

July 3, 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)	)	

AFFIDAVIT OF JOHN L. SAXTON  
CONCERNING JOINT INTERVENORS'  
MOTION FOR SUMMARY DISPOSITION OF CONTENTION 1

I, John L. Saxton, do hereby state as follows:

1. I am employed by the United States Nuclear Regulatory Commission (NRC) as a Hydrogeologist in the Office of Federal and State Materials and Environmental Management Programs, Division of Waste Management and Environmental Programs, Uranium Recovery Licensing Branch. I have been employed by the NRC since 2009. My responsibilities include Project Management and Technical Reviewer for uranium recovery projects. I have met the NRC's License Reviewer Qualifications for Uranium Recovery Projects. I am the Safety Project Manager of the Strata Energy, Inc. (Strata) Ross *In Situ* Uranium Recovery (ISR) Project. I am a principal author of the NRC's Safety Evaluation Report (SER) for and license (SUA-1601) for the Ross ISR Project. I am also a technical reviewer and a subject matter expert in the field of hydrogeology for the Ross ISR Project. As Safety Project Manager, I have participated in the concurrence review of the Draft and Final Environmental Impact Statements for the Ross Project. A statement of my professional qualifications is attached as Attachment 2.
2. I have thoroughly reviewed the geology and hydrogeology sections of Strata's application for a source and byproduct materials license, as amended (Ross Application). I

have also reviewed relevant supporting technical documentation for recently issued source material licenses, the NRC's Generic Environmental Impact Statement for ISR facilities, various generic communications applicable to ISR licenses, as well applicable guidance documents including:

- Standard Review Plan for In Situ Leach Uranium Extraction License Applications (NUREG-1569)
- Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities (NUREG-1910)
- Regulatory Guide 4.14, "Radiological Effluent and Environmental Monitoring at Uranium Mills"

I thus have personal knowledge of the characterization of the groundwater quality at the Ross ISR Project by Strata, and Staff's review of this information in the SER and the SEIS.

3. In preparing this Affidavit, I also reviewed relevant Orders issued by the Atomic Safety and Licensing Board (Board) and the Commission in this proceeding. Additionally, I have reviewed the relevant pleadings of the parties, including the Natural Resources Defense Council's (NRDC's) and Powder River Basin Resource Council's (PRBRC's) (collectively Joint Intervenors') Motion for Summary Disposition on Joint Intervenor's Contention 1 ("Motion") and its supporting documents, including the Joint Third Declaration of Dr. Richard Abitz and First Declaration of Dr. Lance Larson (Exhibit 1 to the Motion) and Second Declaration of Dr. Richard Abitz (Exhibit 2 to the Motion).

4. This Affidavit describes how the NRC Staff evaluates groundwater quality data in a source and byproduct materials license application for an ISR. Specifically, this Affidavit addresses what the NRC considers as characterization of the hydrogeology necessary to meet guidance in NUREG-1569 and regulatory requirements in Criteria 5 and 7, Appendix A, 10 CFR Part 40. As explained in further detail below, the Staff expects applicants to characterize the "baseline" of the proposed license area groundwater data in accordance with guidance in NUREG-1569, Section 2.7; characterize or have procedures to characterize nearby water supply users prior to major site construction in accordance with Criterion 7 and Regulatory

Guide 4.14; and have procedures to develop the Commission-approved background concentrations under Criterion 5B(5) for the groundwater detection monitoring program for the various regulated units that may be proposed in accordance with Criterion 7A. The regulated units consist of lined retention ponds (surface impoundments) and subsurface wellfields.

5. The Ross Application documents groundwater data collected over a two-year period from 27 monitoring wells located throughout the proposed Ross license area. The data provide information on both temporal and spatial (i.e., vertical and horizontal) variations in the groundwater quality. The Ross Application documents that water quality information was obtained using established sampling and analytical methods and includes parameters listed in Table 2.7.3-1 of NUREG-1569. The Ross Application also documents water quality data from 29 existing water supply wells within 2 miles of the Ross ISR Project. For those wells, the reported sampling and analytical methods are acceptable as industry standard practices and the parameters analyzed are consistent with recommendations in Regulatory Guide 4.14. The Ross Application includes summary statistical and graphical analyses of the groundwater quality data.

6. In my review of the Ross Application for compliance with the Atomic Energy Act and NRC safety regulations, I found that the empirical data on groundwater quality collected by Strata met the requirements of Criterion 7 and was consistent with guidance in Section 2.7 of NUREG-1569. Criterion 7 and NUREG-1569 do not specify an exact number of sample locations necessary to establish sufficient information to adequately characterize baseline groundwater quality; however, Section 2.7.2(4) of NUREG-1569 states:

Evaluate the applicant's assessment of water quality of potentially affected ground-water resources. This information will provide the basis for evaluating potential effects of in situ leach extraction on the quality of local ground-water resources. Verify that a sufficient number of baseline ground-water samples are collected to provide meaningful statistics, that samples are spaced in time sufficiently to capture temporal variations, and that the chemical constituents and water quality parameters evaluated are sufficient to establish pre-operational water quality, including classes of use.

