

August 25, 2014

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
STRATA ENERGY INC.)	Docket No. 40-9091-MLA
)	
(Ross <i>In Situ</i> Uranium Recovery)	ASLBP No. 12-915-01-MLA
Site))	

NRC STAFF'S INITIAL STATEMENT OF POSITION

The Staff of the U.S. Nuclear Regulatory Commission (NRC Staff) submits its Initial Statement of Position on the Natural Resources Defense Council's (NRDC's) and Powder River Basin Resource Council's (PRBRC's) (collectively Joint Intervenor's or Intervenor's) Environmental Contentions 1, 2, and 3. In Contentions 1 through 3, the Intervenor's challenge the Final Supplemental Environmental Impact Statement (FSEIS) prepared by the Staff for Strata Energy, Inc.'s (Strata's or the Licensee's) proposed Ross Project. For the reasons set forth below, the Board should dismiss the contentions and affirm that the Staff's review of the Ross Project complied with applicable law.

I. Background

A. The Application

On January 4, 2011, Strata Energy, Inc. (Strata or the Applicant) submitted an application for a combined NRC source and 11e.(2) byproduct material license.¹ As detailed in the Staff's Response to Joint Petitioners' initial hearing request, Strata's license would involve

¹ Letter from Strata Energy, Inc. Submitting Combined Source and 11e.(2) Byproduct Material License Application Requesting Authorization to Construct and Operate Proposed Ross In Situ Leach Uranium Recovery Project Site (Jan. 4, 2011) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110120055). The Application's supporting documentation can be found in ADAMS by searching under Docket No. 04009091.

the construction and operation of an *in situ* uranium recovery and processing facility (ISR) in Crook County, Wyoming.² Along with its application for an NRC license, Strata submitted a Technical Report (TR) supporting its application and an Environmental Report (ER) addressing its proposed facility's impact on the environment. The ER, which is required by NRC regulations in 10 C.F.R. Part 51, helps inform the Staff's independent review of a license application and thereby helps the Staff meet the requirements of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321 *et seq.*

Since Strata submitted its ER in 2011, it has provided additional information relevant to the Staff's NEPA review. In March 2012, Strata submitted responses to the Staff's requests for additional information (RAIs) pertaining to the ER.³ In April 2012, Strata submitted responses to the Staff's RAIs pertaining to the TR.⁴ Strata's supplemental information is publicly available through ADAMS, except in a relatively few instances in which the information is sensitive or otherwise protected from disclosure.

B. The Staff's NEPA Review

In accordance with NEPA and the NRC's NEPA implementing regulations in 10 C.F.R. Part 51, the Staff has prepared a supplemental environmental impact statement (SEIS) in connection with Strata's application. The EIS is a supplemental EIS because the Staff's analysis draws from, and adds to, the analysis in NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities" (GEIS). The GEIS assesses the environmental impacts of ISR operations both generally and on a regional basis, with specific

² See NRC Staff Response to Petition to Intervene and Request for Hearing by the Natural Resources Defense Council & Powder River Basin Resource Defense Council (Dec. 5, 2011), at 1-2 (ADAMS Accession No. ML11339A162).

³ Letter from Mal James, Strata Energy, Inc., to John Saxton, NRC (Mar. 30, 2012) (ADAMS Accession No. ML121030406).

⁴ Letter from Ralph Knode, Strata Energy, Inc., to John Saxton, NRC (Apr. 6, 2012) (ADAMS Accession No. ML121020347).

sections focusing on the Nebraska-North Dakota-Wyoming Uranium Milling Region and the Wyoming East Uranium Milling Region. These sections describe regional features in the area where Strata's facility would be located.

On March 21, 2013, the Staff issued a draft SEIS (DSEIS) for public comment.⁵ The DSEIS addressed environmental impacts related to the construction of the Ross facility and ISR operations at the site, as well as impacts associated with the methods proposed for restoration of aquifers used during ISR operations and decommissioning of the site. The Staff prepared the DSEIS in cooperation with the U.S. Bureau of Land Management (BLM), which manages public lands open to mineral entry on which the Applicant has filed mining claims.

On February 28, 2014, the Staff issued the FSEIS for the Ross Project.⁶ The FSEIS updates the information in the DSEIS and the Staff's analysis of environmental impacts. The FSEIS also adds a new Appendix B, which presents public comments on the DSEIS and the Staff's responses to the comments.

II. The Staff's Expert Witnesses

A. Johari Moore

Ms. Moore is the Ross Project Environmental Project Manager. She works in the Environmental Review Branch in the NRC's Office of Federal and State Materials and Environmental Management (FSME) Programs. As stated in her resume (Ex. NRC002), she holds a Master of Science in Engineering degree in Nuclear Engineering and Radiological Sciences from the University of Michigan and a Bachelor of Science degree in Physics from Florida Agricultural and Mechanical University. Ms. Moore has nine years of professional

⁵ *Supplemental Environmental Impact Statement for the Ross In-Situ Uranium Recovery Project in Crook County, Wyoming*, 78 Fed. Reg. 19,330 (Mar. 29, 2013).

⁶ *Final Supplemental Environmental Impact Statement; Issuance – Proposed Ross Project in Crook County Wyoming for In-Situ Leach Uranium Milling Facilities*, 79 Fed. Reg. 13,683 (Mar. 11, 2014) (Ex. SEI009A). The FSEIS is Supplement 5 to NUREG-1910 (ADAMS Accession No. ML14056A096).

experience preparing environmental assessments, environmental impact statements, and supplemental environmental impact statements related to the licensing of uranium recovery, fuel cycle, and irradiator facilities, as well as rulemakings. Her expertise includes NRC environmental regulations and NEPA requirements applying to materials facilities. Ms. Moore was a technical reviewer in the area of public and occupational health and safety for the supplemental environmental impact statements for the Moore Ranch, Nichols Ranch, Lost Creek, and Dewey-Burdock uranium recovery facilities. She also had Environmental Project Manager responsibilities for the Willow Creek uranium recovery facility's restart and license renewal. As the Environmental Project Manager for the NRC's Ross Project application review, she managed the preparation of both the DSEIS and the FSEIS. She also coordinated with the NRC's contractor for the DSEIS and FSEIS, Attenuation Environmental Company (AEC), on all phases of the SEIS's preparation.

B. John Saxton

Mr. Saxton is the Safety Project Manager and hydrogeology technical reviewer for the safety review of the Ross license application. He works in FSME's Uranium Recovery Licensing Branch (URLB). As stated in his resume (Ex. NRC003), he holds a Masters of Science degree in geology from the University of New Mexico, Albuquerque, New Mexico, and a Bachelors of Science degree in Geological Engineering from Colorado School of Mines. Mr. Saxton has more than 28 years of experience in both the private and public sectors specializing in the fields of hydrogeology and environmental investigations. As project manager and technical reviewer for several applications, he has extensive knowledge of the uranium recovery licensing process. In addition, he has provided substantial reviews for various other technical issues directly related to uranium recovery facilities, including restoration reports, well field data packages, Title I sites corrective action plans, and ongoing staff updates to regulatory guides. He was a principal participant in the development of the Ross Safety Evaluation Report, source and

byproduct materials license SUA-1601, and URLB's concurrence on the Environmental Review Branch's DSEIS and FSEIS.

C. Kathryn Johnson

Dr. Kathryn Johnson is owner and principal consultant of Johnson Environmental Concepts and a subject matter expert for the Ross SEIS through Attenuation Environmental Company. As stated in her resume (Ex. NRC004), she holds a Ph.D. in Geology from the South Dakota School of Mines, a Master of Science and Bachelor of Science degrees in Chemistry from Iowa State University, and a Bachelor of Science degree from Black Hill State University. Dr. Johnson has over 30 years of professional experience in the geochemistry of uranium and associated metals in materials resulting from mining, field and laboratory investigation of geologic, hydrologic, and geochemical systems related to mining, and regulatory analysis. Her expertise includes the fate and transport analysis of seepage from uranium mill tailings and other uranium-containing materials, applying geochemistry to remedial designs for containment of mine wastes containing uranium and associated metals, reviewing and preparing water-quality assessments of environmental impact statements, and field sampling and data analysis to support site characterization and remediation of impacts from mine wastes. For the Ross Project SEIS, Dr. Johnson served as the subject matter expert for matters related to water quality and as the principal editor of all sections on geology, soils, and hydrology.

D. Anthony Burgess

Dr. Anthony Burgess is a consultant and member of the Attenuation Environmental Company team, and has been responsible for the preparation of the sections of the SEIS that focus on groundwater. He has a Bachelor of Science degree in Geology and holds a Doctor of Philosophy in Geology with emphasis on Engineering Geology and Hydrogeology from the University of Durham, United Kingdom. He has 45 years of professional experience providing consulting services in support of a wide range of environmental activities, mining, geotechnical engineering, and resources management. Dr. Burgess is a Registered Geologist and a

Professional Engineer in the State of Washington, and has been qualified by courts in several jurisdictions as an expert in hydrogeology, characterization of contaminated sites, contaminant transport modeling, and design of environmental remediation system components. Since 1977, he has participated in a variety of studies and reviews for U.S. and international bodies responsible for disposal designs and practices associated with radioactive waste generated by both commercial power companies and for national defense. Dr. Burgess' environmental compliance experience includes coordination, management and cost estimating of site investigations, remedial alternatives evaluations, cleanup designs, and their implementation. His mining experience spans permitting, site dewatering, design, and management of groundwater and leachate control systems, groundwater monitoring and geotechnical design. His experience in water resources encompasses development of surface water and groundwater management systems, watershed analyses, and water quality monitoring and modeling.

