



Mark Gordon, Governor

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.



Todd Parfitt, Director

Lawrence Corte
President, Western Nuclear Inc.
333 North Central Avenue
Phoenix, Arizona 85004

RE: Approval of license Amendment for Western Nuclear, Inc. Split Rock Site, WYSUA-56, TFN 6-5-344, Amendment 111.

Dear Mr. Corte

This letter approves the above referenced license amendment which provides a revision to License Condition 74 for modification of the Alternate Concentration Limit for Nitrate (NO₃-N) at the Southwest Valley Point of Compliance (POC) well WN-21 from 70.7 mg/L to 500 mg/L based on conservative groundwater flow and transport modeling. In addition, the amendment proposed a long-term care boundary that encompassed the potential future transport of nitrate in groundwater. Lastly the amendment is administrative and reflects changes based on Wyoming assuming regulatory authority over the site.

Receipt of this letter grants Western Nuclear Inc. authority to make changes as outlined in the modified license. In the event that revisions other than those listed in the amendment request inadvertently occurred within this package, those revisions are not automatically considered approved.

This operations is not within Sage Grouse Core Area, and has no stipulations related to the Governor's Executive Order 2015-4.

If you have questions, please contact Ryan Schierman at (307)777-7757 or ryan.schierman@wyo.gov

Sincerely,

Kyle Wendtland
Administrator, Land Quality Division

Date: April 5, 2019

Enclosures; Source Material License Amendment 111, Technical Evaluation of Amendment

Cc: Emily Werner

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND QUALITY DIVISION (LQD)
RADIOACTIVE MATERIAL LICENSE

Pursuant to the Wyoming Environmental Quality Act (Wyo. Stat. Ann. §§ 35-11-101 to -2005) and the Uranium Recovery Regulations (Rules of Wyoming Department of Environmental Quality, Uranium Recovery, Ch. 1-9), and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to acquire, own, possess, use, transfer, offer or receive for transport the radioactive material designated below; and to use such radioactive material for the purpose(s) and the place(s) designated below. This license is subject to all applicable rules and orders now or hereafter in effect and to any conditions specified below.

Licensee 1. Western Nuclear, Inc. 2. 2801 Youngfield Street, Suite 340 Golden, CO 80401 [Applicable Amendments: 34, 52, 92, 96]		3. License Number WYSUA-56 Amendment No. 111
		4. Expiration Date: Until terminated [Applicable Amendments: 31, 32, 41] 5. NRC Docket No: 40-1162
6. Byproduct Source a. Natural Uranium b. Byproduct Material as defined in 10 CFR 40.4	7. Chemical and or Physical Form Any	8. Maximum quantity licensee may possess at any one time under this license a. Unlimited

9. The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings generated by the licensee's past milling operations authorized under WYSUA-56.

[Applicable Amendments: 32, 46, 58, 111]

10. Authorized Places of Use: The licensee's uranium milling facilities located approximately two miles north of Jeffrey City, Wyoming.

[Applicable Amendments 46, 50, 60, 82]

11. DELETED by Amendment No. 49.
 12. DELETED by Amendment No. 49.
 13. DELETED by Amendment No. 49.
 14. DELETED by Amendment No. 49.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number WYSUA-56

Amendment No. 111

15. DELETED by Amendment No. 49.
16. DELETED by Amendment No. 54.
17. DELETED by Amendment No. 33.
18. DELETED by Amendment No. 49.
19. DELETED by Amendment No. 56.
20. DELETED by Amendment No. 49.
21. DELETED by Amendment No. 56.
22. DELETED by Amendment No. 54.
23. DELETED by Amendment No. 33.
24. The licensee shall collect surface water samples from the Sweetwater River at the following five locations: 1) upstream of the proposed long-term care boundary near the western boundary of Section 3, township 29 N and range 92 W; 2) in a sharp meander directly upstream of well JJ-1R (SR-A); 3) approximately 3,000 river feet downstream of SR-A in riffle section (SR-B); 4) in tight meander downstream of Site, approximately 1,600 river feet upstream of diversion dam, in Section 31, township 30 N and range 91 W; 5) downstream of proposed long-term care boundary in Section 5, township 29 N and range 91 W. Samples shall be collected at the same sampling frequency and for the same constituents [excluding static water level] as required under LC No. 74.A for the first 12 wells. The data obtained from this monitoring program shall be reported semiannually to the LQD in accordance with requirements of 10 CFR 40.65.

[Applicable Amendments: 26, 28, 30, 44, 49, 56A, 84, 89, 98]
25. The licensee shall conduct a quality assurance program as contained in their submittal dated March 25, 1981. In addition, the licensee shall be required to document the results and recommendations of each annual audit of the environmental monitoring program. Any requested changes to the "Environmental Monitoring Manual" submitted on March 23, 1981, as revised by letters dated March 27, 1991, January 28 and March 11, 1992, shall be in the form of a license amendment.

[Applicable Amendments: 49, 63]
26. DELETED by Amendment No. 49.
27. DELETED by Amendment No. 92.
28. DELETED by Amendment No. 87.

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29. The licensee shall maintain an LQD-approved financial surety arrangement adequate to cover the estimated decommissioning and reclamation costs consistent with 10 CFR 40, Appendix A, Criteria 9 and 10. Costs will include work undertaken by a third party for the decommissioning and decontamination of the mill and mill site for the reclamation of any tailings or waste disposal areas, for ground-water restoration as warranted, and for the long-term surveillance fee.

When the LQD approves a revised decommissioning and reclamation plan, the licensee shall submit for LQD review and approval, a proposed revision to the financial surety arrangement if estimated costs of the new plan exceed the amount of the existing surety. The licensee shall have a revised surety approved by the LQD in effect not later than three (3) months after the LQD approves a revised plan.

10 CFR Part 40, Appendix A, Criteria 9 and 10 require that annual updates to the surety amount be submitted to the LQD at least 3 months prior to December 30 each year. If LQD approval of a proposed revision to the surety is not completed thirty (30) days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for one (1) year.

Annual updates or revisions shall include a breakdown of the cost estimates with adjustments for inflation and the basis for the cost estimates. The basis for the cost estimate is the LQD approved reclamation/decommissioning plan or LQD-approved revisions to the plan. The licensee shall maintain a contingency fee of at least fifteen (15) percent of the total cost estimate and the licensee must identify any changes in the engineering plans, or to activities performed at the site, and to any conditions that affect estimated costs for site closure.

Western Nuclear's LQD-approved financial assurance arrangement includes a surety, the surety bond issued by Westchester Fire and Insurance Company, and a standby trust agreement that is accessible to the LQD. The total LQD portion of the financial assurance amount shall be no less than the amount set by the most recent WDEQ Director's Bond Letter. The financial assurance shall be continuously maintained until a replacement is authorized by the LQD so as to ensure compliance with 10 CFR Part 40, Appendix A, Criterion 9 and 10.

[Applicable Amendments: 24, 45, 53, 64, 66, 70, 72, 76, 85P, 93, 94, 95, 97, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110,111]

30. DELETED by Amendment No. 69.
31. DELETED by Amendment No. 46.
32. A. DELETED by Amendment No.56.
B. DELETED by Amendment No. 50.
33. DELETED by Amendment No. 88.

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34. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the LQD and no such disturbance shall occur until the licensee has received authorization from the LQD to proceed.

The licensee is authorized to excavate material from the proposed reclamation borrow areas as designated in the licensee's approved reclamation plan, provided that protection of the cultural resources is managed in accordance with statements and representation contained in the licensee's letter dated March 30, 1992.

