 (1996).

<sup>10</sup> *Louisiana Energy Servs.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 87 (1998).

<sup>11</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

<sup>12</sup> *Calvert Cliffs 3 Nuclear Project LLC and UniStar Nuclear Operating Services LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), LBP-10-24, \_\_ NRC \_\_, \_\_ (slip op. at 50) (December 28, 2010).

<sup>13</sup> *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-04, 53 NRC 31, 71 (2001).

<sup>14</sup> *Long Island Lighting Company* (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836 (1973).

**B. Atomic Energy Act**

Technical contentions raise issues regarding compliance with the Atomic Energy Act (“AEA”) and NRC regulations. The NRC must license ISR operations in accordance with NRC regulatory requirements in 10 C.F.R. Part 40 to protect public health and safety from radiological hazards. 10 C.F.R. Part 40, Appendix A, sets forth, among other things, the technical criteria for applicants and licensees relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. Although the Appendix A criteria were developed for conventional uranium milling facilities, they have since been applied in limited fashion to ISR facilities.<sup>15</sup>

**C. Burden of Proof**

An applicant generally has the burden of proof in a licensing proceeding.<sup>16</sup> However, in cases involving NEPA contentions, the burden belongs to the NRC Staff because it, not the applicant, has the responsibility for complying with NEPA.<sup>17</sup> However, because the Staff, as a practical matter, relies heavily upon the applicant’s ER in preparing the EA, should

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<sup>15</sup> See *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-99-22, 50 NRC 3, 8-9 (1999) (“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”) (internal reference omitted).

<sup>16</sup> 10 C.F.R. § 2.325.

<sup>17</sup> See, e.g., *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

the applicant become a proponent of a position set forth in the EA, the applicant also has the burden on that matter.<sup>18</sup>

The NRC in its administrative proceedings has generally relied upon the “preponderance of the evidence”<sup>19</sup> standard in reaching the ultimate conclusions after a hearing to resolve a contention.<sup>20</sup> Thus, for technical contentions, the Board must consider the evidence and testimony and determine whether Crow Butte has shown by the preponderance of the evidence that its license amendment application satisfies applicable regulatory requirements. And, for environmental contentions, the Board must consider the evidence and testimony and determine whether the NRC Staff and Crow Butte have shown by the preponderance of the evidence that the NRC Staff’s review was adequate to comply with NEPA.

#### **APPLICANT WITNESSES**

Crow Butte’s Initial Written Testimony on Contention 2 is provided by Mr. Robert Lewis, Mr. Doug Pavlick, and Mr. Walter Nelson. Through the testimony and supporting exhibits, Crow Butte’s witnesses demonstrate that that Crow Butte’s equipment and procedures for use at its facility are adequate to protect public health and minimize danger to life or property

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<sup>18</sup> *Louisiana Energy Servs., L.P.* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 338-39 (1996) (citing *Pub. Serv. Co. of N.H.* (Seabrook Station, Units 1 & 2), ALAB-471, 7 NRC 477, 489 n.8 (1978)), *rev’d on other grounds*, CLI-97-15, 46 NRC 294 (1997).

<sup>19</sup> The definition of “preponderance of the evidence” in Black’s Law Dictionary, 6th ed. (p. 1182), is “[e]vidence which is of greater weight or more convincing than the evidence offered in opposition to it; that is, evidence which as a whole shows that the fact sought to be proved is more probable than not.”

<sup>20</sup> *Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-94-6, 39 NRC 285 (1994), *aff’d*, *Advanced Medical Systems, Inc. v. NRC*, 61 F.3d 903 (6th Cir. 1995); *see also Commonwealth Edison Co.* (Zion Station, Units 1 & 2), ALAB-616, 12 NRC 419, 421 (1980) (stating that applicants are not held to an absolute standard or required to prove a matter conclusively but rather, consistent with the Administrative Procedure Act, are held to a preponderance standard).

and, with respect to the NRC Staff's EA, that the evaluation is reasonable and reflects a "hard look" at the potential impacts of issuing a license amendment for the MEA.