III. Procedural History of Admitted Contentions

On October 27, 2011 the Intervenor filed a petition to intervene and request for a hearing wherein they proffered five contentions, characterized by the Board as "environmental/NEPA" contentions.⁷ The Board admitted four contentions, as reformulated by the Board in its February 10, 2012 order.⁸ The contentions admitted by the Board challenged the application's characterization of baseline groundwater quality (Environmental Contention 1); its analysis of environmental impacts that will occur if the Applicant cannot restore groundwater to primary or secondary limits (Environmental Contention 2); the adequacy of the hydrological information used to demonstrate the Applicant's ability to contain groundwater fluid migration (Environmental Contention 3); and the adequacy of the application's assessment of cumulative

⁷ Petition to Intervene and Request for Hearing by the Natural Resources Defense Council & Powder River Basin Resource Council (Oct. 27, 2011) (Intervention Petition); *Strata Energy, Inc.* (Ross In Situ Uranium Recovery Project), LBP-12-3, 75 NRC 164, 192 (2012).

⁸ *Strata Energy, Inc.*, LBP-12-3, 75 NRC at 210, 212.

impacts of the proposed action and the planned Lance District expansion projects (Environmental Contention 4/5A).⁹

On March 21, 2013, the Staff issued a DSEIS for public comment.¹⁰ The DSEIS addressed environmental impacts related to the construction of the Ross facility and ISR operations at the site, as well as impacts associated with the methods for restoration of aquifers used during ISR operations and decommissioning of the site. After issuance of the DSEIS, the Intervenor sought to update or amend their admitted contentions to apply to the Staff's DSEIS and to add a new environmental contention.¹¹ Resubmitted Contentions 1 through 4/5A addressed the same issues as the contentions previously admitted in this hearing – baseline groundwater quality, restoration of groundwater quality, fluid migration, and cumulative impacts – while new Contention 5 raised the new claim that the DSEIS improperly segmented the scope of the proposed federal action, which led to a failure to consider the environmental impacts of, and appropriate alternatives to, the Applicant's actual proposed project.

On July 26, 2013, the Board admitted "resubmitted" Contentions 1 through 3, finding that these contentions challenged information in the DSEIS that was sufficiently similar to information in Strata's ER.¹² In so doing, the Board found that the contentions "migrated" from

⁹ *Id.*

¹⁰ *Supplemental Environmental Impact Statement for the Ross In-Situ Uranium Recovery Project in Crook County, Wyoming*, 78 Fed. Reg. 19,330 (Mar. 29, 2013).

¹¹ Natural Resources Defense Council's & Powder River Basin Resource Council's Joint Motion to Resubmit Contentions & Admit One New Contention in Response to Staff's Supplemental Draft Environmental Impact Statement (May 6, 2013), at 1.

¹² *Strata Energy, Inc.* (Ross In Situ Uranium Recovery Project), LBP-13-10, 78 NRC ___, __ (2013) (slip op.).

the ER to the DSEIS.¹³ The Board declined to migrate admitted Contention 4/5A to the DSEIS, leaving it admitted as against the ER, and rejected the Intervenor's remaining new contention.¹⁴

On February 28, 2014, the Staff issued the FSEIS for the Ross Project. The FSEIS updated the information in the DSEIS and the Staff's analysis of environmental impacts. The FSEIS also added a new Appendix B, which presented public comments on the DSEIS and the Staff's responses to the comments. On March 31, 2014 the Intervenor's filed a motion wherein the Intervenor's sought to migrate their admitted contentions to the Staff's FSEIS or, in the alternative, to amend their admitted contentions to apply to the FSEIS.¹⁵ The Intervenor's also sought admission of two new environmental contentions. On May 23, 2014, the Board issued an order allowing Contentions 1 and 3 to migrate from the DSEIS to the FSEIS, transforming the contentions into FSEIS-related contentions.¹⁶ The Board also admitted Contention 2 as an amended contention challenging the FSEIS.¹⁷ The Board declined to migrate admitted Contention 4/5A to the FSEIS or to admit it as an amended contention, thereby leaving it admitted as against the ER. Finally, the Board rejected the Intervenor's two new contentions.¹⁸

On June 13, 2014, the parties each filed a separate motion for summary disposition of certain admitted contentions. The Staff and Strata each requested that the Board grant summary disposition of Contention 4/5A, and the Joint Intervenor's requested summary

¹³ *Id.* at ___ (slip op. at 13, 15, 17).

¹⁴ *Id.* at ___ (slip op. at 20).

¹⁵ Natural Resources Defense Council's & Powder River Basin Resource Council's Joint Motion to Migrate or Amend Contentions, and to Admit New Contentions in Response to Staff's Final Supplemental Environmental Impact Statement, at 1 (Mar. 31, 2014).

¹⁶ Order (Ruling on Motion to Migrate/Amend Existing Contentions and Admit New Contentions Regarding Final Supplement to Generic Environmental Impact Statement) (May 23, 2014) (unpublished) (ADAMS Accession No. ML14143A184) ("May 23, 2014 Order").

¹⁷ *Id.* at 2.

¹⁸ *Id.*

disposition of Contention 1.¹⁹ On July 2, 2014, the Intervenor's responded in opposition to the Staff's and Strata's motions for summary disposition of Contention 4/5A.²⁰ On July 3, 2014, the Staff and Strata each filed a response in opposition to Joint Intervenor's motion for summary disposition of Contention 1.²¹ On July 25, 2014, the Board granted the Staff's and Strata's respective requests for summary disposition of Contention 4/5A.²² On August 12, 2014, the Board denied Joint Intervenor's request for summary disposition of Contention 1, finding that material issues of fact relating to that contention remain in controversy, and that the Intervenor's thus had not shown that they were entitled to judgment as a matter of law..²³

As a result of the Board's rulings, the scope of this hearing is limited to those issues that have been pled with particularity in Environmental Contentions 1, 2, and 3. The admitted contentions, as framed by the Board, are as follows:

Environmental Contention 1: The FSEIS fails to adequately characterize baseline (*i.e.*, original or pre-mining) groundwater quality. The FSEIS fails to comply with 10 C.F.R. §§ 51.90-95; 10 C.F.R. Part 40, Appendix A; and NEPA because it lacks an adequate description of the present baseline (*i.e.*, original or pre-mining) groundwater quality and fails to demonstrate that

¹⁹ See NRC Staff's Motion for Summary Disposition of Contention 4/5A (Jun. 13, 2014); Licensee Strata Energy, Inc.'s Motion for Summary Disposition (Jun. 13, 2014); Natural Resources Defense Council's & Powder River Basin Resource Council's Motion for Summary Disposition on Environmental Contention 1 (Jun. 13, 2014) (Intervenor's Summary Disposition Motion).

²⁰ Natural Resources Defense Council's & Powder River Basin Resource Council's Opposition to Motions for Summary Disposition of Contention 4/5A (July 2, 2014)

²¹ NRC Staff Answer to Natural Resources Defense Council's and Powder River Basin Resource Council's Motion for Summary Disposition on Contention 1 (July 3, 2014); Strata Energy, Inc.'s Response in Opposition to Intervenor's Motion for Summary Disposition (July 3, 2014).

²² Memorandum and Order (Ruling on Summary Disposition Motion Regarding Environmental Contention 4/5A) (Jul. 25, 2014).

²³ Memorandum and Order (Ruling on Summary Disposition Motion Regarding Environmental Contention 1) (Aug. 12, 2014).

groundwater samples were collected in a scientifically defensible manner, using proper sampling methodologies. The FSEIS's departure from NRC guidance serves as additional evidence of these regulatory violations. NRC, NUREG-1569, Standard Review Plan for In Situ Leach Uranium Extraction License Applications, §§ 2.7.1, 2.7.3, 2.7.4 (2003).

Environmental Contention 2: The FSEIS fails to analyze the environmental impacts that will occur if the applicant cannot restore groundwater to primary or secondary limits. The FSEIS fails to meet the requirements of 10 C.F.R. §§ 51.90-95 and NEPA because it fails to evaluate the virtual certainty that the applicant will be unable to restore groundwater to primary or secondary limits in that the FSEIS does not provide and evaluate information regarding the reasonable range of hazardous constituent concentration values that are likely to be applicable if the applicant is required to implement an Alternative Concentration Limit (ACL) in accordance with 10 C.F.R. Part 40, App. A, Criterion 5B(5)(c).

Environmental Contention 3: The FSEIS fails to assess the likelihood and impacts of fluid migration to the adjacent groundwater, as required by 10 C.F.R. §§ 51.90-95 and NEPA, and as discussed in NUREG-1569 § 2.7, in that

1. The FSEIS fails to analyze sufficiently the potential for and impacts associated with fluid migration associated with unplugged exploratory boreholes, including the adequacy of the applicant's plans to mitigate possible borehole-related migration impacts by monitoring wellfields surrounding the boreholes and/or plugging the boreholes.
2. There was insufficient information for the NRC staff to make an informed fluid migration impact assessment given that the applicant's six monitor-well clusters and the 24-hour pump tests at four of these clusters provided insufficient hydrological information to demonstrate satisfactory groundwater control during planned high-yield industrial well operations.

IV. Applicable Legal Standards

The following general legal standards apply to the Board's review of the merits of the Intervenor's NEPA-related claims. The Staff, in Section V below, addresses each contention.