[Applicable Amendment: 71]

35. Before engaging in any project-related activity not evaluated by the LQD, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates such activity may result in a significant adverse environmental impact that was not evaluated, or an impact greater than that evaluated in the environmental statement, the licensee shall provide a written evaluation of such activity and obtain prior approval of the LQD for the activity.

36. DELETED by Amendment No. 49.

37. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR Part 20, provided that all entrances to the restricted area are conspicuously posted in accordance with Section 20.203(e)(2) and with words, "Any area within this facility may contain radioactive material."

[Applicable Amendment: 49]

38. Mill tailings other than samples for research shall not be transferred from the site without specific prior approval of the LQD obtained through application for amendment of this license. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

39. DELETED by Amendment No. 50.

40. DELETED by Amendment No. 49.

41. Release of equipment or packages from the restricted area shall be in accordance with the previously provided guidance entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September, 1984.

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42. The Radiation Safety Officer (RSO) shall perform an annual review of the radiation protection program for content and implementation. A copy of the annual review report shall be retained at the site and shall be available for LQD review.
- [Applicable Amendments: 49, 87]
43. The results of sampling, analysis surveys and monitoring, the calibration of equipment, reports on inspections, and the additional conditions to this license, as well as any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in LQD regulations, all such documentation shall be maintained for a period of at least 5 years.
- [Applicable Amendments: 49, 87]
44. Written procedures shall be established for site reclamation and monitoring activities to include personnel and environmental monitoring, and survey instrument calibrations. These procedures shall be reviewed and approved in writing by the Radiation Safety Officer (RSO) before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing site procedures at least annually. An up-to-date copy of each written procedure shall be kept at the site facility.
- [Applicable Amendments: 49, 56, 87]
45. DELETED by Amendment No. 49.
46. DELETED by Amendment No. 87.
47. DELETED by Amendment No. 49.
48. The Radiation Safety Office (RSO), who is responsible for the radiation safety aspects of the decommissioning, shall possess the minimum qualifications as specified in Section 2.4.1 of Regulatory Guide 8.31, "Information Relevant to Ensuring That Occupational Radiation Exposure at Uranium Mills Will Be As Low As Is Reasonably Achievable," until license termination.
- [Applicable Amendments: 49, 50, 56, 87]
49. DELETED by Amendment No. 49.
50. DELETED by Amendment No. 49.
51. DELETED by Amendment No. 49.
52. DELETED by Amendment No. 49.

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53. Radiation detection instruments shall be calibrated after repair and as recommended by the manufacturer or at intervals not to exceed six months, whichever is sooner.
54. DELETED by Amendment No. 49.
55. DELETED by Amendment No. 49.
56. DELETED by Amendment No. 49.
57. DELETED by Amendment No. 33.
58. DELETED by Amendment No. 37.
59. DELETED by Amendment No. 49.
60. DELETED by Amendment No. 49.
61. DELETED by Amendment No. 49.
62. DELETED by Amendment No. 49.
63. DELETED by Amendment No. 56.
64. The licensee shall control grazing to the N and NNE of the tailings impoundment by maintaining cattle guards at each end of the rock outcrops along the north side of the restricted area fence, as indicated on map A, submitted by letter dated August 18, 1978 from G. Fletcher to J. Linehan.
65. DELETED by Amendment No. 49.
66. DELETED by Amendment No. 33.
67. DELETED by Amendment No. 33.
68. DELETED by Amendment No. 46.
69. DELETED by Amendment No. 46.
70. DELETED by Amendment No. 49.
71. DELETED by Amendment No. 49.
72. DELETED by Amendment No. 49.
73. DELETED by Amendment No. 54.

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74. The licensee shall implement a compliance monitoring program containing the following:
- A. Sample wells JJ-1R, WN-39B, WN-41B, WN-42A, SWAB-1, SWAB-2, SWAB-4, SWAB-12, SWAB22, SWAB-29, SWAB-31, and SWAB-32 semi-annually for uranium and sulfate and annually for aluminum, ammonia, antimony, arsenic, beryllium, cadmium, chloride, fluoride, lead, manganese, molybdenum, nickel, nitrate, pH, radium-226 and-228, selenium, sulfate, thallium, thorium230, TDS, and uranium. Sample wells 1, 4R, 5, and 21 semi-annually for aluminum, ammonia, antimony, arsenic, beryllium, cadmium, chloride, fluoride, lead, manganese, molybdenum, nickel, nitrate, pH, radium-226 and-228, selenium, sulfate, thallium, thorium-230, TDS, and uranium. In addition, water levels shall be collected at all of the above wells for every sampling event.
- B. Comply with the following ground-water protection standards at point of compliance Wells 5 and 21:
- aluminum = 37 mg/L, antimony = 0.006 mg/L, arsenic = 0.05 mg/L, beryllium = 0.01 mg/L, cadmium = 0.01 mg/L, fluoride = 4 mg/L, lead = 0.05 mg/L, nickel = 0.05 mg/L, selenium = 0.05 mg/L, thallium = 0.002 mg/L, and thorium-230 = 0.95 pCi/L.
- C. Comply with the following alternate concentration limits in the northwest valley at point of compliance Well 5, with background being recognized in Well 15:
- ammonia = 0.61 mg/L, manganese = 225 mg/L, molybdenum = 0.66 mg/L, nitrate = 317 mg/L, radium-226 and -228 = 7.2 pCi/L, and natural uranium = 4.8 mg/L.
- Comply with the following alternate concentration limits in the southwest valley at point of compliance Well 21, with background being recognized in Well 15:
- ammonia = 0.84 mg/L, manganese = 35 mg/L, molybdenum = 0.22 mg/L, nitrate = 500 mg/L, radium-226 and -228 = 19.9 pCi/L, and natural uranium = 3.4 mg/L.
- [Applicable Amendments: 25, 27, 36, 39, 40, 44, 48, 51, 56, 58, 61, 62, 67, 69A, 79, 89, 98, 99, 105, 111]
- D. Comply with the following ground water trigger levels at the point of exposure:
- Trigger Levels for the Split Rock aquifer: ammonia = 0.5 mg/L, manganese = 0.73 mg/L, molybdenum = 0.18 mg/L, nitrate = 10 mg/L, radium-226 and -228 = 5.0 pCi/L, and natural uranium = 0.087 mg/L or 0.3 mg/L for SWAB-32.

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Trigger Levels for flood-plain aquifer: ammonia = 0.5 mg/L, manganese = 2.39 mg/L, molybdenum = 0.18 mg/L, nitrate = 10 mg/L, radium-226 and -228 = 5.0 pCi/L, and natural uranium = 0.044 mg/L.

E. Comply with the following surface water trigger levels at the point of exposure:
ammonia = 0.5 mg/L, manganese = 0.05 mg/L, molybdenum = 0.18 mg/L, nitrate = 10 mg/L, radium-226 and -228 = 5.0 pCi/L, and natural uranium = 0.03 mg/L.