## **DISCUSSION OF CONTENTION 2**

### **A. Overview of Contention 2**

#### ***1. Concern 1***

Concern 1 is a safety and environmental issue that challenges "the adequacy of the descriptions of the affected environment for establishing the potential effects of the proposed MEA operation on the adjacent surface water and groundwater resources." Concern 1 as migrated is the broadest of the four concerns, encompassing 10 C.F.R. Part 40, Appendix A, Criteria 4(e) (related to local faults and earthquake risk) and 5G(2) (related to underlying soil and geological formations), and the criteria in NUREG-1569 Section 2.6 (addressing information on geology and seismology).

#### ***2. Concerns 2 and 3***

Concern 2 as admitted by the Board in this proceeding is limited to safety concerns (as addressed by the SER) regarding "the absence in the applicant's technical report [and/or NRC's SER], in accord with NUREG-1569 section 2.7, of a description of the effective porosity, hydraulic porosity, hydraulic conductivity, and hydraulic gradient of site hydrogeology, along with other information relative to the control and prevention of excursions." Concern 3 as migrated, like Concern 2, is specifically limited to the criteria in NUREG-1569 section 2.7, raising the question of whether an "acceptable conceptual model of site hydrology that is adequately supported by site characterization data so as to demonstrate with scientific confidence that the area hydrogeology, including horizontal and vertical hydraulic conductivity, will result in the confinement of extraction fluids and expected operational and restoration performance".

### **3. Concern 4**

Concern 4 addresses the issue of “whether the draft EA contains unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones.”

#### **B. Assessment of Contention 2**

The testimony begins by providing a brief overview of the regulatory standards and information required to be provided in an application. The witnesses then go on to describe where in the application each concern is addressed and provided additional discussion to demonstrate that the issues have been adequately and conclusively addressed in the EA and SER.

##### **1. Concern 1**

In their testimony, the Crow Butte witnesses summarize the detailed information available regarding the geology at the license area. The witnesses first discuss the information provided by CBR with respect to local faults and earthquake risk, as required under 10 C.F.R. Part 40, Appendix A, Criterion 4(e). The testimony then points to where in the application the information used to support the NRC’s conclusions with respect to Part 40, Appendix A, Criterion 5G(2) is located, including detailed information concerning extent, thickness, uniformity, shape, and orientation of underlying strata; hydraulic gradients and conductivities of the various formations based on information gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to groundwater; information gathered on boreholes including both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity; and hydrologic parameters such as permeability based on field testing (*e.g.*, pump tests). The testimony also identifies the detailed and exhaustive information in the application that corresponds to applicable sections of NUREG-1569.

## **2. Concerns 2 and 3**

For Concerns 2 and 3, CBR's witnesses describe the NRC's analysis in the SER with respect to site hydrogeology based on the information presented in the TR and demonstrate how that information is consistent with the criteria in NUREG-1569 Section 2.7. The witnesses identify where information needed to characterize surface-water bodies and drainages within the licensed area and affected surrounding, including maps. The witnesses cite two separate studies assessing the potential for flooding and erosion to affect the site. CBR witnesses also discuss the local and regional groundwater hydrology, including local hydraulic gradient, hydrostratigraphy and other relevant information regarding hydrogeology, as necessary to address the elements in criterion 2.7.3(3). The witnesses also discuss the chemical and radiochemical analyses of water samples performed by CBR, an assessment of seasonal and historical variability for potentiometric heads and hydraulic gradients in aquifers and water levels of surface-water bodies; and information on past, current, and anticipated future water use, including descriptions of local ground-water well locations, type of use, amounts used, and screened intervals sufficient to evaluate potential risks to ground-water or surface-water users in the vicinity of the MEA. The witnesses then provide a list of the exhaustive information provided by CBR to develop the site conceptual model, including pumping tests, mineralogical studies, well impact analysis, and monitoring well data.