A. Legal Standards under NEPA

When preparing an EIS, the Staff must take a hard look at the environmental impacts of the proposed action.²⁴ This standard is, however, subject to a “rule of reason.” Under NEPA’s rule of reason, the Staff need not address every environmental effect that could potentially result from the proposed action.²⁵ Rather, the Staff need only provide “[a] reasonably thorough discussion of the significant aspects of the probable environmental consequences[.]”²⁶

NRC precedent follows Circuit Court precedent in defining the scope of the Staff’s NEPA review. “NEPA does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts.”²⁷ The proper inquiry is not whether an effect is “theoretically possible,” but whether it is “reasonably probable that the situation will obtain.”²⁸ The Staff “need not address every impact that could possibly result, but rather only those that are reasonably foreseeable or have some likelihood of occurring.”²⁹

As the Commission has emphasized, “[a]n environmental impact statement is not intended to be ‘a research document.’”³⁰ NEPA does not require the Staff to analyze every

²⁴ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

²⁵ *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)).

²⁶ *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).

²⁷ *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005) (emphasis in original).

²⁸ *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 49 (1978).

²⁹ *Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-09-07, 69 NRC 613, 631 (2009).

³⁰ *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010) (citing *Town of Winthrop v. FAA*, 533 F.3d 1, 13 (1st Cir. 2008)).

conceivable aspect of proposed project.³¹ NEPA also does not require that the Staff commit virtually infinite study and resources to a proposed project.³² 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.”³³

B. Legal Standards Governing Development of Groundwater Information

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, must submit an environmental report that complies with the requirements of 10 C.F.R. § 51.45. 10 C.F.R. § 51.45 requires, in part, that the environmental report contain a description of the affected environment. The environmental report should contain sufficient data to aid the Commission in its development of an independent analysis. 10 C.F.R. § 51.45(c).

Every applicant for such a license is also required by the provisions of 10 C.F.R. § 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. 10 C.F.R. Part 40, Appendix A, *Introduction*. 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. *Id.* Although the Appendix A criteria were developed for conventional uranium milling facilities, they have since been applied in limited fashion to ISR facilities.³⁴

³¹ *Private Fuel Storage*, CLI-02-25, 56 NRC at 349.

³² *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (footnote omitted).

³³ *Id.* at 315.

³⁴ 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).

Appendix A requires applicants and licensees to provide two types of water quality information to the Commission: (1) “baseline” water quality information that describes the existing groundwater conditions at an ISR site, collected at least one year prior to the commencement of any major site construction (Criterion 7); and (2) water quality information collected prior to the commencement of operations that is used to set the “Commission approved background concentration” of constituents in the groundwater, and which is used only to detect lixiviant excursions and to establish standards for aquifer restoration after uranium recovery is complete (Criterion 5B(5)).

C. Site-Characterization Groundwater Information

Criterion 7 of 10 C.F.R. Part 40, Appendix A, requires the licensee to establish two groundwater monitoring programs, the first of which consists of a preoperational monitoring program that is used to provide “complete baseline data” on the milling site and its environs. Criterion 7 states, “At least one full year prior to any major site construction, a preoperational monitoring program must be conducted to provide complete baseline data on a milling site and its environs.” The Staff expects the license application to characterize the baseline of the proposed license area groundwater in accordance with NUREG-1569, Section 2.7, or to submit procedures to characterize this information prior to major site construction, in accordance with Criterion 7 and Regulatory Guide 4.14.³⁵ 10 C.F.R. 51.45(b) also requires the applicant to submit site-characterization groundwater quality information to inform the Staff’s review of the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects. In the Staff’s FSEIS, the information submitted by Strata in satisfaction of 10 C.F.R. 51.45(b) and Criterion 7 is referred to as “pre-licensing, site characterization” groundwater information, to clarify that it is distinct from the set of water quality information that Strata will be

³⁵ Affidavit of John L. Saxton Concerning Joint Intervenors’ Motion for Summary Disposition of Contention 1 (Jul. 3, 2014), at ¶ 4 (“Saxton Affidavit”).

required to provide after issuance of its license, but prior to commencement of operations, in accordance with Appendix A, Criterion 5B(5).³⁶

D. Post-Licensing, Pre-Operational Groundwater Information

Criterion 5B(5) of 10 C.F.R. Part 40, Appendix A, requires that at the point of compliance³⁷ the concentration of a hazardous constituent must not exceed: (a) the Commission approved background concentration of that constituent in the groundwater; (b) the respective value given in the table in paragraph 5C of Appendix A if the constituent is listed in the table and if the background level of the constituent is below the value listed; or (c) an alternate concentration limit established by the Commission. The background concentration of the constituent is developed pursuant to conditions imposed by the NRC in the licensee's source and byproduct material license. The license issued to Strata by the NRC reflects this requirement in Condition No. 11.3, which requires the licensee to establish background water quality data for the ore zone, overlying, and underlying aquifers prior to injection of lixiviant in a wellfield. License Condition No. 11.3 sets forth specific standards and criteria for obtaining information that will satisfy the requirements of Criterion 5B(5)(a).

V. The Staff's Position on Individual Contentions

The Staff addresses each of the Intervenor's contentions below and in its attached testimony (Ex. NRC001). As the Staff explains, it prepared the Ross Project FSEIS consistent with the requirements of applicable law. The Intervenor's claims of deficiencies in these documents lack support, and the Board should therefore dismiss the contentions.

³⁶ See Ex. SEI009A at 2-25–2-26.

³⁷ The "point of compliance" is the site-specific location in the uppermost aquifer where the groundwater protection standard must be met. 10 C.F.R. Part 40, Appendix A, *Introduction*.

A. Environmental Contention 1

In Contention 1, the Intervenor challenge the FSEIS's analysis of the baseline groundwater quality in the Ross Project area. The Intervenor rely on three declarations from Dr. Richard Abitz, including a joint declaration submitted by Dr. Abitz and Dr. Lance Larson (Joint Third Declaration) submitted on March 31, 2014.³⁸ The Intervenor also refer to previously filed declarations of Drs. Moran, Sass, and Abitz.³⁹

Contrary to the Intervenor's claims, the Staff analyzed baseline groundwater quality to the extent required under NEPA. The Staff did so by reviewing the information in Strata's application documents, requesting additional information in numerous areas, and evaluating Strata's RAI responses.⁴⁰ Based on this information, the Staff was able to characterize the environment potentially affected by the Ross Project and evaluate how the Project might affect baseline groundwater quality at the project site and environs. Although the Intervenor argue that the Staff should have obtained more information in various areas or utilized different methodologies to assess this information, none of their arguments establishes a violation of controlling law. The Board should therefore dismiss Contention 1.

1. The Intervenor Incorrectly Argue that Post-Licensing, Pre-Operational Background Groundwater Data Must Be Included in the FSEIS

Joint Intervenor argue that the Staff violated NEPA because the FSEIS does not consider post-licensing, pre-operational background groundwater data from monitoring wells at

³⁸ Joint Third Declaration of Dr. Richard Abitz and First Declaration of Dr. Lance Larson on Behalf of the Natural Resources Defense Council & Powder River Basin Council (Mar. 31, 2014) ("Joint Third Declaration").

³⁹ Declaration of Robert E. Moran on Behalf of the Natural Resources Defense Council & Powder River Basin Council Natural Resources (Oct. 27, 2011); Declaration of Dr. Ronald L. Sass on Behalf of the Natural Resources Defense Council & Powder River Basin Council Natural Resources (Oct. 27, 2011); Declaration of Dr. Richard Abitz on Behalf of the Natural Resources Defense Council & Powder River Basin Council Natural Resources (Oct. 27, 2011); Second Declaration of Dr. Richard Abitz on Behalf of the Natural Resources Defense Council & Powder River Basin Council Natural Resources (May 6, 2013).

⁴⁰ Ex. NRC001 at A.1.2.

the Ross Project site. The Intervenor state that NEPA, regulations promulgated by the Council on Environmental Quality (CEQ), and regulations promulgated by the NRC require the Staff “to collect robust baseline water quality information, and establish baseline water quality levels, during the NEPA process and before issuance of an ISR license.”⁴¹ In support of their claim that the Staff failed to comply with these authorities, the Intervenor point to general regulatory requirements for an adequate assessment of environmental impacts, the Part 40, Appendix A criteria that applicants/licensees must meet, and NUREG-1569, the Staff’s Standard Review Plan for *In Situ* leach uranium recovery facility applications.⁴² Joint Intervenor argue that because the “necessary water quality data will be collected *after* the license is issued,” the Staff’s environmental review was inadequate as a matter of law.⁴³ This argument, however, is premised on a fundamental misunderstanding of the applicable requirements.

As the Staff explains in its testimony, there are generally two different types of groundwater quality information that an ISR applicant/licensee must provide to the NRC – (1) “pre-licensing, site-characterization,” or “baseline,” groundwater quality information; and (2) “post-licensing, pre-operational,” or “background,” groundwater quality information.⁴⁴ The first set of information is required to be provided prior to issuance of the license and must be analyzed in the Staff’s FSEIS. The latter is not required at this stage, and has limited relevance for the Staff’s assessment, under NEPA, of conditions at the Ross Project site.

The pre-licensing, site-characterization “baseline” water quality information gathered by an applicant is used to describe existing groundwater conditions at an ISR site. This information must be submitted to the NRC under 10 C.F.R. § 51.45(b), which requires that the applicant

⁴¹ Intervenor’s Summary Disposition Motion at 8, 9.

⁴² *Id.* at 9-11.

⁴³ *Id.* at 8.