F. DELETED by Amendment No. 105.

[Applicable Amendments: 25, 27, 36, 39, 40, 44, 48, 51, 56, 58, 61, 62, 67, 69A, 79, 99, 105]

G. DELETED by Amendment No. 105.

[Applicable Amendments: 92, 99, 100, 102, 105]

75. DELETED by Amendment No. 92.

76. Notification to LQD under 10 CFR 20.2202, 10 CFR 40.60, and specific license conditions should be made as follows:

Required written notice to LQD under this license should be given to: Land Quality Division, 200 West 17th Street, Suite 10, Cheyenne, WY 82002

[Applicable Amendments: 73, 95, 100, 110, 111]

WYOMING DEPARTMENT ENVIRONMENTAL
QUALITY

Dated: April 5, 2019



Kyle Wendtland, Land Quality Administrator



Todd Parfitt, Director of the Wyoming Department
Environmental Quality

**Wyoming Department of Environmental Quality
Land Quality Division
Uranium Recovery Program**

**STATE DECISION DOCUMENT
TECHNICAL REVIEW OF WESTERN NUCLEAR INC SPLIT ROCK URANIUM
MILL ALTERNATE CONCENTRATION LIMIT FOR NITRATE IN GROUNDWATER
IN THE SOUTHWEST VALLEY**

LICENSE AMENDMENT REQUEST

By letter dated October 25, 2016 (ML16328A402), Western Nuclear Incorporated (WNI) submitted a request to the U.S. Nuclear Regulatory Commission to amend License Condition (LC) 74 with regards to the nitrate Alternate Concentration Limit (ACL) for the Southwest Valley. The request was supplemented by letter dated December 9, 2016 (ML16349A144), and then again on June 21, 2017 (ML17177A107) in response to questions posed by the Department of Energy (DOE) on May 24, 2017 (ML17145A425). The NRC was unable to conclude its review of WNI submittal prior to Wyoming becoming an Agreement State, therefore the Wyoming Department of Environmental Quality Land Quality Division (LQD) reviewed the request.

The ACL, represented by LC 74(c) would be changed from its current value of 70.7 mg/L to a new value of 500 mg/L. WNI has requested this change to reflect groundwater monitoring results which show that current concentrations of nitrate at wells downgradient of the Point of Compliance (POC) well, WN-21, currently exceed the original proposed ACL of 70.7 mg/L. The ACL requested, 500 mg/L, is shown by WNI to be protective of downgradient waters, human health, and the environment beyond the Long Term Surveillance Boundary (LTSB) over the time frame of 1000 years. This requested ACL is based upon institutional controls that result in the effective isolation of the material for the timeframe of concern (1000 years), not as a protective exposure value. The Point of Exposure (POE) to a member of the public or the environment is at the LTSB boundary.

Additionally WNI has requested to extend the LTSB to encompass additional lands from those currently approved as presented in a WNI letter to the LQD dated January 11, 2019. This extension provides for the revised SW Valley nitrate ACL such that the nitrate plume exists in isolation. WNI or the federal government owns a majority of the land within the proposed extended LTSB. The small portion of land not owned by WNI or the federal government has durable administrative land use restrictions, acquired by WNI, to disallow water well drilling. This effectively prevents exposures of humans, livestock, or wildlife to potentially contaminated groundwater.

HISTORY

The Split Rock uranium mill was owned and operated by Western Nuclear Incorporated (WNI) in Fremont County, Wyoming. The Split Rock disposal site is located approximately 2 miles northeast of Jeffrey City in Fremont County, Wyoming, and about 58 miles east southeast of

Lander, Wyoming. The site lies in the high plains of central Wyoming and encompasses approximately 5,398 acres. The site elevation ranges from a low of about 6,300 feet (ft) to a high of about 6,800 ft. Topographically the disposal cell itself lies at the base of a saddle between two of the granite peaks located on site. At the northern boundary of the site property is the Sweetwater River.

Milling commenced in 1957 under AEC license R-205 and continued until 1981. The mill then went on standby status until 1986 when the license was converted to possession only and amended to allow WNI to complete the disposal of the tailings at the site. Most of the ore which fed the mill originated in open pit mines at the Gas Hills mining district. The milling processes incorporated sulfuric acid leaching, liquid ion-exchange, solvent extraction and concentration, drying, and packaging. At peak capacity, the mill could process 1,700 tons of ore per day. The primary constituent in the tailings solution was chloride and sulfate as well as trace metals from ore. As a result of these operations, approximately 7.7 million tons of tailings were produced and discharged as slurry into three separate tailings piles, designated Old, Alternate, and New. Between 1988 and 2007 the mill and mill buildings were dismantled and the tailings were reclaimed in place. All tailings and other contaminated materials were encapsulated in the three impoundments.

GROUNDWATER REMEDIAL ACTIONS

Background

Ground water flow and contaminant transport of site-derived constituents primarily involves the Upper and Lower Split Rock saturated units, collectively called the Split Rock aquifer, and the Sweetwater River Alluvium, called the floodplain aquifer. The floodplain aquifer is hydrologically connected to the underlying Split Rock aquifer and was formed where the Sweetwater River cut and meandered across the Split Rock formation. Most residents of Jeffrey City derive their water supply from the town wells drilled into the Split Rock aquifer. The Jeffrey City municipal wells presently supply approximately 379 (Lpm) (100 gpm), though pumping only occurs periodically to fill the storage tanks. These wells are located west of the site and are, therefore, upgradient of the site and unaffected by site-derived contamination.

Groundwater below the WNI Split Rock site has been negatively affected by the notably unlined tailings impoundment. From 1957 to 1981, the mill processed ore and discharged tailings and acidic liquids into the impoundment. The liquids quickly entered the unsaturated zone as the tailings design utilized seepage to eliminate liquids in the impoundment. Over time, these liquids migrated into the groundwater.

The site groundwater hydrology consists of two main drainage pathways. Two valleys naturally exist around the tailings which are surrounded by granite outcroppings, preventing groundwater flow through them in the first aquifer. One exits the tailings area to the northwest and is referred to as the Northwest (NW) Valley, while the other drains to the southwest and is called the Southwest (SW) Valley. Contaminants have entered both of these drainage pathways. Historically, up to 1,400 gallons per minute of tailings seepage entered the drainage pathways. Since 1986, when liquids and tailings disposal was ceased, this number has slowed and is

expected to reach long-term steady-state rate of less than 5 gpm. The two drainage pathways have caused this infiltration to split into two distinct groundwater flow paths, both of which eventually head northeast towards the Sweetwater River after going around the granite outcroppings. Areas with higher granite basement elevations beneath the Sweetwater River floodplain causes ground water to discharge from the Split Rock aquifer into the floodplain aquifer. A significant lateral constriction in the Split Rock aquifer and the Sweetwater River alluvium occurs near wells northeast of the site and at the point where the river passes through the granite outcrop at the Three Crossings Diversion Dam.

The Sweetwater River is the primary discharge point for the regional groundwater flow. Near the site, the river is classified by the state as Class 2 AB surface waters, Class 2 AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally. Unless otherwise shown, these waters are presumed to exhibit sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2 AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture, and scenic value uses.

WNI proposed distinct ACLs for the NW Valley and SW Valley, respectively. These ACLs, with the exception of nitrate in SW Valley, are protective at the POE at the site boundary. The ACLs for the site groundwater contaminants of concern were originally accepted by the NRC in August of 2006 and a finding of no significant impact (FONSI) was warranted in the Environmental Assessment (EA) (ML062130387). The ACLs from that submittal are listed in Table 1. The NRC found that:

- Potential access to the seepage-impacted ground water is prevented by including impacted aquifers within the LTSB, property acquisition and the use of ICs (mitigation measures), and the establishment of ground water and surface water trigger values.
- Discharges to the Sweetwater River are not sufficient to impact human health and the environment.
- Ground water fate and transport modeling conducted by WNI indicates that revising the ground water standards to ACLs would cause no degradation to the use of ground water or surface water outside the LTSB, as a result of mill-related activities.
- Only potable ground water use is impacted within the LTSB; ground water may still be used for livestock watering and irrigation.
- An acceptable compliance ground water monitoring program will be implemented to adequately monitor the future movements of the ground water plume and assure that no significant environmental impacts will occur and that the ACLs will not be exceeded.

