

January 29, 2004

Ms. Donna Bergman-Tabbert, Manager
U.S. Department of Energy
Grand Junction Office
2597 B3/4 Road
Grand Junction, CO 81503

SUBJECT: REQUEST FOR INFORMATION - GROUNDWATER COMPLIANCE ACTION
PLAN FOR THE LAKEVIEW, OREGON, UMTRA PROJECT SITE

Dear Ms. Bergman-Tabbert:

By letter dated October 21, 2002, the U.S. Department of Energy (DOE) submitted a revised version of the GroundWater Compliance Action Plan (GCAP) for the Uranium Mill Tailings Remedial Action Project site at Lakeview, Oregon. The GCAP was revised to address the U.S. Nuclear Regulatory Commission (NRC) comments transmitted to DOE on February 1, 2002. The staff has reviewed the revised Lakeview GCAP, using the "Standard Review Plan for the Review of DOE Plans for Achieving Regulatory Compliance at Sites With Contaminated GroundWater Under Title I of the Uranium Mill Tailings Radiation Control Act" (NUREG 1724, draft) and finds additional information is needed in order to complete its review. The information needed is identified in the enclosure. We would especially like to call your attention to the first item in the enclosure in which we raise a concern on your proposed use of supplemental standards for an aquifer that is currently being used as a source of drinking water. We conclude that the compliance strategy of supplemental standards based on *limited use groundwater* will need to be revised.

If you have any questions concerning this letter please contact me at (301) 415-6629 or by email at mhf1@nrc.gov.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Myron Fliegel
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket WM-64

Enclosure: Request For Information

cc: M. Tucker, DOE
D. Stewart-Smith, Oregon OOE
N. Scott, Oregon DEQ
B. McClure, Oregon DEQ

D. Bergman-Tabbert

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*see previous concurrence

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OFC	FCLB		FCLB		FCLB		FCLB	
NAME	M. Fliegel*		B. Garrett*		R. Linton*		R. Nelson	
DATE	1/13/04		1/15/04		1/23/04		1/29/04	

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REQUEST FOR INFORMATION
DEPARTMENT OF ENERGY GROUNDWATER COMPLIANCE ACTION PLAN FOR THE
LAKEVIEW, OREGON, UMTRA PROJECT SITE

1. **Action:** Analyze the groundwater compliance strategy utilized at the Lakeview site. Revise the groundwater compliance strategy to comply with the provisions of 10 CFR 192.

Basis: DOE proposes that no remediation be undertaken based on *limited use groundwater* and application of supplemental standards to achieve compliance with Subpart B of 40 CFR 192 at the former Lakeview millsite. *Limited use groundwater*, per 40 CFR Part 192.11(e), is defined as:

groundwater that is not a current or potential source of drinking water because (1) the concentration of total dissolved solids is in excess of 10,000 mg/l, or (2) widespread, ambient contamination not due to activities involving residual radioactive materials from a designated processing site exists that cannot be cleaned up using treatment methods reasonably employed in public water systems, or (3) the quantity of water reasonably available for sustained continuous use is less than 150 gallons per day. The parameters for determining the quantity of water reasonably available shall be determined by the Secretary with the concurrence of the Commission.

As the compliance strategy proposed is supplemental standards based on *limited use groundwater*, DOE must show that groundwater is not a current or potential source of drinking water. However, water is currently being consumed from a domestic well at location 0543 that is in the immediate area of the former mill and the contaminant plume. Since water is currently a source of drinking water, the compliance strategy of using supplemental standards based on *limited use groundwater* cannot be applied to this site.

2. **Action:** Determine and justify background concentrations for contaminants of concern in the main portion of the Lakeview valley around the former millsite.

Basis: The Base Line Risk Assessment (BLRA) identified several constituents of concern. DOE argues, in section 2.3.3 of the GroundWater Compliance Action Plan (GCAP), that there is a problem with the previous evaluation because only a single well or well pair was used to represent nongeothermal backgroundwater quality and that this well pair was located near the base of the mountains along Hammersley Creek. The well pair location along the base of the mountains and near the creek receives recharge essentially directly from the mountains and that water quality may not be indicative of backgroundwater quality in the main portion of the valley.

Enclosure

This is a plausible argument. However, if this argument is accepted, DOE does not have groundwater quality wells at the site indicative of the main portion of the valley. Any compliance strategy that relies on groundwater quality, such as supplemental standards based on *limited use groundwater*, would therefore have no basis.

3. **Action:** Provide verification to support the claim in section 2.4 of the GCAP that groundwater at the Lakeview millsite is Class III.

Basis: GCAP section 2.4 states that, “The UMTRA groundwater regulations in 40 CFR 192 note that the use of supplemental standards for limited use groundwater applies the groundwater classification system in Environmental Protection Agency (EPA) Ground Water Protection Strategy (EPA, 1988). Based on this strategy, limited use groundwater would be considered to be Class III.” DOE must provide EPA or State of Oregon documentation that the groundwater at the Lakeview site is classified as Class III.

4. **Action:** Further characterize the site to identify the contaminant plume boundary.

Basis: The extent of the groundwater contamination plume has not been identified. This is especially true to the west and south of the former raffinate and tailings ponds. Well 0518 contains elevated levels of chloride, sodium, manganese, sulfate, and total dissolved solids that presumably are millsite related, however, there are no additional well locations down or cross gradient to this well. Additional wells are necessary to define the extent of millsite contamination.