⁴⁴ Ex. NRC001 at A.1.3.

submit an Environmental Report that describes the affected environment. This information must also be submitted under Criterion 7 in Appendix A of 10 C.F.R. Part 40, which states that an ISR applicant must conduct preoperational monitoring for at least one year prior to major site construction. The Staff agrees with the Intervenors that, under Part 51, baseline site-characterization groundwater information must be collected and analyzed in the FSEIS prior to issuance of a license. As the Staff details in its testimony, this information is described Section 3.5.3.3 of the FSEIS, and data supporting the Staff's discussion is provided in Appendix C to the FSEIS.⁴⁵

By contrast, post-licensing, preoperational background water quality information is gathered to establish the water quality standards in designated regulatory compliance monitoring wells used to detect lixiviant excursions and to establish standards for aquifer restoration after uranium recovery is complete.⁴⁶ These monitoring wells are used by a licensee to generate background data before operations in a wellfield begin, as required under Criterion 5B(5) in Appendix A.⁴⁷ The post-licensing, pre-operational background information is not used to characterize the ISR environment generally, but rather to establish specific standards for aquifer restoration once activities in the wellfield have ceased.⁴⁸ In short, the post-licensing, pre-operational background information a licensee must provide under Criterion 5B(5) is *monitoring data*, not "baseline" groundwater information.

Furthermore, there is no statutory or regulatory requirement that the applicant submit this type of data prior to issuance of its license, or that the FSEIS consider this type of monitoring data. In fact, the Commission has stated that

⁴⁵ Ex. NRC001 at A.1.4.

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ Ex. NRC012 at 5-6.

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,' 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[.]⁴⁹

Rather, the FSEIS is sufficient if it describes the process by which the monitoring data will be obtained. With this information the Staff can explain the processes of ISR construction, operation, and groundwater restoration (in FSEIS Section 2), and describes how this data will be used to detect excursions and assess aquifer restoration, in order to analyze the environmental impacts of the Ross Project. In its FSEIS for the Ross Project, the Staff describes this process as well as the condition in Strata's license that requires the establishment of a monitoring well network and collection of this groundwater monitoring data.⁵⁰

Although the NRC does not require an applicant to submit post-licensing, pre-operational background data with its license application, it does not follow that the NRC lacks sufficient information to consider an ISR project's impacts under NEPA. Pursuant to 10 C.F.R. Part 51, Subpart A, Appendix A, the Staff's FSEIS must describe the environment to be affected by the proposed action, using data and analyses commensurate with the importance of the impact. NUREG-1748, Section 5.3.4, describes the type of information that should be included in an EIS in order to describe the affected environment for water resources. Under NUREG-1748, site-specific and regional data on the characteristics of surface and ground water quality should be provided in "sufficient detail to provide the necessary data for other reviews dealing with water resources."⁵¹

⁴⁹ *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-01, 63 NRC 1, 5-6 (2006) (footnotes omitted).

⁵⁰ Ex. NRC001 at A.1.4.

⁵¹ Ex. NRC001 at A.1.5.

The site-characterization information an applicant must submit under 10 C.F.R. § 51.45(b) and Criterion 7 of 10 C.F.R. Part 40, Appendix A, combined with any responses to requests for additional information on the subject of groundwater quality, allow the Staff to evaluate the quality of groundwater that may be affected by the proposed ISR activities and determine how those activities might reasonably affect water quality.⁵² Strata submitted information on its Criterion 7 preoperational monitoring program as part of its application for a license.⁵³ In response to requests for additional information, Strata provided further groundwater information for the Staff's safety and environmental reviews.⁵⁴ The FSEIS, in particular Section 3.5.3.3, uses the information submitted by Strata in satisfaction of 10 C.F.R. § 51.45(b) and Criterion 7 to describe the affected environment for groundwater resources at the Ross Project site and to inform the FSEIS's review of reasonably foreseeable environmental impacts of the proposed action.

Therefore, the Intervenor's premise that necessary groundwater quality data will not be collected until *after* the license is issued, and commensurately was left unconsidered in the Staff's environmental review of the project, is incorrect. As the Staff explains in its testimony, when preparing the FSEIS, the Staff had all of the groundwater information necessary for it to adequately characterize the affected environment and assess the reasonably foreseeable impacts of the proposed action.⁵⁵ The Staff did not need to collect data of the type required by Criterion 5B(5) in order to conduct a qualitative assessment of the baseline groundwater quality

⁵² Ex. NRC001 at A.1.6; 10 C.F.R. § 51.45(b).

⁵³ Ex. NRC001 at A.1.6.

⁵⁴ See Strata RAI Question and Answer Responses – Technical Report (Apr. 11, 2012) (ADAMS Accession No. ML121020343); Strata RAI Question and Answer Responses – Environmental Report (Mar. 30, 2012) (ADAMS Accession No. ML121030404).

⁵⁵ Ex. NRC001 at A.1.5.

at the Ross Project site.⁵⁶ Nor does it appear that the Joint Intervenor argue that the Criterion 5B(5) information, in isolation, was required to be assessed prior to issuance of the license. Rather, the Intervenor consistently treat both distinct types of groundwater data as a single set of “baseline” information.⁵⁷ For example, in their motion for summary disposition of Contention 1, the Intervenor argue, “To the contrary, as set out in *Criteria 5 and 7*, [the Standard Review Plan], and Joint Intervenor’s declarations, what is necessary is simply a scientifically rigorous data collection effort, and an appropriate methodology to use that data to disclose and consider baseline water quality levels.”⁵⁸ As the Staff explained in response to the Intervenor’s motion, however, their reference to portions of NUREG-1569 fails to recognize the separate review standards for different types of groundwater programs collected for different purposes.⁵⁹

Because the Intervenor conflate these two types of data, the Intervenor argued in their motion for summary disposition of Contention 1 that, pursuant to *Criteria 5 and 7*, it is not necessary to establish the entire monitoring well network to collect this information.⁶⁰ While this is generally true of the comprehensive baseline groundwater information required pursuant to Criterion 7, this assertion does not account for the deficiencies in the Criterion 5B(5) monitoring data that would result from the establishment of background concentrations gathered by way of the Intervenor’s recommended data collection approach. If adopted, the Intervenor’s recommended approach would be less comprehensive than the approach imposed by the NRC in Strata’s License Condition No. 11.3, which requires the establishment of background concentrations from the monitoring well network that will be used for excursion and restoration

⁵⁶ *Hydro Resources*, CLI-99-22, 50 NRC at 17.

⁵⁷ See Motion at 16 (emphasis added);

⁵⁸ See Intervenor’s Summary Disposition Motion at 16 (emphasis added);

⁵⁹ See Saxton Affidavit at ¶¶ 7-9.

⁶⁰ Intervenor’s Summary Disposition Motion at 16; see also Joint Third Decl. of Dr. Richard Abitz and First Decl. of Dr. Lance Larson at 15 n.4.

monitoring.⁶¹ Furthermore, divorcing the collection of Criterion 5B(5) background concentration information from the area and timeframe closest to the commencement of operations could render the data collected less useful for its intended purpose, which is to establish the water quality standards at designated regulatory compliance monitoring wells used to detect lixiviant excursions during operations and to establish standards for aquifer restoration after uranium recovery is complete.⁶² The Intervenor has not demonstrated that NEPA mandates such a prejudicial change to the groundwater monitoring program mandated in Strata's license.

Second, as the Board recognized when it denied the Intervenor's motion for summary disposition of Contention 1, the Intervenor concedes that "the NEPA process does not mean [Strata] was required to establish the entire groundwater monitoring network that will be used during operations as part of the NEPA process."⁶³ Rather, as the Board acknowledged, the Intervenor asserts that "what is necessary is simply a scientifically rigorous data collection effort, and an appropriate methodology to use that data to disclose and consider baseline water quality levels."⁶⁴ As explained in the Staff's testimony, comprehensive baseline groundwater quality data was described and carefully considered by the Staff in its FSEIS.⁶⁵ Therefore, the Intervenor has not shown that the FSEIS falls short of the requirements of NEPA and 10 C.F.R. Part 51 by failing to define the background concentrations required to be established pursuant to Criterion 5B(5).

⁶¹ See Saxton Affidavit at ¶ 9.

⁶² Ex. SEI015 at License Condition 11.3.

⁶³ Denial of MSD1 (quoting Intervenor's Summary Disposition Motion at 16).

⁶⁴ *Id.*

⁶⁵ Ex. NRC001 at A.1.5, A.1.6.

2. The Intervenor Fail to Show that the FSEIS is Inconsistent with CERCLA or RCRA

The Intervenor, through Drs. Abitz and Larson, appear to advance an argument that the Staff's analysis in the FSEIS is inconsistent with the Resource Conservation and Recovery Act (RCRA), its implementing regulations, and Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).⁶⁶ Specifically, the Joint Intervenor's declarants state that by allowing Strata to establish the post-licensing, pre-operational background concentrations under Criterion 5B(5) after the issuance of its license, the Staff "is in conflict with regulations for establishing baseline at RCRA and CERCLA sites hydraulically up gradient of the disturbed area."⁶⁷ They again reference that provision and quote from Section 120(a)(2) of CERCLA to support their claim that "the NRC has no basis to suggest that post-licensing, pre-operational baseline in a disturbed area meets the intent of regulations directed at establishing proper baseline."⁶⁸

The Intervenor do not explain how the FSEIS is inconsistent with CERCLA, RCRA, or 40 C.F.R. Part 264. Section 120(a)(2) of CERCLA simply states that "facilities which are owned or operated by a department, agency, or instrumentality of the United States" are subject to the guidelines, rules, regulations, and criteria applicable to preliminary assessments carried out under CERCLA for facilities at which hazardous substances are located. This Section prohibits federal agencies from "adopt[ing] or utiliz[ing] any such guidelines, rules, regulations, or criteria which are inconsistent with the guidelines, rules, regulations, and criteria established" under CERCLA. The Intervenor have not shown how this provision applies to the Staff's licensing of

⁶⁶ Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (codified as amended in scattered sections of 42 U.S.C.); Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ ; 42 U.S.C. §§ 9601-28, 9651-75, 26 U.S.C. §§ 4611-12, 4661-62.