2006 EA ACL Concentrations		
Contaminant	NW Valley	SW Valley
Manganese (mg/L)	225	35
Molybdenum (mg/L)	0.66	0.22
Ammonia (mg/L)	0.61	0.84
Radium-226 & Radium-228 (pCi/L)	7.2	19.9
Natural Uranium (mg/L)	4.8	3.4
Nitrate (mg/L)	317	70.7

Table 1: 2006 NRC EA ACL Concentrations

However, subsequent to the FONSI, the ACL for nitrate in the SW Valley was exceeded at a well downgradient of the point of compliance (POC), well SWAB-2 at a concentration of 380 mg/L in September of 2009. The nitrate concentration is still, as of for the 2nd half of 2018, greater than the ACL, showing a nitrate concentration of 120 mg/L at well SWAB-2 and 129 mg/L at SWAB-1R (the POC well WN-21 remains below the current 70.7 mg/L ACL). WNI has since proposed a new ACL for the SW Valley for nitrate of 500 mg/L and proposed to expand their site long term surveillance boundary (LTSB).

TECHNICAL EVALUATION

The newly proposed ACL is not based on any sampling result for nitrate, the highest to date being 380 mg/L, but is instead proposed by WNI as a “conservative” value. This value is described as “conservative” because even at a steady-state source concentration of 500 mg/L, which to reiterate has never been observed, the 1000 year contamination plume modeled by WNI would not result in the Environmental Protection Agency’s (EPA) Maximum Concentration Limit (MCL) of 10 mg/L for nitrate in drinking water, at the boundary of the LTSB. The 1000 year time frame was chosen as the statutory compliance period pursuant to 10 CFR 40 Appendix A, Criterion 6(1)(i). The quality of the drinking water at the LTSB would be maintained during the timeframe. The estimated concentration of nitrate in the groundwater at the LTSB (Sweetwater River) at the end of the 1000 year timeframe is a less than 2 mg/L increase above baseline groundwater nitrate.

The publically available ATRANS1 model, available from S.S. Papadopoulos & Associates, Inc. (ML16328A407, ML16328A405, ML16328A406), was used to determine the downgradient effects of a nitrate ACL of 500 mg/L in the SW Valley. ATRANS1 solves three-dimensional advective-dispersive transport problems. This model assumes a constant source condition with a location at well SWAB-2, a well downgradient from the POC. The source term is defined in this model as a two-dimensional persistent 500 mg/L nitrate patch 2,000 feet wide by 350 feet deep, and uses dispersion alone to dilute the source term in a path 10,000 feet wide by 350 feet deep by 21,310 feet long (the shortest downgradient length from the source term point to the LTSB). In reality, dilution from incoming clean groundwater, chemical adsorption, and other processes would inhibit the existence of a constant source term for the entire 1000 year timeframe. A

decreasing source term would be more probable based on the above causes of dilution and as infiltration from the tailings slows over time. Therefore the use of this model is assumed to be conservative in its estimation of downgradient nitrate over the timeframe.

The LQD-URP ran the ATRANS1 model separately from the work of the licensee and identified the model to be most sensitive to the groundwater velocity parameter, v . The following equation defines the groundwater velocity, v .

$$v = \frac{-Ki}{n_e}$$

Where: K represents the hydraulic conductivity;

n_e is the effective porosity of the aquifer; and

i represents the hydraulic gradient, such that

$$i = \frac{\Delta h}{\Delta x}$$

Where Δh equals the difference in head between two wells; and

Δx is the difference in distance between the two wells.

In WNI's ATRANS1 model, v is 0.0407 feet per day, where K is 5 feet per day, i is 52 feet over 21310 feet (the difference in head over the distance between well SWAB-2 and the Sweetwater River), and n_e is 0.3. Using this groundwater velocity, along with the parameters listed in Table 2, ATRANS1 was ran. The estimated concentration at the river after 1000 years was 1.978 mg/L. This is well below the MCL of 10 mg/L. This value was validated using the one-dimensional Ogata-Banks solution for groundwater transport (USGS, 1961). Using the same inputs as those in ATRANS1 (as applicable), the Ogata-Banks solution resulted in a nitrate concentration of 2.39 mg/L at 1000 years at the Sweetwater River. The similarity in these solutions provides some confidence in the model.

Input	Symbol	Value Used	Units	Justification
Groundwater Velocity	v	0.0407	feet/day	Porosity of 0.3, hydraulic conductivity of 5 feet/day (Aquifertek, 2016)
Longitudinal dispersion	α_L	200	feet	Dispersion is greater than the actual estimated of 125 feet
Transverse dispersion	α_T	20	feet	Dispersion is greater than the actual estimated of 12.5 feet
Vertical dispersion	α_V	2.1	feet	Dispersion is greater than the actual estimated of 1.25 feet
Decay (no decay assumed)	λ	0	day ⁻¹	Denitrification is likely over the 1000 years
Retardation factor	R_d	1		Flows with groundwater, no adsorption
Contamination thickness	T_c	350	feet	Conservative as there will be no vertical dilution
End time of model run	t	365000	days	Full 1000 years to be considered in 10 CFR 40 Appendix A Criterion 6(1)
Time between calculations	Δt	3650	days	10 years between calculations
Starting concentration of contamination	C_0	500	mg/L	Higher than the highest observed concentration of 380 mg/L
Width of contamination	y_0	2000	feet	Current width of estimated plume
Hydraulic head at SWAB-2	H_1	6292	feet	Measured
Hydraulic head at Sweetwater River	H_2	6240	feet	Measured
Model x distance	L	21310	feet	Distance from SWAB-2 to the Sweetwater River
Model y dimension	W	10000	feet	Unlimited lateral dispersion of plume
Aquifer thickness (Model z dimension)	T	350	feet	Conservative as there will be no vertical dilution

Table 2: ATRANS1 Model Inputs

To estimate the sensitivity of the velocity parameter, the model was run numerous times using various groundwater velocity inputs. The fitted curve in Figure 1 corresponds with the results of those runs. The time where 10 mg/L of nitrate is observed at the POE in the model, the Sweetwater river, varies according to the relationship:

$$t = 44.414v^{-0.998}$$

Where t is the time in years at which a concentration of 10 mg/L is observed at the river, and v is the groundwater velocity in feet/day