My review of the data provided by Strata in the Ross Application and in response to requests for additional information enabled me to conclude that the empirical data collected provided meaningful statistical data; the data were spaced sufficiently in time to capture temporal variations; and the water quality parameters evaluated were sufficient to establish pre-operational water quality, consistent with NUREG-1569, Section 2.7.2(4). I based my conclusions on my experience as an environmental professional and subject-matter expert in the field of hydrogeology, my familiarity of acceptable pre-operational data in other source and byproduct materials licenses issued by the NRC (e.g., Moore Ranch, Nichols Ranch, Lost Creek), my reviews of wellfield baseline data at existing licensed facilities in my capacity as a qualified license reviewer at NRC, and my research as part of my license reviewer qualifications of documents pertaining to the development of procedures for the ISR license reviews. The groundwater dataset upon which I based my determination was the same information used and described in the Ross FSEIS.

7. The Motion's premise that the FSEIS failed to establish baseline water quality for the Ross Project site by delaying the collection of necessary data until after the license is issued is based on Intervenor's belief that the necessary data should have included the Commission-approved background concentrations for the proposed wellfields established in accordance with Criterion 5B(5)(a). However, not collecting Criterion 5B(5)(a) background concentrations prior to license issuance is consistent with NRC implementing regulations under the Atomic Energy Act and Commission-approved guidance documents, such as NUREG-1569.

8. The Motion asserts that guidance in NUREG-1569 Sections 2.7.1 (Hydrology - Areas of Review), 2.7.2 (Hydrology – Review Procedures) and 2.7.3 (Hydrology – Acceptance Criteria) supports the premise that the Criterion 5B(5)(a) background concentrations are data that are necessary for the Staff's review and approval of the Ross Application. That argument is incorrect. The guidance on areas of review, review procedures and acceptance criteria for Criterion 5B(5)(a) background concentrations is not found in Section 2.7.1, but rather in

Sections 5.7.8 and 6.1 of NUREG-1569. The format of NUREG-1569 is such that Chapter 2 contains guidance for staff's review of the *pre-operational* aspect of the proposed facility, whereas Chapter 5 contains guidance for staff's review of the proposed programs *during operations*, and Chapter 6 contains guidance for staff's review of the proposed programs *during decommission and reclamation*, including groundwater restoration of the wellfields. Thus, by design, NUREG-1569 does not require an application to provide the actual Criterion 5B(5)(a) background concentrations. Rather, NUREG-1569 calls for procedures to be in place for *subsequent* collection of the Criterion 5B(5)(a) background concentrations during operations. This is further reinforced in Section 1.2 (Proposed Activities – Review Procedures):

The reviewer should determine whether the application provides a sufficiently comprehensive summary of the nature of the facilities, equipment, and procedures to be used in the proposed in situ leach activity including the name and location. Reviewers should keep in mind that the development and initial licensing of an in situ leach facility is not based on comprehensive information. This is because in situ leach facilities obtain enough information to generally locate the ore body and to understand the natural systems involved. More detailed information is developed as each area is brought into production.

9. The Criterion 5B(5) background concentrations characterize water quality at designated monitoring wells, which, by license condition, are those used to detect lixiviant excursions from the production zone during operations and establish standards for aquifer restoration after the uranium recovery operations are complete. This is reflected in Condition 11.3 of Strata's source and byproduct material license. The information a licensee obtains for background concentrations under Criterion 5B(5) is used to establish standards for a regulatory groundwater detection monitoring program in order to detect a release. It is also used to establish standards for aquifer restoration after uranium recovery operations are complete. This intended purpose is distinct from the information required of the applicant/licensee by 10 C.F.R. 51.45 and Criterion 7. This site-characterization baseline information is used to characterize the general environmental baseline conditions of the site, and is necessary to evaluate future impacts that may be derived from accidental and unplanned spills or releases, similar to the requirement that

all applicants characterize the radiological baseline data in a variety of environmental media prior to major construction.

10. I declare under penalty of perjury that my statements set forth above and in my statement of professional qualifications attached hereto are true and correct to the best of my knowledge, information, and belief.

**Executed in Accord with 10 CFR § 2.304(d)**

John L. Saxton  
Hydrogeologist  
U.S. Nuclear Regulatory Commission  
Mail Stop T-8 D25  
Washington, DC 20555-0001 (301) 415-0697  
[John.Saxton@nrc.gov](mailto:John.Saxton@nrc.gov)

Executed in Rockville, MD  
this 3rd day of June, 2014