⁶⁷ Joint Third Decl. at ¶ 11 (citing 40 C.F.R. § 264.97).

⁶⁸ *Id.* at ¶ 12.

a privately owned and operated uranium recovery facility or to the NRC's regulations that are relevant to the Staff's review of Strata's application. Nor have they explained how this provision relates to the Ross Project.

In addition, the Intervenor's have not shown that the FSEIS conflicts with 40 C.F.R. § 264.97. The FSEIS describes the process for gathering post-licensing, pre-operational background groundwater data that Strata will be required to follow to comply with the conditions of its license.⁶⁹ The Intervenor's claim that the NRC "has no basis to suggest that post-licensing, pre-operational baseline in a disturbed area meets the intent of regulations directed at establishing proper baseline" is couched as a general challenge to the Commission's rules for establishing the post-licensing, pre-operational background values in Part 40, Appendix A, rather than as a specific challenge to the Staff's evaluation of the Ross Project in its FSEIS. The Staff is not in a position, through its FSEIS, to overturn existing NRC regulations concerning the methodology for establishing Criterion 5B(5) background values.

Finally, although it is not apparent from the Intervenor's filings that 40 C.F.R. § 264.97 applies to the NRC's environmental review of Strata's ISR project, it is clear that even if applicable, 40 C.F.R. § 264.97 does not prohibit the gathering of background information from within the "disturbed" area of ISR operations, as suggested by the Intervenor's declarants. 40 C.F.R. § 264.97(a)(1)(i) allows a determination of background groundwater quality to include the sampling of wells that are not hydraulically upgradient of the waste management area where sampling at non-upgradient wells will provide an indication of background groundwater quality that is representative or more representative than that provided by up-gradient wells. As the Staff explains in its testimony, due to the geochemical characteristics of the uranium ore body in which an ISR project is situated, upgradient water quality is not necessarily representative of the

⁶⁹ Ex. NRC001 at A.1.4.

background water quality in the ISR production zone.⁷⁰ Therefore, the gathering of background groundwater quality information from the production zone would be permitted under 40 C.F.R. § 264.97, and as such, the Intervenor's have not established that the Commission's regulations, nor the Staff's FSEIS, are in conflict with RCRA or its implementing regulations.

3. The Intervenor's Fail to Show that the FSEIS Contains an Inadequate Description of Baseline Groundwater Quality at the Ross Project Site

Joint Intervenor's' remaining arguments challenge specific aspects of the FSEIS's analysis of the baseline groundwater quality in the Ross Project area. For the reasons described below, none of their various arguments establishes a violation of NEPA.

a. Empirical Characterization of Baseline Groundwater Quality

Joint Intervenor's allege that the FSEIS fails to present any empirical characterization of the pre-mining baseline water quality values that will be used to assess the impacts of the Ross Project on the exempted aquifer, to detect horizontal and vertical migration of lixiviant outside the exempted aquifer, and to establish binding and achievable water quality values for aquifer restoration. In a related claim, they state that the FSEIS lacks "a discussion of the proper scientific and statistical methods that must be executed to establish valid baseline values."

The Intervenor's do not show that the Staff's description of baseline groundwater quality in the FSEIS violates NEPA. As the Staff explains, the FSEIS's assessment of the potential impacts to groundwater quality due to operation of the Ross Project is not a *quantitative* analysis involving a comparison of water quality after restoration to the pre-licensing, site-characterization typical water supply well were to be or the post-licensing, pre-operational data. Rather, it is a *qualitative* assessment of the licensee's likelihood of achieving the post-licensing, pre-operational groundwater protection standards.⁷¹ This is consistent with the requirements in 10 C.F.R. Part 51 for the preparation of an EIS, which requires a description of the affected

⁷⁰ Ex. NRC001 at A.1.7.

⁷¹ Ex. NRC001 at A.1.8.

environment using data and analyses commensurate with the importance of the impact. This is also consistent with NUREG-1748, which directs the Staff to describe the affected environment in “sufficient detail to provide the necessary data for other reviews dealing with water resources.”⁷² The limited statistical data presented in the FSEIS is sufficient for the Staff to conduct the qualitative and descriptive evaluation required for the FSEIS’s characterization of groundwater at the site and evaluation of the project’s potential impacts.⁷³

As the Staff explains in its testimony, the baseline groundwater quality data presented in FSEIS Section 3.5.3.3 was developed by Strata in accordance with NRC and Wyoming State guidance, and these data are sufficient to support the Staff’s assessment of the Project’s reasonably foreseeable impacts to groundwater quality at the site.⁷⁴ Further empirical analysis of the groundwater data would be superfluous to the Staff’s qualitative assessment of the data provided.⁷⁵ Moreover, it would not affect the FSEIS’s conclusions regarding the potential impacts of the project on groundwater quality, because that conclusion is predicated on the restoration of groundwater to the post-licensing, pre-operational baseline levels or alternate levels determined by the Commission to be protective of human health and the environment.⁷⁶

b. Accuracy of Baseline Groundwater Quality Values

The Intervenor claim that the FSEIS’s conclusions regarding impacts on groundwater resources lack support because the pre-licensing, site characterization groundwater quality data reported in the FSEIS are biased to high values. The Intervenor claim that the data is biased due to improper installation and development of Strata’s monitoring wells and previous ISR

⁷² 10 C.F.R. Part 51 Appendix A to Subpart A(6); Ex. NRC013 at 5-8.

⁷³ Ex. NRC001 at A.1.8(3).

⁷⁴ Ex. NRC001 at A.1.4 and A.1.6.

⁷⁵ Ex. NRC001 at A.1.5.

⁷⁶ *Id.*

operations conducted by Nubeth, an organization that had previously explored for uranium and conducted ISR research and development within the area of the Ross Project in the late 1970s. They express a related concern that the post-licensing, pre-operational background information that Strata must develop will be biased to high values due to well installation and development activities in the area of the Ross Project. Drs. Abitz and Larson focus their discussion on the use of oxidizing fluids during drilling operations and the impact of air-lifting during well development, which they assert can cause uranium ore to be oxidized during the drilling, casing, and development of monitoring wells.

The Staff explains in its testimony that Drs. Abitz and Larson's concerns regarding well construction and development techniques could be true to the extent that the impacts are short-term and localized to the vicinity of the well. However, they note that the objective for the site characterization wells was to obtain water quality of the aquifer as it would be used as a resource – that is, if a typical water supply well were to be installed and developed in the aquifer.⁷⁷ Therefore, even if these impacts occurred, the information developed from these wells provided a sufficiently accurate characterization of the groundwater to enable the Staff to describe the existing environment and to support the Staff's conclusions regarding the potential impacts to groundwater from the Ross Project.⁷⁸

In its testimony, the Staff also addresses a subsidiary argument that baseline values would be (or were) biased to high levels as a result of selectively obtaining the samples from the ore-rich interval of the site. As the Staff explains, this was not the case for the site-characterization well samples, as those wells were screened over the entire ore-zone aquifer.⁷⁹ In any event, for the post-licensing, pre-operational wells, the Staff notes that, even if

⁷⁷ Ex. NRC001 at A.1.8(1).

⁷⁸ *Id.*

⁷⁹ *Id.*

groundwater samples were biased to high concentrations due to samples from wells screened only in the ore interval, the purpose of the wells – to establish control samples in order to measure excursions and restoration effectiveness – would be undermined by the type of screening called for by Drs. Abitz and Larson, and could lead to the additional migration of fluids beyond the ore body.⁸⁰

Finally, the Staff addresses the Intervenor's claim that the FSEIS fails to account for the lack of a "pre-industrial baseline" at the site, referring specifically to the 1970s-era Nubeth research and development project in the Ross Project area. As the Staff explains in its testimony, the baseline data in the FSEIS provide a general description of the *existing* environmental conditions in the Ross Project area.⁸¹ If the groundwater quality data in Tables 3.6 of the FSEIS are biased to high values as a result of impacts from the former Nubeth operation, these "high values" are what are representative of the existing groundwater conditions at the site.⁸² The same consideration applies to the relevance of this information to the establishment of post-licensing, pre-operational background values for the Ross Project. The purpose of defining these values is not to evaluate the impacts of past uranium mining activities on water quality. Post-licensing, pre-operational background values are defined in order to establish standards for a regulatory groundwater monitoring program in order to detect a release, and to establish standards for aquifer restoration after uranium recovery operations are complete. The Intervenor fails to show that the Staff needed to take into account the allegedly missing information on pre-Nubeth "baseline" constituent levels when defining the environment that may be affected by the Ross Project.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Ex. NRC001 at A.1.8(2).