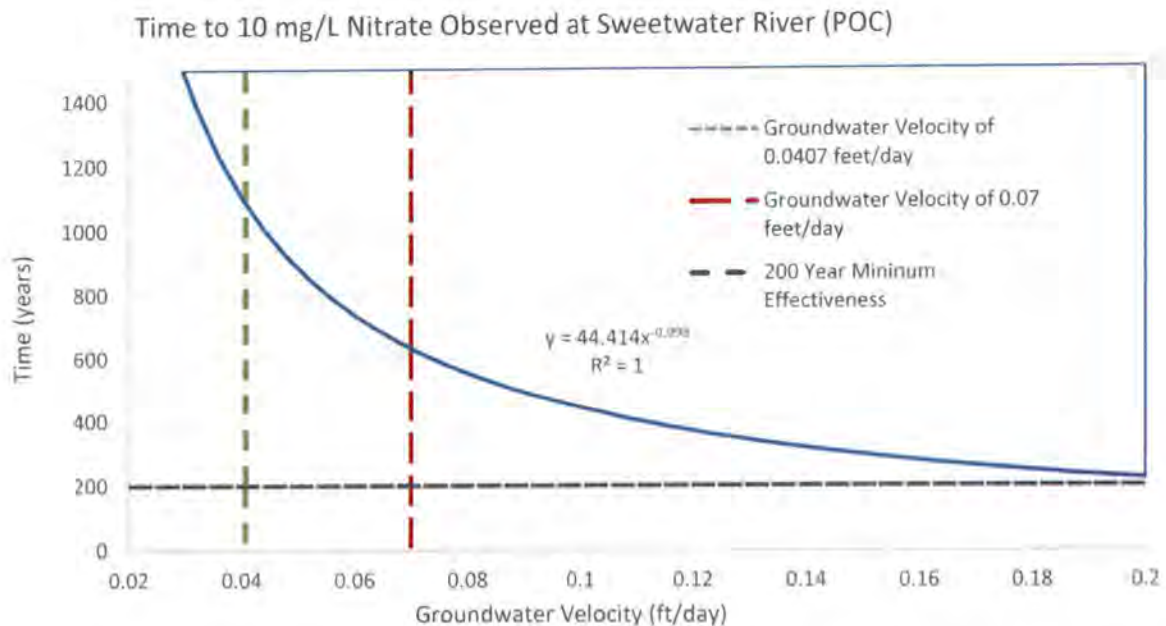


Figure 1: Influence of groundwater velocity on time before ACL results in nitrate MCL at the POE

Assuming the lower end porosity estimated in the 1999 WNI Split Rock Groundwater Protection Plan (GWPP) (0.25) and the geometric mean hydraulic conductivity (7.36 feet/day), a velocity of 0.072 feet per day is calculated. Assuming these values, the time at which 10 mg/L may be observed at the POE would be 615 years. However, the best estimate of porosity is likely higher than 0.3, as observed in the laboratory testing completed in the 1999 GWPP, and as estimated by WNI (Aquifertek, 2016). This testing estimated porosities greater than 0.35, and the 1999 model was run using an estimate of 0.35. The hydraulic conductivity of 5 feet per day is based on model calibrations using pump tests and evaluating hydraulic head at the wells in the southwest valley. This estimate therefore is considered the best estimate of hydraulic conductivity. Thus, the velocity used in the ATRANSI model is likely conservative.

Other factors in the model are likely conservative, or demonstrably conservative. For instance, the model assumes a constant source term of 500 mg/L of nitrate to a depth of 350 feet for the 1000 year time period with no decay (denitrification). A 500 mg/L nitrate groundwater sample as never been observed, with the highest sample result to date being 380 mg/L, taken in 2008 at well SWAB-2. There would likely be some denitrification in the aquifer, and the source term is thought to most likely degrade in concentration over time as infiltration from the tailings slows. In fact, since the sample of 380 mg/L was observed at SWAB-2, subsequent samples have been lower, with upgradient sample location results, such as at WN-21, continuing to decline. Therefore, a more likely scenario would be a lower concentration nitrate plume, degrading over time, over a smaller vertical distance than modeled. Taking these considerations into account, it is unlikely a 10 mg/L plume would reach the river. Using the ATRANSI model provided and the selected aquifer parameters however, it would occur beyond 600 years in the future. This falls

outside of the time of consideration mandated in 10 CFR 40 Appendix A, Criterion 6(1) which states that radiological controls “be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years”. To the extent reasonably achievable, the nitrate plume will not exceed 10 mg/L in less than 1000 years, and in any case, will not reach the POE in less than 200 years.

The LTSB extension is necessary so that the nitrate plume, over the 1000 year timeframe, does not come into contact with humans, livestock, or wildlife via the drinking water pathway. Therefore, this amendment is also approved. The proposed LTSB provided by WNI is shown in addendum 1. The extension of the LTSB, although specifically completed for the nitrate plume, would improve the confidence of previous ACL decisions made by the NRC for constituents in the SW Valley. The evaluation of nitrate, which used very conservative assumptions, would equally be bounding for any other constituent of concern, and thus is protective of all previously approved ACLs.

ALTERNATIVES TO THE PROPOSED ACTION

Groundwater remediation began in 1990 and continued until 2006. This program removed approximately 6 million gallons to 66 million gallons of water per year, depending on evaporative capacity and well operability, from the aquifer and sent this water to evaporation ponds as part of the Ground Water Corrective Action Program (CAP). In total, WNI removed 460 million gallons of contaminated groundwater under the CAP. Further CAP work has been investigated and a summary of the costs and benefits of further action may be found in August 2006 Environmental Assessment for Amendment to Source Materials License SUA-56 Ground Water Alternate Concentration Limits (ML062130387). In this document, the NRC concluded that further remediation of groundwater would be ineffective and not viable.

WDEQ agrees with this assessment, and furthermore believes the same assessment of alternatives applied in the August 2006 EA (ML062130387) to the ACLs developed at that time would apply to a new ACL for nitrate for the SW valley.

EVALUATION OF THE PROPOSED ACTION

Consistent with 10 CFR 40, Appendix A, Criterion 5B(6), the revised ACL of 500 mg/L for nitrate within the SW Valley would not appear to pose a substantial present or potential hazard to human health or the environment if not exceeded at the SW Valley POC well WN-21, or any point downgradient based upon the institutional controls in place from the tailings pile to the Sweetwater River. Therefore, this amendment to increase the nitrate ACL in the SW valley from 70.7 mg/L to 500 mg/L is approved.

This finding is based on the staff’s evaluation of the model and modeling files provided by WNI. The modeling files and the results of the model were found to be consistent with the assumptions, input parameters, and predictions described in the October 4th, 2016 technical memorandum (ML16328A404). Additionally, as part of its review, the staff calculated the

Ogata-Banks solution, which is a one-dimensional dispersion without chemical reactions analytical solution. Using this solution, predictions were nearly identical (2.39 mg/L) to the 1.978 mg/L estimated by WNI at the end of the 1000 year time period at the Sweetwater River, making the same conservative assumptions.

As stated in 10 CFR 40.28(b), “the general license in paragraph (a) of this section [for the Department of Energy’s Long-Term Surveillance and Maintenance] becomes effective when the Commission terminates, or concurs in an Agreement State’s termination of, the specific license and the site Long-Term Surveillance Plan (LTSP) meeting the requirements of this section has been accepted by the Commission.” The DOE is required to submit the LTSP to the NRC which will include both a proposed long-term environmental monitoring program and the proposed LTSB as discussed in 10 CFR 40.28(1), (2), and (3). Upon review and approval of the LTSP, the LTSB and long-term monitoring program, pursuant to the general license in 10 CFR 40.28 becomes effective. While the groundwater monitoring wells proposed by WNI for the SW Valley would be considered protective for near-term monitoring in comparison to the 1000 year compliance period, the prolonged transport times for constituents to reach the LTSB reduce their effectiveness for determining potential health and safety impacts at the POE. Thus, groundwater monitoring may not be necessary in the SW Valley following license termination due to the proposed LTSB expansion, with potentially only surface water samples needing to be collected at the proposed Sweetwater River sampling points. Therefore, the LTSB extension as presented in addendum 1 and WNI’s January 11th, 2019 letter to the LQD is also approved.