The witnesses also provide an in-depth discussion of the aquifer pumping test. CBR's witnesses conclude that the pumping test is sufficient to demonstrate confinement, assess aquifer properties, and confirm ability to control mining fluids, and that additional pumping tests are not necessary. The witnesses then discuss several lines of evidence other than aquifer pumping test results that demonstrate the confinement of the Basal Chadron Sandstone aquifer, including the thickness, continuity, and low permeability of the confining units; the height of the

potentiometric surface of the Basal Chadron aquifer; and differences in geochemical signatures between the Basal Chadron Sandstone and overlying aquifers. The witnesses conclude that additional pumping tests would provide little incremental value given the quality and reliability of existing data and analyses.

### ***3. Concern 4***

Concern 4 argues that the “EA contains unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones.” CBR’s witnesses then summarize the data, including information presented to address Concerns 1, 2, and 3, that provide the basis for the NRC Staff’s and CBR’s conclusion that there is isolation of the aquifers in the ore-bearing zones. The witnesses describe the extensive data and analyses that support the conclusion of isolation of aquifers in the ore-bearing zones. In summary, the following lines of evidence indicate adequate hydrologic confinement of the basal sandstone of the Chadron Formation within the MEA:

- Results of the May 2011 aquifer pumping test demonstrate no discernible drawdown in the overlying Brule Formation observation wells screened throughout the MEA.
- Large differences in observed hydraulic head (330 to 500 feet) between the Brule Formation and the basal sandstone of the Chadron Formation indicate strong vertically downward gradients and minimal risk of naturally occurring impacts to the overlying Brule Formation.
- Significant historical differences exist in geochemical groundwater characteristics between the basal sandstone of the Chadron Formation and the Brule Formation.
- Site-specific XRD analyses, particle grain-size distribution analyses, and geophysical logging confirm the presence of a thick (between 360 and 450 feet), laterally continuous upper confining layer consisting of low permeability mudstone and claystone, and a thick (more than 750 feet), regionally extensive lower confining layer composed of very low permeability black marine shale.
- Falling Head Permeameter testing of two core samples M-2169C, Run 5, Sample 1 (Brule Formation) and M-1635C, Run 3 (Chadron Formation),

measured hydraulic conductivities of  $1.31 \times 10^{-7}$  and  $1.32 \times 10^{-7}$  cm/s, respectively.

- Analyses of particle size distribution results using the Kozeny-Carman equation suggests a conservative maximum hydraulic conductivity of  $5.9 \times 10^{-5}$  cm/s for core samples from the upper confining layer and an average estimated hydraulic conductivity of  $3.7 \times 10^{-5}$  cm/s. Actual hydraulic conductivities are expected to be at least one to two orders of magnitude lower as demonstrated by Falling Head Permeameter Testing of the core samples.
- Hydraulic resistance to vertical flow is expected to be high due to the significant thickness of the upper confining zone within the MEA.
- The vertical hydraulic conductivity across the upper and lower confining layers is likely to be even lower than  $10^{-5}$  cm/sec due to vertical anisotropy.

### C. Conclusions on Contention 2

CBR provided in-depth and extensive discussion of the environment at the MEA, including groundwater resources and site hydrogeology. The ER and TR describe the data collected, the analyses performed, and the conclusions reached. The TR includes extensive discussion of the data and methods used to determine effective porosity, hydraulic porosity, hydraulic conductivity, and hydraulic gradient. This information is presented in narrative form in the TR and further described in tables and figures. Based on this information, the NRC Staff rightly concluded that “the information provided by the applicant, as supplemented by the requirements of the erosion concern and drawdown license conditions . . . meets the applicable acceptance criteria of Section 2.7.3 of NUREG-1569.”<sup>21</sup>

The site conceptual model, and the evidence supporting that model, are presented in extensive detail in the ER and TR and provide an acceptable basis for assessing operational and restoration performance. CBR’s conclusions are further buttressed by its experience at the Central Processing Facility. There also is extensive data and analysis supporting multiple lines

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<sup>21</sup> SER, Section 2.4.4.

of evidence, all of which lead inexorably to the conclusion that the ore-bearing zones are hydrologically isolated. The NRC Staff reviewed that data, performed its own assessment of the data, and reached the same conclusions.