This does not mean, however, that the Staff failed to consider the impacts of past mining activities in the Ross Project area. In Chapter 5 of the FSEIS, the Staff discusses cumulative effects,⁸³ including effects potentially related to past mining activities from the Nubeth project.⁸⁴ Cumulative effects are not, however, within the scope of this contention. To the extent that the Intervenor object to the Staff's analysis of the cumulative impacts from the Nubeth project, they were required to raise this issue in their contentions on the DSEIS or the FSEIS.⁸⁵

c. Characterization of Uranium and Ra-226 Concentrations

Finally, Joint Intervenor claim that the FSEIS fails to provide sufficient information to conclude that the regional water quality in the ore zone exceeds the EPA's drinking water maximum concentration limits (MCLs) for uranium and radium-226. However, NEPA requires the Staff to describe and analyze groundwater information so that the NRC can evaluate the reasonably foreseeable environmental impacts of the Ross Project, not as a research exercise.⁸⁶ Although Drs. Abitz and Larson call for additional information and alternative analytical methodologies, they fail to explain why this information is necessary from a NEPA standpoint.

As the Staff explains in its testimony, the information gathered and assessed by the Staff in the FSEIS was sufficient to find that some of the measurements of uranium and radium-226

⁸³ "Cumulative effect" is the impact on the environment which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. 40 C.F.R. § 1508.7.

⁸⁴ Ex. NRC001 at A.1.8(2).

⁸⁵ Note that the Board admitted Contention 4/5A against the ER as a challenge to Strata's cumulative impacts analysis of groundwater quality. *Strata Energy, Inc.*, LBP-12-3, 75 NRC at 199-204. The Board, however, refused to migrate Contention 4/5A to the DSEIS and the FSEIS, and determined that the motion to amend 4/5A was not eligible to be admitted as an amended contention because it did not establish that new information had a new cumulative impacts contention filed against the FSEIS was inadmissible as it did not meet the requirements for a late-field contention. *Strata Energy, Inc.*, LBP-13-10, 78 NRC at ___ (slip op. at 19-22); May 23, 2014 Order at 12-14.

⁸⁶ *Pilgrim*, CLI-10-22, 72 NRC at 208.

in the ore zone exceeded the EPA's MCLs for these constituents. The site characterization information for groundwater used for the FSEIS was developed by Strata consistent with NRC guidelines as provided in NUREG-1569 and Regulatory Guide 4.14. In addition, the Staff's finding in the FSEIS regarding the levels of uranium and radium-226 in the ore zone aquifer are consistent with the WDEQ's and EPA's conclusions that the ore zone aquifer is an exempt underground source of drinking water.

In conclusion, the Staff obtained sufficient information to describe the affected environment and evaluate how the Ross Project might affect groundwater quality. The Staff complied with NEPA, and the Board should therefore dismiss Contention 1.

B. Environmental Contention 2

In Contention 2, as limited by the Board,⁸⁷ Joint Intervenors argue that the FSEIS fails to analyze the environmental impacts that will occur if Strata cannot restore groundwater to primary or secondary limits. They argue that the FSEIS does not provide and evaluate information regarding the reasonable range of hazardous constituent concentration values that are likely to be applicable if Strata must implement an alternate concentration limit (ACL) for the Ross Project, in accordance with 10 C.F.R. Part 40, Appendix A, Criterion 5B(5)(c). The Intervenors rely on the Second Abitz Declaration and Joint Third Declaration to support their arguments.

Section 4.5 of the FSEIS describes the potential environmental impacts to groundwater quality due to excursions and analyzes the impacts following the aquifer-restoration phase of the Ross Project.⁸⁸ As the Staff explains in its testimony, because the NRC will not have the data to evaluate an ACL application until the late stages of aquifer restoration, it was not possible to provide a meaningful estimation of a potential future ACL at the Ross Project in the

⁸⁷ *Strata Energy, Inc.*, LBP-13-10, 75 NRC at ___ (slip op. at 13-16); May 23, 2014 Order at 7-10.

⁸⁸ Ex. NRC001 at A.2.1.

FSEIS.⁸⁹ However, in Section 4.5.1.3 of the FSEIS, the Staff conducts a bounding analysis of potential groundwater quality impacts at restoration based on the historical experience of aquifer restoration activities at other NRC-regulated ISR sites.⁹⁰ This bounding analysis consists of an examination of three facilities⁹¹ that received the Commission's approval for aquifer restoration activities and the groundwater quality parameters in those wellfields for which the NRC approved restoration.⁹² The analysis of these sites in the FSEIS provides an example of historical hazardous constituent concentration values that the NRC found to be protective of human health and the environment.⁹³ For each site, the Staff explains that the facility was able to restore the majority of groundwater constituents to either post-licensing, pre-operational baseline values or to an approved alternate value consisting of levels equivalent to either existing Wyoming Class I Domestic Use standards or the Environmental Protection Agency's (EPA's) drinking water MCLs.⁹⁴ In addition, using the information described in the FSEIS, the Staff finds that for the three sites, the uranium concentrations at the time of restoration were 1.73 mg/L, or 18 times background levels, at Crow Butte Wellfield 1; 1.83 mg/L, or 4 times background, at Irigaray Mine Units 1-9, and 3.53 mg/L, or 71 times background levels at Smith Ranch A-Wellfield.⁹⁵

The Staff also responds in its testimony to each of Drs. Abitz and Larson's claims of deficiencies in the bounding analysis performed by the Staff. First, the Staff clarifies that the

⁸⁹ Ex. NRC001 at A.2.2.

⁹⁰ Ex. NRC001 at A.2.4.

⁹¹ The FSEIS notes that a fourth facility, Cogema Mining Company's Christensen Ranch Mine Units 2-6, has requested approval of restoration from the NRC. Ex. NRC001 at A.2.7.

⁹² Ex. NRC001 at A.2.6.

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ Ex. NRC001 at A.2.6.

three facilities used to provide this analysis are the best sources of information available to the Staff on the potential levels of hazardous constituent concentrations that may be approved by the Commission in the future as ACLs.⁹⁶ This is because the Crow Butte Wellfield 1, Smith Ranch-Highland A Wellfield, and Irigaray Mine Units 1-9 projects discussed in the FSEIS are the only commercial wellfields for which the Commission has approved aquifer restoration since the 1980s.⁹⁷ Second, the Staff addresses the specific deficiencies alleged by Drs. Abitz and Larson in the Crow Butte, Smith Ranch, and Irigaray restoration approvals. The Staff explains that even if deficiencies existed in the data or analyses used by the Commission to approve restoration at these sites, they would not likely affect the numerical range of the bounding analysis developed from the Staff's analysis of these projects.⁹⁸

In short, while the Intervenor, through Drs. Abitz and Larson, claim that the Staff should have considered more information in their discussion of historical Commission-approved aquifer restorations, and find fault with the examples of aquifer restoration approvals discussed in the FSEIS, the Intervenor has not established that the FSEIS is, as a result, legally inadequate. As the Commission has stated, "NEPA does not call for certainty or precision, but an *estimate* of anticipated (not unduly speculative) impacts."⁹⁹ "While there will always be more data that could be gathered, agencies must have some discretion to draw the line and move forward with decisionmaking."¹⁰⁰ In this case, the Staff used the best information available on the concentration levels of hazardous constituents that the Commission has historically found to be protective of human health and the environment to provide a bounding analysis that, if these

⁹⁶ Ex. NRC001 at A.2.7.

⁹⁷ NRC001 at A.2.7.

⁹⁸ NRC001 at A.2.11.

⁹⁹ *Louisiana Energy Services*, CLI-05-20, 62 NRC at 536 (emphasis in original).

¹⁰⁰ *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010).

past approvals are indicative of how the Commission would act in the future, may provide some evidence of what a future ACL for the Ross Project could look like.¹⁰¹ Even if the Commission's prior decisions to approve aquifer restoration activities at these three sites were based upon flawed or incomplete information, the fact remains that these sites provide the only relevant examples of how the Commission might act with respect to the Ross Project in the future. To attempt to satisfy the Intervenor's demands for even more analysis, much of which amount to challenges of the Commission's prior technical assessments supporting the agency's approval of restoration for these sites, would go far beyond what NEPA requires.

In addition, the Intervenor's do not show that any change in the Staff's analysis based upon the allegations in their contention would alter the Staff's conclusion in the FSEIS that the potential groundwater impacts from the Ross Project would be SMALL, notwithstanding the potential future need for an ACL at the site. First, as explained above and in the Staff's testimony, the FSEIS concludes that most of those constituents were returned to either post-licensing, pre-operational concentrations or Class I Domestic Use standards.¹⁰² For the few constituents that exceeded these standards, the Staff found that the concentrations did not change the class of use and did not represent a potential impact to the groundwater outside the aquifer-exemption boundary.¹⁰³ Therefore, the Staff concluded that this data did not change the conclusion in the DSEIS that the potential groundwater impacts from the Ross Project would be SMALL.¹⁰⁴

Second, the Staff's conclusion in the FSEIS regarding potential impacts to groundwater from the Ross Project assumes that a Commission-approved ACL *of any amount* would have

¹⁰¹ See NRC001 at A.2.6.

¹⁰² *Id.*

¹⁰³ Ex. SEI009A at 4-48.