References

U.S. Geological Survey (USGS), 1961, A Solution of the Differential Equation of Longitudinal Dispersion in Porous Media, Geological Survey Professional Paper 411-A, available at: <https://pubs.usgs.gov/pp/0411a/report.pdf>

U.S. Nuclear Regulatory Commission, 2016, Meeting Summary – Technical Meeting To Discuss The Decommissioning Of The Western Nuclear Incorporated Site In Jeffrey City, Wyoming, November 9, 2016 [ADAMS Accession No. ML16291A240]

U.S. Nuclear Regulatory Commission, 2016, Western Nuclear Incorporated’s Request for Evaluation of the Establishment of an Alternate Concentration Limit for Nitrate at the Split Rock Site, May 2, 2016 [ADAMS Accession No. ML16088A356]

U.S. Nuclear Regulatory Commission, 2006, License Amendment No. 99 approving Alternate Concentration Limits, Western Nuclear, Inc., Split Rock Site, Jeffrey City, Fremont County, Wyoming, SUA-56, September 28, 2006 [ADAMS Accession No. ML062910216]

Western Nuclear Inc. (Worthington Miller Environmental, LLC), 2017, Western Nuclear, Inc. - Split Rock Uranium Mill Tailings Facility; Surface Water and Groundwater Monitoring Report for Second Half of 2016, February 22, 2017 [ADAMS Accession No. ML17054C859]

Western Nuclear Inc. (Worthington Miller Environmental, LLC), 2016, Western Nuclear,

Inc., Split Rock Uranium Mill Tailings Facility - Surface Water and Groundwater Monitoring Report for First Half of 2016, September 12, 2016 [ADAMS Accession No. ML16258A157]

Western Nuclear Inc., 2016, License Amendment Request for Western Nuclear Inc., Split Rock Mill Site, Source Material License SUA-56, December 9, 2016 [ADAMS Accession No. ML16349A144]

Western Nuclear Inc. (Wright Environmental Services), 2016, Proposed Long-Term Groundwater Monitoring Program, December 2, 2016 [ADAMS Accession No. ML16349A159]

Western Nuclear Inc., 2016, License Amendment Request for Western Nuclear Inc., Split Rock Mill Site, Source Material License SUA-56, October 25, 2016 [ADAMS Accession No. ML16328A402]

Western Nuclear Inc., 2019, WNI letter to LQD with 2018 revised Long Term Surveillance Boundary and a revised site ownership map for the Western Nuclear Inc. Split Rock Site, January 11, 2019.

Western Nuclear Inc. (AquiferTek), 2016, Analytical Modeling of Nitrate in Groundwater at the Western Nuclear Inc. Split Rock Site, October 4, 2016 [ADAMS Accession No. ML16328A404]

Western Nuclear Inc. (AquiferTek), 2016, Calculations for Analytical Model, August 23, 2016 [ADAMS Accession No. ML16328A408]

Western Nuclear Inc. (AquiferTek), 2016, Site Ownership Map with Groundwater Contours and Estimated Flow Path, Figures 1-3, October 25, 2016 [ADAMS Accession No. ML16328A409]

Western Nuclear Inc. (AquiferTek), 2016, Presentation: Western Nuclear Inc. Split Rock Site Analytical Transport Modeling of Nitrate, October 12, 2016 [ADAMS Accession No. ML16291A265]

Western Nuclear Inc. (S. S. Papadopoulos & Associates, Inc.), 2005, ATRANS Analytical Solutions for Three-Dimensional Solute Transport from a Patch Source, Version 2, May 13, 2005 [ADAMS Accession No. ML16328A407]

Western Nuclear Inc. (S. S. Papadopoulos & Associates, Inc.), 2005, ATRANS Analytical Solutions for Three-Dimensional Solute Transport from a Patch Source, Appendix A: Derivations of the Solutions, May 13, 2005 [ADAMS Accession No. ML16328A405]

Western Nuclear Inc. (S. S. Papadopoulos & Associates, Inc.), 2005, ATRANS Analytical Solutions for Three-Dimensional Solute Transport from a Patch Source, Appendix B: Test Problems, May 13, 2005 [ADAMS Accession No. ML16328A406]

Western Nuclear Inc., 2015, Technical Memorandum: Response to NRC Request for Additional Information (RAI) Dated August 13, 2015, for Groundwater for the Western Nuclear Incorporated Site in Jeffery City, Wyoming [ADAMS Accession No. ML15324A213]

Western Nuclear Inc., 2015, Assessment of Recent Groundwater and Surface Water Conditions, May 22, 2015 [ADAMS Accession No. ML15162A364]

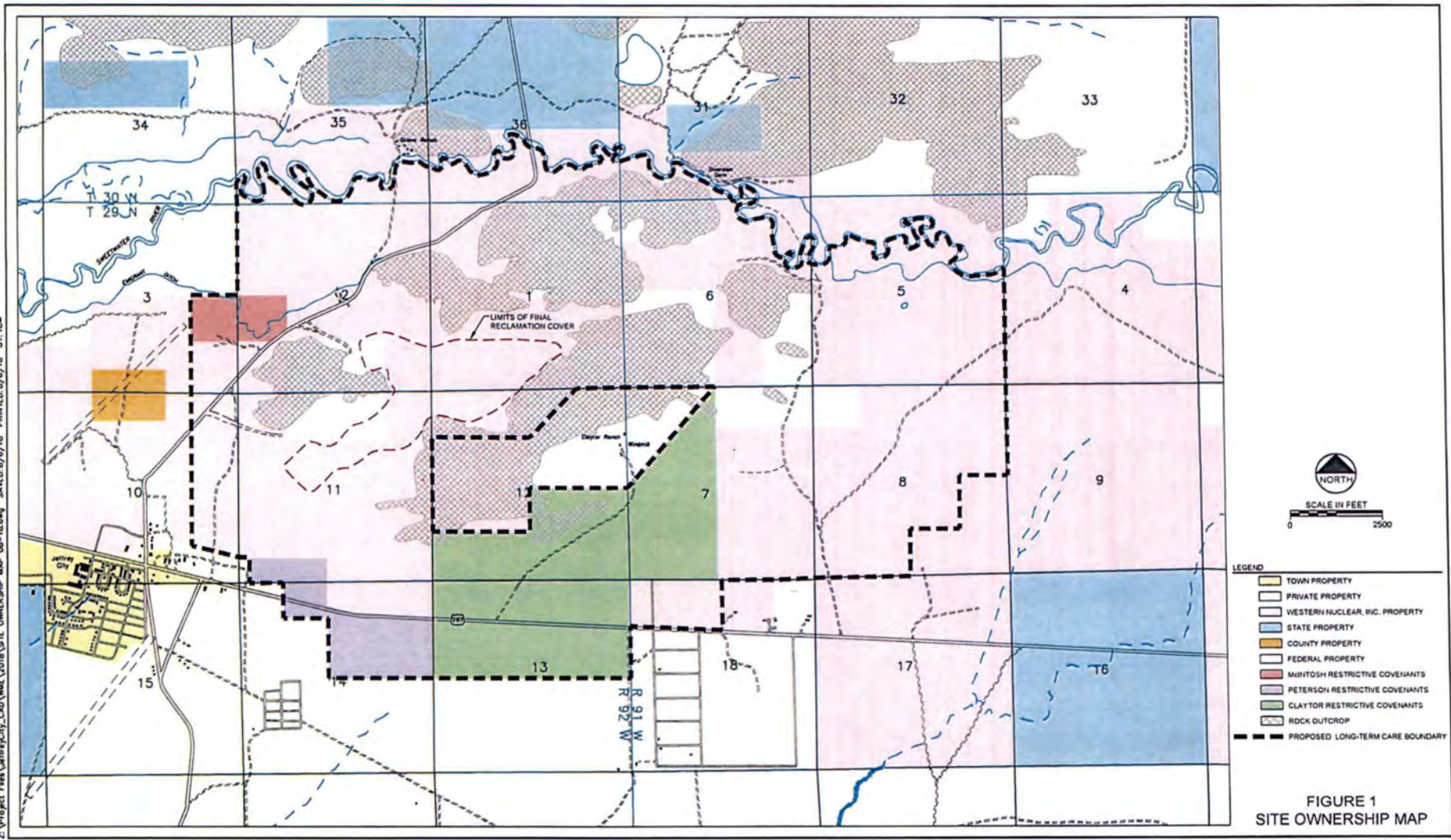
Western Nuclear Inc., 2003, Supplemental Ground Water Modeling Report. March 7, 2003 [ADAMS Accession No. ML030760336]

Western Nuclear, Inc., 1999, Site Closure Plan” and “Site Ground Water Characterization and Evaluation, October 29, 1999 [ADAMS Accession Nos. ML003672392, ML003672396, ML003672400, ML003672396].