Overall, the EA and the record satisfy NEPA with respect to hydrogeology and the potential impacts of Crow Butte's operations at the MEA on groundwater and nearby surface water. Crow Butte provided a detailed description of the regulatory and statutory requirements cited in the migrated contention, and identified where the required information is provided. NRC Staff has independently assessed the information provided in reaching its conclusions in the EA and SER. The NRC Staff in the EA has taken the requisite hard look at the impacts of issuing a license amendment at the MEA on groundwater and surface water. The NRC Staff addressed the significant aspects of the probable environmental impacts of the proposed action. Moreover, each of the concerns raised by OST has been considered by Crow Butte in the ER and TR, addressed by the NRC Staff in the SER and in the EA, and discussed in the testimony of the witnesses.

### **CONCLUSIONS**

For the reasons set forth in this Initial Statement of Position, as supported by the accompanying testimony and evidence, the NRC Staff has taken the requisite "hard look" at potential impacts from the MEA. The NRC Staff evaluated the impacts of operations at the MEA in the EA and "has come to grips with all important considerations."<sup>22</sup> The EA adequately described the affected environment, including the effects of the proposed MEA operation on the adjacent surface water and groundwater resources; an acceptable conceptual model of site hydrology that is adequately supported by site characterization data so as to demonstrate ability

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<sup>22</sup> *Grand Gulf ESP*, CLI-05-4, 61 NRC at 13.

to ensure the confinement of extraction fluids and expected operational and restoration performance; and discussion of the basis for conclusions regarding the isolation of the aquifers in the ore-bearing zones. Moreover, to the extent necessary, the EA is augmented by the full record of this proceeding, including the testimony and exhibits, which in the aggregate are more than sufficient to satisfy the agency's obligation under NEPA.<sup>23</sup> The Licensing Board therefore should resolve the environmental aspects of Contention 2 in favor of Crow Butte and the NRC Staff.

Crow Butte also has presented information and analysis regarding the technical aspects of proposed licensed activities and demonstrated that its activities comply with 10 C.F.R. Part 40. In addition to considering the information provided to describe the effected environment and that support the conclusions in the NRC's SER, Crow Butte (and the NRC Staff and NDEQ) considered the data presented and described effective porosity, hydraulic porosity, hydraulic conductivity, and hydraulic gradient of site hydrogeology, along with other information relative to confinement, control of mining fluids, and prevention of excursions. The Board therefore should also resolve the technical aspects of Contention 2 in favor of Crow Butte.

Respectfully submitted,

/s/ signed electronically by  
Tyson R. Smith  
Winston & Strawn LLP  
101 California Street  
San Francisco, CA 94111

COUNSEL FOR CROW BUTTE  
RESOURCES, INC.

Dated at San Francisco, California  
this 17th day of August 2018

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<sup>23</sup> *LES*, LBP-06-8, 63 NRC at 286.

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CERTIFICATE OF SERVICE

I hereby certify that copies of “CROW BUTTE RESOURCES’ INITIAL STATEMENT OF POSITION” in the captioned proceeding have been served this 17th day of August 2018 via the Electronic Information Exchange (“EIE”), which to the best of my knowledge resulted in transmittal of the foregoing to all those on the EIE Service List.

/s/ signed electronically by \_\_\_\_\_  
Tyson R. Smith  
Winston & Strawn LLP  
101 California Street  
San Francisco, CA 94111

COUNSEL FOR CROW BUTTE  
RESOURCES, INC.