¹⁰⁴ Ex. NRC001 at A.2.8.

only a SMALL impact on groundwater at the site. The Staff explains in the FSEIS that a licensee would be required by its WDEQ Permit to Mine and by its source and byproduct materials license to conduct aquifer-restoration activities to restore the ore zone aquifer to post-licensing, pre-operational conditions, if possible.¹⁰⁵ If the aquifer could not be returned to that condition, the NRC would require that the aquifer meet EPA MCLs as provided in 10 CFR Part 40, Appendix A, or ACLs as approved by the NRC. The FSEIS concludes that, for these reasons, the potential impacts to water quality of the exempted aquifer as a result of ISR operations is expected to be SMALL and temporary.¹⁰⁶ In other words, for the purposes of determining the potential effects of the Ross Project, the Staff considered a scenario where Strata would be unable to restore groundwater to primary or secondary limits, and concluded that such impacts would nevertheless be SMALL.¹⁰⁷ Therefore, because the FSEIS accounts for this possibility and in addition describes, based upon historical experience, what the range of hazardous constituent values for a Ross Project ACL may look like, the FSEIS provides all of the information required under NEPA.

Finally, the Staff respectfully notes that the remaining claims made by Joint Intervenors and their experts are not material to, or within the scope of, the issues presented by Contention 2 as admitted and limited by the Board. As discussed previously, the Board has expressly and repeatedly limited the scope of Contention 2 to the narrow question of whether the Staff has described and analyzed a reasonable range of hazards constituent concentration values that are likely to be applicable should Strata require an ACL.¹⁰⁸ Therefore, any arguments concerning, *inter alia*, Strata's proposed restoration process, restoration timeframe, aquifer

¹⁰⁵ Ex. SEI009A at 4-37.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *Strata Energy, Inc.*, LBP-13-10, 75 NRC at ___ (slip op. at 13-16); May 23, 2014 Order at 7-10.

restoration criteria, aquifer restoration techniques, the likelihood that Strata will require an ACL, and the likelihood that Strata will fail to comply with any ACL approved by the Commission, are not within the scope of the contention as admitted for hearing and commensurately are not addressed in the Staff's testimony on Contention 2.

C. Environmental Contention 3

The Intervenor's argue that the FSEIS does not sufficiently analyze fluid migration associated with unplugged exploratory drillholes. They argue that the FSEIS does not adequately evaluate Strata's proposed mitigation of possible borehole-related migration, including its commitment to attempt to locate and abandon all historic wells within the well-ring perimeter, and Strata's post-operation monitoring program. The Intervenor's also argue that the Staff had insufficient information to make an informed fluid migration impact assessment due to the insufficiency of Strata's pumps tests at the six monitor-well clusters. The Intervenor's rely on declarations of Dr. Robert E. Moran, Dr. Ronald L. Sass, the first and second declarations of Dr. Abitz, and the joint declaration of Dr. Abitz and Dr. Lance Larson.

Contrary to Intervenor's' claims, the Staff adequately evaluated Strata's proposed mitigation measures and provided this evaluation in the FSEIS. The Staff thoroughly explained its evaluation within the FSEIS, including its evaluation of Strata's post-operation monitoring program and its commitment to attempt to locate and abandon all historic drillholes within the well-ring perimeter. The Staff also had sufficient information to conduct an informed fluid migration impact assessment based on the information that Strata provided in its license application in accordance with NRC guidance documents.

In its testimony, the Staff addresses each of the Intervenor's' specific claims of deficiencies in the FSEIS. The Staff provides a summary of its position below, with references to portions of its testimony in which the Staff's experts address these issues at length.

1. The FSEIS Sufficiently Analyzed Fluid Migration Associated with
Unplugged Drillholes

In developing the FSEIS, the Staff included a thorough discussion of fluid migration.¹⁰⁹ Section 3.5.3.2, Local Ground Water Resource, provided a summary of on-site pumping tests and groundwater numeric model analyses. Additionally, Section 4.5.1.2, Ross Project Operation, referenced the GEIS discussion on vertical excursions, and also another summary of pumping tests and groundwater numeric model analyses. The Staff concluded that the potential for vertical excursions was low and that properties of the confining units at the Ross site were bounded by those evaluated in the GEIS, which estimated a conservative velocity of groundwater through the confining unit of 1.4 inches per year.

The Intervenor expressed concern about the age of information on which the Staff relied. However, in developing the FSEIS the Staff took the age of the information under consideration and determined that the current water quality in the ore zone (OZ) aquifer and the shallow monitoring (SM) aquifer are the same as each were at the time the data was initially collected.¹¹⁰ Since there was no change in water quality between the initial and current data collection, the Staff determined that the drillholes made at the time of initial data collection did not alter the recent water quality data.

As part of its plan to mitigate the potential effects of vertical excursions due to historic drillholes, Strata committed to attempt to locate and abandon all historic drillholes within the well-ring perimeter of the well fields. This commitment was incorporated into Strata's license as License Condition 10.12. The Staff evaluated this commitment in FSEIS Section 4.5.1.2, Ross Project Operation, and Section 3.5.3.2, Local Ground Water Resource.¹¹¹ The Staff evaluated the methods proposed by Strata for abandoning historic drillholes and tested those methods on

¹⁰⁹ Ex. NRC001 at A.3.1.1.

¹¹⁰ Ex. NRC001 at A.3.1.4.

¹¹¹ Ex. NRC001 at A.3.1.1.

Well12-18OZ. In that test case, the Staff confirmed that after plugging all historic drillholes, there was no indication of a cross-connection with either the overlying or the underlying aquifers.

In Section 3.5.3.2, the Staff explained that License Condition 10.12 includes only drillholes within the perimeter ring because lixiviant is limited to the wellfield.¹¹² Therefore, the highest potential for migration is through a borehole that is located within the wellfields. Strata's license condition to attempt to locate and abandon all historic drillholes within the well-ring perimeter provided the Staff with more confidence that potential pathways would be plugged, thereby minimizing the chances of vertical excursions.¹¹³ Strata's efforts will be documented and submitted to the Staff for review and verification prior to operation, and the Staff will also perform on-site compliance inspections to ensure that Strata has conformed with this license condition.¹¹⁴ If Strata does not meet this license condition, the Staff has the authority to pursue enforcement against Strata.

In developing License Condition 10.12, the Staff recognized the difficulty in locating all drillholes.¹¹⁵ Due to this difficulty, and taking into account the additional mitigation measures proposed by Strata, the Staff allowed Strata to attempt to locate and abandon the drillholes, rather than be required to locate and abandon all holes. Strata must document its efforts and include that documentation in the wellfield data package. License Condition 10.13 requires that the wellfield data package be submitted to the Staff for review and verification. If the Staff determines that Strata failed to make a good faith effort to abandon all drillholes, it would not

¹¹² Ex. NRC001 at A.3.1.2.

¹¹³ Ex. NRC001 at A.3.1.6.

¹¹⁴ Ex. NRC001 at A.3.1.7.

¹¹⁵ Ex. NRC001 at A.3.1.8.

concur on the approval of the wellfield package, which would result in a violation if Strata were to begin operations.¹¹⁶

The Intervenor fault the Staff for assuming that Strata will be successful in locating and abandoning the drillholes. In response to this concern, the Staff notes that Strata has proposed a “Three-pronged defense,” to address potential migration due to historic drillholes.¹¹⁷ License Condition 10.12, which requires Strata to attempt to locate and abandon all historic drillholes within the well-ring perimeter, is the first prong. The use of this prong is supported by Strata’s pumping test on Well 12-18OZ, where all historic drillholes were located and abandoned. The second prong involves detection of vertical excursions. The Staff has imposed License Conditions 11.3 and 11.4, which establish criteria for how excursions will be determined. The final prong is implementation of immediate and long-term corrective actions, including cessation of lixiviant injection into production areas, numerical ground water modeling to better understand the potential extent of excursions, and extraction and treatment of contaminated ground water. These steps are required by License Condition 11.5. The Staff determined that, even though Strata has demonstrated its ability to locate and abandon drillholes, sufficient safeguards are in place to protect against excursions should Strata be unable to locate and abandon all historic drillholes within the well-ring perimeter.

The Intervenor fault the Staff’s conclusions because only a small number of drillholes have already been filled. However, the Staff notes that Strata must attempt to locate and abandon all drillholes within the well-ring perimeter *prior* to operations.¹¹⁸ The FSEIS analyzes potential excursions and conditions during operation, not the present conditions. Additionally, unfilled drillholes do not automatically result in excursions due to drilling mud that may remain in

¹¹⁶ Ex. NRC001 at A.3.1.9.

¹¹⁷ Ex. NRC001 at A.3.1.5.

¹¹⁸ Ex. NRC001 at A.3.1.11.

the drillhole and prevent vertical excursions. Strata also performed simulations to determine whether drillholes further from the wellfield will result in vertical excursions. Based on Strata's simulations, the Staff concluded that those unplugged drillholes farther away from the wellfield are less likely to result in vertical excursions. For those reasons, the Intervenor's concerns did not alter the Staff's conclusions.

The Intervenor also call into question the actual number of drillholes, claiming that there are over 5000 holes that should have been evaluated in the FSEIS. The Staff has clarified that Strata drilled 540 exploratory holes, and Nubeth drilled 1682 holes.¹¹⁹ In response to a public comment, the Staff clarified that the number of drillholes for future Lance District development are not available and, in any event, outside the scope of the license application and FSEIS. The Intervenor obtained their information regarding the total number of drillholes for the entire Lance District project from the Peninsula Energy website, but the Staff has consistently reported the number of drillholes at the Ross project, which is the scope of the current application, not the entire Lance District project.¹²⁰

Contrary to Intervenor's claims, the Staff analyzed the potential foreseeable environmental impacts if Strata is unable to locate and fill all drillholes.¹²¹ This discussion is included in FSEIS Section 4.5.1.2, Ross Project Operation, Ore Zone and Surrounding Aquifers, page 4-42. The Staff determined that an unplugged borehole would not automatically lead to a vertical excursion, but if it did then it would result in an increase of the concentration of one or more of the excursion indicator parameters associated with lixiviant relative to baseline conditions. License condition 11.5 requires that if these circumstances are confirmed, well

¹¹⁹ Ex. NRC001 at A.3.1.12.