Western Nuclear, Inc., 2004, Letter transmitting a modified memorandum that addresses the verbal questions regarding the risk assessment that show that groundwater impacted by site derived constituents could be used for agricultural purposes, May 24, 2004 [ADAMS Accession No. ML041490156].

Addendum 1

Z:\Project Files\JeffreyCity_CAD\WML\2018\SITE OWNERSHIP MAP 08-18.dwg SAVED:8/6/18 PRINTED:8/6/18 BY: TOM



**RECORD OF SURVEY
WESTERN NUCLEAR, INC.
SPLIT ROCK SITE
2018 REVISED LONG TERM CARE AREA**

LEGAL DESCRIPTION:

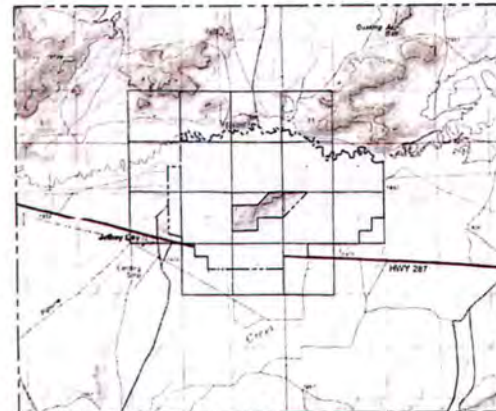
A Tract of land in Sections 1-3, 10-14, Township 29 North, Range 92 West, Sections 5-8, and 18, Township 29 North, Range 91 West, Section 31, Township 30 North, Range 91 West, Sections 35 and 36, Township 30 North, Range 92 West, All of the 6th P.M., Fremont County, Wyoming

Said tract of land is also described as the "2018 Revised Long Term Care Boundary" and is described as follows:

Commencing from Point #1, the Point of Beginning, being a point of intersection with the southerly bank of the Sweetwater River and the section line common to said Sections 34 and 35, T30N, R92W, which point bears N00°18'03"W, a distance of 555.49' more or less from the Southwest corner of said Section 35.
 Thence proceed S00°18'03"E, a distance of 555.49' along said section line to Point 2, being the Southwest corner of Section 35;
 Thence S00°34'42"E, a distance of 2567.23' along the section line common to said Sections 2 and 3 to Point 3, being the 1/4 corner common to said Sections 2 and 3, T29N, R92W;
 Thence N89°53'13"W, a distance of 1309.02' along the E-W centerline of said Section 3 to Point 4, being the CE 1/16 corner of said Section 3;
 Thence S00°49'32"E, a distance of 2024.95' to Point 5, being the E 1/16 corner common to said Sections 3 and 10;
 Thence S00°42'21"E, a distance of 2535.98' to Point 6, being the CE 1/16 corner of said Section 10;
 Thence S00°34'57"E, a distance of 1647.60' to Point 7, being a point on the northerly boundary of the "Home on the Range Estates" Subdivision;
 Thence S75°57'12"E, a distance of 1408.89' along the northerly boundary of the said subdivision to Point 8, being the Northeast corner of the said "Home on the Range Estates" Subdivision;
 Thence S00°42'37"E, a distance of 645.79' along the easterly boundary of the said subdivision to Point 9, being the Southeast corner of the said "Home on the Range Estates" Subdivision;
 Thence N89°29'51"E, along the section line common to Section 11 and Section 14 a distance of 1262.65' to Point 10, being the N 1/16 corner common to said Sections 11 and 14, T29N, R92W;
 Thence S00°23'03"E, a distance of 1322.15' to Point 11, being the NW 1/16 corner of said Section 14;
 Thence N89°27'12"E, a distance of 1314.91' to Point 12, being the CH 1/16 corner of said Section 14;
 Thence S00°33'52"E, a distance of 1321.26' along the N-S centerline of said Section 14 to Point 13, being the C 1/4 of said Section 14;
 Thence N89°24'42"E, a distance of 2624.11' along the E-W centerline of said Section 14 to Point 14, being the 1/4 corner common between said Sections 13 and 14;
 Thence N00°15'34"E, along the East-West centerline of said Section 13 a distance of 5282.83' to Point 15, being the 1/4 corner common to said Section 18, T29N, R91W and said Section 13, T29N, R92W;
 Thence N00°23'54"W, along the section line common to said Section 18 and Section 13, a distance of 1355.66' to Point 16, being the intersection of the said section line and the northerly right-of-way of U.S. Highway 287;
 Thence S87°25'17"E along the said northerly right-of-way a distance of 2565.22' to Point 17, being the intersection of the said northerly right-of-way of U.S. Highway 287 and the North-South centerline of said Section 18;
 Thence N00°34'41"W, a distance of 1370.72' to Point 18, being the 1/4 corner common to said Section 18 and Section 7;
 Thence N89°43'23"E, along the section line a distance of 2648.99' to Point 19, being the SE corner of said Section 7;
 Thence N89°33'05"E, along the section line common to Section 8 and Section 17 a distance of 2548.25' to Point 20, being the 1/4 corner common to said Sections 8 and 17;
 Thence N00°26'51"W, along the North-South centerline of said section 8 a distance of 1325.50' to Point 21, being the CS 1/16 corner of said Section 8;
 Thence N89°14'01"E, a distance of 1304.86' to Point 22, being the SE 1/16 corner of said Section 8;
 Thence N00°35'07"W, a distance of 1322.72' to Point 23, being the CE 1/16 corner of said Section 8;
 Thence N00°21'20"E along the East-West centerline of said Section 8, a distance of 1302.44' to Point 24, being the 1/4 corner common to said Section 8 and Section 9, T29N, R91W;
 Thence N01°00'41"W, along the section line a distance of 2643.44' to Point 25, being the NE corner of said Section 8;
 Thence N00°24'49"W, along the section line common to Section 5 and Section 4 a distance of 2640.87' to Point 26, being the 1/4 corner common to said Section 5 and Section 4;
 Thence N00°24'49"W along the section line, a distance of 301.95' more or less to Point 27, being the intersection point of the East section line of said Section 5 and the southerly bank of the Sweetwater River;
 From Point 27 the "2018 Revised Long Term Care Boundary" follows the southerly bank of the Sweetwater River upstream to Point 1, the Point of Beginning.