¹²⁰ Ex. NRC001 at A.3.1.13.

¹²¹ Ex. NRC001 at A.3.1.14.

operations will cease until Strata can demonstrate to the satisfaction of the NRC that the excursion is not attributed to leakage through any abandoned well.

Finally, contrary to Intervenor's claims, the Staff has provided a timetable for tentative construction and operation of the Ross Project Facility. Since Strata is required by license condition to attempt to locate and abandon all historic drillholes within the perimeter well ring of the Wellfield prior to operation, the tentative timetable for locating and plugging those drillholes corresponds with the timetable for tentative construction and operation.¹²² Strata is required by License Condition 10.12 to provide confirmation of those efforts in the wellfield data package, and License Condition 10.13 requires Strata to submit the wellfield data package to the NRC for review and verification as a necessary prerequisite to Strata starting wellfield operation.

2. The Staff had Sufficient Information to Conduct an Informed Fluid Migration Impact Assessment

The Staff's process in conducting its fluid migration impact assessment was sound and led to a well-reasoned and firmly grounded conclusion. The Staff reviewed GEIS Sections 2.4.1.3, Excursions; 2.4.1.4, Excursion Monitoring; and 2.11.4, Excursions, and considered the mechanisms by which fluid migration beyond a wellfield's ore zone could occur.¹²³

Preoperational activities that would reduce or eliminate these mechanisms, and operational and monitoring activities designed to detect an excursion, were also considered. Methods for recovering an excursion were evaluated, and the Staff concurred with Strata's proposed methods. The Staff reviewed the numerical ground water simulations and results provided by Strata of horizontal excursion and recovery due to wellfield imbalance, and determined that Strata's methods and conclusions were consistent with published data on horizontal excursions discussed in GEIS Section 2.11.4, page 2-47.

¹²² Ex. NRC001 at A.3.1.15.

¹²³ Ex. NRC001 at A.3.2.2.

The Staff also reviewed published summary case histories of vertical excursions, and determined that License Condition 11.5, which requires lixiviant injection cease until information is collected and potential modifications are implemented, was consistent with methods used in past cases. The methodology used by the Staff resulted in sufficient information for the Staff's fluid migration impact assessment because it provided a similar level of detail as previous experiences of ore zone fluid migrations.¹²⁴ The information also informed the development of license conditions to minimize the probability of and detection and recovery of excursions.

In addition, the Staff considered Strata pumping tests which they conducted to determine the range of values for aquifer parameters and to establish a site conceptual model for the hydrogeologic setting.¹²⁵ The types of pumping tests used by Strata are specifically listed in the Standard Review Plan for In Situ Leach Uranium Extraction License Applications (NUREG-1569) (SRP), and are used to establish the level of detail necessary at the pre-license stage of the project. The Staff used the Acceptance Criteria for the hydrologic characterization in the SRP in its evaluation, and the Staff determined that the available data met those acceptance criteria.¹²⁶ While the SRP is not binding on the Board, the Commission has stated that Staff guidance is "implicitly endorsed by the Commission and therefore is entitled to corresponding special weight."¹²⁷

Intervenors also claim that Strata will have limited options to correct vertical excursions at the time they occur. However, detection of excursions through the network of monitoring

¹²⁴ Ex. NRC001 at A.3.2.3.

¹²⁵ Ex. NRC001 at A.3.2.4.

¹²⁶ Ex. NRC001 at A.3.2.5. Contrary to Intervenors' claims, the pumping tests conducted by Strata did not produce significant data gaps in the conceptual and numerical hydrologic models.

¹²⁷ *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-05-29, 61 NRC 365, 375 n.26 (2005) (quoting *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), ALAB-900, 28 NRC 275, 290 (1988)). See also *NextEra Energy Seabrook* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC 301, 314 n.78 (2012); *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264 (2001).

wells, followed by Strata's pumping of ground water to "recover" the excursion, would reduce long-term potential impacts to the OZ aquifer.¹²⁸ The Intervenor cite Staub et al. (1986)¹²⁹ to support their claims, but the Staff explains that Staub considered case histories from operations in the 1970s and early 1980s, and since that time conditions have become more stringent, requiring more rigorous mechanical integrity testing of wells and improved monitoring programs. The Staff relied on Section 2.11.4, Excursions, in the GEIS, which summarizes more recent data on excursions.¹³⁰

Intervenor claim that the test data from well 12-18OZ established that communication between the SM aquifer and OZ aquifer horizons is evident. However, the Staff did not see evidence of direct communication between the aquifers through its evaluations of the test well and industrial water supply wells.¹³¹ The Staff clarified that the test was a 72-hour test, and that the presence of SM characteristic ground water mixed into the OZ groundwater was due to the geologically short transit time between the SM and OZ aquifers.

Data from Well 22x-19 also does not support the Intervenor's claim that groundwater from SM and OZ aquifers is mixing because well 22x-19 well is completed in, or passes through, the OZ and DM zones.¹³² Regardless, the Staff evaluated industrial water supply wells and imposed License Condition 10.19 to restrict wellfield operations in areas influenced by continued pumping from industrial water supply wells.¹³³

¹²⁸ Ex. NRC001 at A.3.2.6.

¹²⁹ Ex. NRC020.

¹³⁰ Ex. NRC001 at A.3.2.6.

¹³¹ Ex. NRC001 at A.3.2.7.

¹³² Ex. NRC001 at A.3.2.8.

¹³³ Ex. NRC001 at A.3.2.9.

The Staff also analyzed and modelled subsurface geochemistry and the potential for site contaminant excursions. The FSEIS and GEIS clearly describe how lixiviant will disturb the geochemical conditions of the OZ aquifer in GEIS Section 2.4.1.2 and FSEIS Section 2.1.1.2.¹³⁴ Also, the Staff's approval of chloride, conductivity, and total alkalinity is consistent with analysis of excursions and recommendations for excursion monitoring parameters in NUREG/CR-3967.

The Intervenor also faults the Staff for not monitoring for uranium, but their claim misses the point. Uranium is not monitored as an indicator parameter for excursions because it does not have the characteristics of a leading indicator to identify excursions most quickly. The Staff clarifies that the rate of uranium transport in the aquifer could be slowed by adsorption and precipitation, and therefore uranium is not a leading indicator of an excursion into groundwater outside the production zone.¹³⁵

Drs. Abitz and Larson further argue that Strata's proposed mitigation actions lack a scientific basis and analysis that address all conditions in the aquifers. In response, the Staff clarified that the scientific basis for these conditions is the hydrologic principles of water movement in the aquifer, and outlined each way in which it either evaluated the condition referenced by Drs. Abitz and Larson or determined that the condition was not relevant to the Staff's review.¹³⁶ The Staff explained that the historical record of excursions demonstrates that adjustments in pumping and injection rates are successful in correcting excursions and that the geochemical characteristics asserted by Drs. Abitz and Larson are not relevant except perhaps for specific isolated incidents.

Finally, the Intervenor inappropriately and incorrectly cites the Bison Basin ISR and NUREG/CR-6870, *Consideration of Geochemical Issues in Groundwater Restoration at*

¹³⁴ Ex. NRC001 at A.3.2.10.

¹³⁵ *Id.*

¹³⁶ Ex. NRC001 at A.3.2.11.

Uranium In-Situ Leach Mining Facilities (2007). The Bison Basin ISR is discussed in NUREG/CR-3967, but it used a different method for establishing UCLs than that used by Strata.¹³⁷ However, the data reported from Bison Basin supports Strata's selection of excursion monitoring parameters. Also, contrary to Intervenor's claims that none of the considerations from NUREG/CR-6870 were applied in the FSEIS, the Staff considered NUREG/CR-6870 through Section 2 of the GEIS, and used it to describe how different lixivants interact with subsurface materials.¹³⁸ NUREG/CR-6870 was also cited in FSEIS Section 5.7.2, Water Resources, Ground Water, pages 5-30 and 5-59. It was used in describing the potential cumulative effects on groundwater quality of multiple wellfields in the Lance District.

In conclusion, the Staff sufficiently analyzed fluid migration associated with unplugged exploratory drillholes, including the adequacy of Strata's mitigation plans. The Staff also conducted a thorough fluid migration impacts analysis. The Staff had sufficient information to conduct an informed assessment, and the Board should find in favor of the Staff with regard to Contention 3.

¹³⁷ Ex. NRC001 at A.3.2.12.

¹³⁸ Ex. NRC001 at A.3.2.13.

VI. Conclusion

For the foregoing reasons, the Board should dismiss each of the Joint Intervenors' admitted contentions and affirm that the Staff's environmental review of the Ross Project application complied with applicable law.

Respectfully submitted,

/Signed (electronically) by EM/

Emily Monteith
Richard S. Harper
Counsel for NRC Staff

Dated at Rockville, Maryland
this 25th day of August, 2014.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
STRATA ENERGY, INC.)	Docket No. 40-9091-MLA
)	
(Ross In Situ Recovery Uranium Project))	ASLBP No. 12-915-01-MLA-BD01
)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R § 2.305, I hereby certify that copies of the foregoing "NRC STAFF INITIAL STATEMENT OF POSITION" in the above-captioned proceeding have been served via the Electronic Information Exchange (EIE) this 25th day of August, 2014.

/Signed (electronically) by/

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