Less and except the following described parcel of land
 Commencing at Point 28, being the Point of Beginning and being the 1/4 corner common to said Section 11 and Section 12, T29N, R92W;
 Thence N00°20'06"W, along the section line common to said Section 11 and Section 12 a distance of 1304.14' to Point 29, being the N 1/16 corner common to said Section 11 and 12;
 Thence N89°54'02"E, a distance of 2039.81' to Point 30, being the CH 1/16 corner of said Section 12;
 Thence N84°35'29"E, a distance of 1871.59' to Point 31, being the E 1/16 corner common to said section 12 and Section 1;
 Thence N88°47'18"E, along the section line common to said Section 12 and Section 1 a distance of 1319.13' to Point 32, being the Northeast corner of said Section 12;
 Thence N89°43'03"E, along the section line common to said Section 5 and Section 7, T29N, R91W, a distance of 2561.40' to Point 33, being the 1/4 corner common to said Section 5 and Section 7;
 Thence S44°04'42"W, a distance of 3562.52' to Point 34, being the 1/4 corner common to said Section 7 and Section 12;
 Thence S48°18'32"W, along the East-West centerline of said Section 12 a distance of 2541.83' to Point 35, being the C 1/4 of said Section 12;
 Thence S00°12'47"E, along the North-South centerline of said Section 12 a distance of 1307.09' to Point 36, being the CS 1/16 corner of said Section 12;
 Thence S88°52'14"W, a distance of 2635.25' to Point 37, being the S 1/16 corner common to said Section 11 and Section 12;
 Thence N00°07'40"W, along the section line common to said Section 11 and Section 12 a distance of 1311.45' to Point 28, being the Point of Beginning.
 Said excepted parcel containing 373.77 acres more or less.

Said "2018 Revised Long Term Care Boundary" as described above contains 5,428.34 acres, more or less, dependent upon the course of the Sweetwater River.



VICINITY MAP
NOT TO SCALE


CERTIFICATE OF SURVEYOR

I, Paul F. Hennessey, professionally licensed surveyor in the State of Wyoming do hereby certify that this plat was prepared from results of a survey made by me or under my direct supervision, and is, to the best of my knowledge, information and belief, a true and correct representation of said survey.

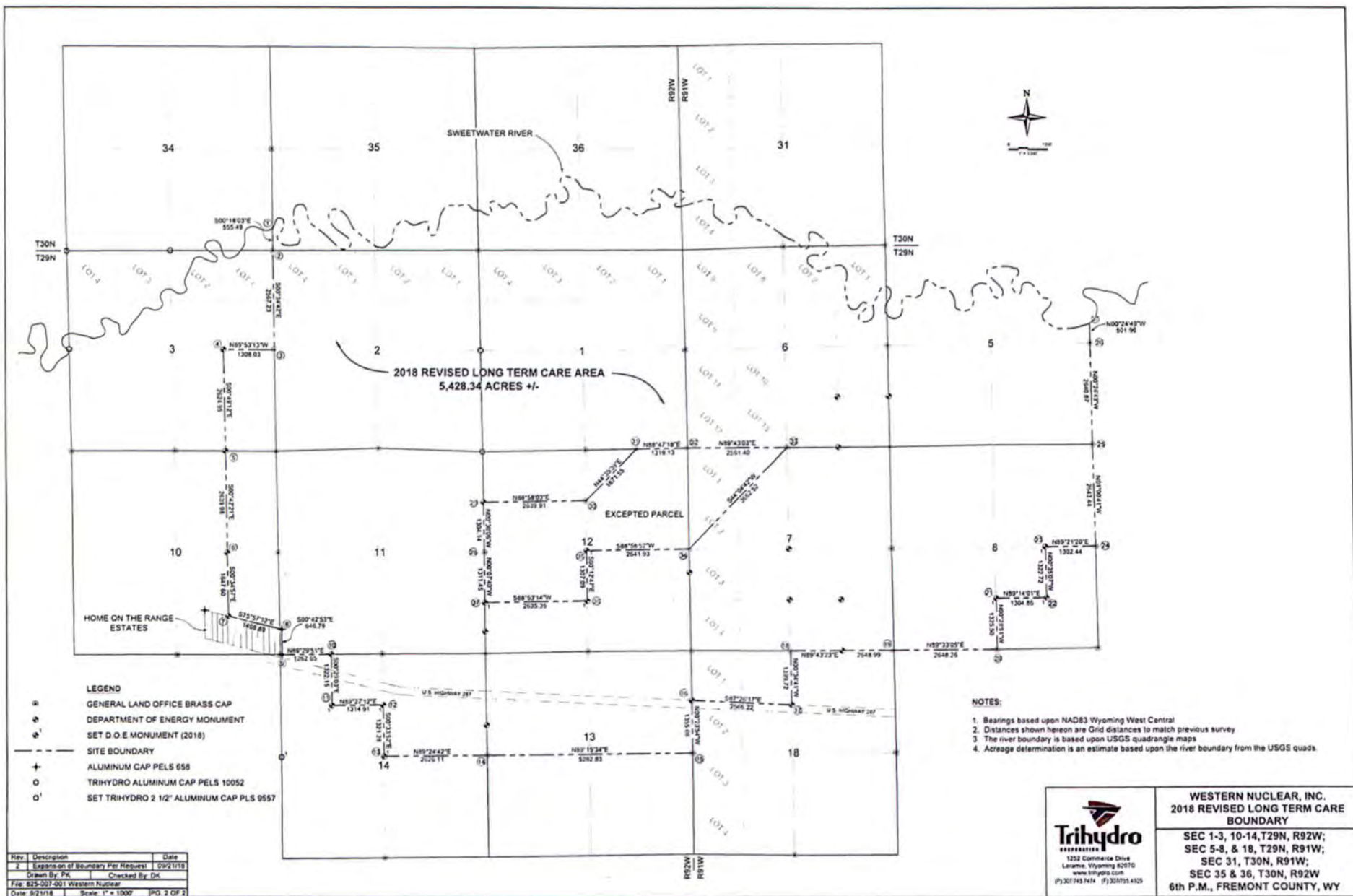


CLERK AND RECORDER'S CERTIFICATE

Blank space for Clerk and Recorder's signature and date.

 1212 Commerce Drive Laramie, Wyoming 82070 www.tribhydro.com (307) 745-7474 (F) (307) 755-4020	WESTERN NUCLEAR, INC. 2018 REVISED LONG TERM CARE BOUNDARY
	SEC 1-3, 10-14, T29N, R92W; SEC 5-8, & 18, T29N, R91W; SEC 31, T30N, R91W; SEC 35 & 36, T30N, R92W 6th P.M., FREMONT COUNTY, WY

Rev.	Description	Date
2	Expansion of Boundary Per Request	09/21/18
	Drawn By: PK	Checked By: DK
File: 825-001-001 Western Nuclear		
Date: 9/21/18	Scale: 1" = 1000'	PG: 1 OF 3



- LEGEND**
- ⊙ GENERAL LAND OFFICE BRASS CAP
 - ⊕ DEPARTMENT OF ENERGY MONUMENT
 - ⊙ SET D.O.E MONUMENT (2018)
 - SITE BOUNDARY
 - + ALUMINUM CAP PELS 658
 - TRIHYDRO ALUMINUM CAP PELS 10052
 - ¹ SET TRIHYDRO 2 1/2" ALUMINUM CAP PLS 9557

- NOTES:**
1. Bearings based upon NAD83 Wyoming West Central
 2. Distances shown hereon are Grid distances to match previous survey
 3. The river boundary is based upon USGS quadrangle maps
 4. Acreage determination is an estimate based upon the river boundary from the USGS quads.

Rev	Description	Date
2	Expansion of Boundary Per Requests	09/21/18
	Drawn By: PK	Checked By: DK
File: 825-007-001 Western Nuclear		
Date: 9/21/18 Scale: 1" = 1000' PG. 2 OF 2		



WESTERN NUCLEAR, INC.
2018 REVISED LONG TERM CARE BOUNDARY

SEC 1-3, 10-14, T29N, R92W;
 SEC 5-8, & 18, T29N, R91W;
 SEC 31, T30N, R91W;
 SEC 35 & 36, T30N, R92W

6th P.M., FREMONT COUNTY, WY

1222 Commerce Drive
 Laramie, Wyoming 82070
 www.trihydro.com
 (P) 307.743.7474 (F) 307.753.4125