5. **Action:** Provide additional information that groundwater contamination located south of the site along Roberta Avenue is from another source, such as fill from former logging ponds, as opposed to uranium milling operations.

Basis: GCAP section 2.3.3 proposes that, “The porous fill may have trapped rain water and allowed increased leaching of naturally occurring salts in the soils.” Provide a basis for this statement.

GCAP section 2.3.3 states, “Anecdotal evidence from residents downgradient of the logging facility suggest that operations at the facility adversely affected water quality in some private wells.” Clarify the anecdotal evidence used to support this statement.

GCAP section 2.3.3 states, “The BLRA also indicated that additional data should be gathered to determine the source of the contamination in this southern area.” The installation and removal of three piezometers adjacent to Roberta Avenue adds additional data, although limited, to support the theory that the logging ponds are responsible for contamination. Further investigation is necessary to prove that groundwater contaminant flow is the same as the flow direction indicated by the piezometric surface and that sources other than the millsite are responsible for the contamination.

6. **Action:** Identify additional compliance monitoring wells. Increase the number of monitoring well locations for long-term sampling at the institutional control (IC) boundary

or propose other compliance monitoring well locations that will insure long-term compliance with groundwater protection standards.

Basis: There is only one well located at the IC boundary in the downgradient direction of the site that is proposed for long-term monitoring. Additional compliance monitoring wells at the IC boundary will insure that contaminants are not moving beyond the boundary. Other compliance monitoring wells, not at the IC boundary, can be identified through groundwater modeling that will show groundwater protection standards will be met at the boundary.

7. **Action:** Clarify the contaminants of concern that pose a potential risk to human health.

Basis: Section 2.3.3 of the GCAP states, "Only boron, manganese, sodium, and sulfate are a concern when groundwater concentrations are compared to health-based benchmarks such as health advisories and risk-based concentrations." Section 5.0 of the GCAP states, "on the basis of data evaluated for this report, only four constituents present in the surficial aquifer-arsenic, chloride, manganese, and sulfate-pose a potential risk to human health." These two statements imply that there are six potential contaminants of concern that pose a risk to human health.

8. **Action:** Discuss the proposed Lakeview valley hydraulic system model and compare the model to actual site data. Clarify the similarity of a marine sediment setting and the lacustrine sediment setting of the Goose Lake Graben.

Basis: Figure 2-5 in the GCAP is a diagram of a closed basin/arid climatic hydrologic system. The diagram indicates an upward moving hydraulic head under the facility location. However, the cross sections A-A' and B-B' provided indicate that hydraulic head decreases generally with depth, opposite of what is shown in figure 2-5. If hydraulic head decreases with depth, this would support a downward component of groundwater flow that may allow for millsite contamination at depth if the water-bearing zones are connected.

GCAP section 2.3.3 states, "It would be expected that natural groundwater from a closed lake setting in that arid western U.S. would have some similarities to that derived from a saline marine sediment setting and would also have naturally high concentrations of those constituents." A comparison of Lakeview's lacustrine graben-controlled depositional environment to other lacustrine graben-controlled depositional environments seems more appropriate.

9. **Action:** Provide information showing that groundwater from potential deep wells greater than 300 feet deep within the IC boundary are not hydraulically connected to contaminated shallow groundwater.

Basis: Domestic wells will be allowed in the IC boundary at a depth greater than 300 feet (or whatever depth the Oregon Water Resources Department codifies.) If the deep aquifer water-bearing zone and the shallow aquifer water-bearing zone are hydraulically connected, there is a possibility that a domestic well may draw contaminated groundwater from the shallow water-bearing zone into the deep water-bearing zone.

DOE has not demonstrated that the shallow aquifer and the deep aquifer are not hydraulically connected.

10. **Action:** Determine if deep domestic wells constructed within the IC boundary will be subject to long-term monitoring.

Basis: New deep wells installed within the IC boundary should be subject to long term monitoring as is domestic well 0543. The contaminants of concern for sampling and the monitoring frequency should be specified in the GCAP. Although potential new wells in the IC boundary would be deep, DOE has not demonstrated at this time that there is no connection between the shallow and deep water-bearing zones.

11. **Action:** Provide a rationale for the location of the IC boundary.

Basis: Section 3.2.1 of the GCAP indicates, "An IC boundary was established around the western part of the former millsite that included land containing and extending beyond probable millsite contamination as defined by the extent of the sulfate plume." Monitoring well location 0518 has a sulfate concentration of 429 mg/L that appears to be above background levels. This would indicate that sulfate millsite contamination is currently beyond the proposed IC boundary. The IC boundary may need to be expanded after the site is further characterized and the groundwater compliance strategy is revised.

12. **Action:** Provide to the NRC for review a copy of each IC agreement that is part of the compliance strategy.

Basis: Institutional controls are discussed in the text of the GCAP in section 3.2.1 and an IC boundary is shown on Plate1: Lakeview Base Map with 1994 Photo Base. The GCAP does not contain documents to support the location, specifics, and nature of the ICs that are part of the compliance strategy. Lake County and the City of Lakeview IC ordinances requiring future land users inside an IC area to obtain hookups from the new domestic water line or to drill a well to a depth that ensures satisfactory water quality need to be submitted to NRC for review. The state code promulgated by the Oregon Water Resources Department that ensures an adequate depth for a new well also needs to be submitted to NRC for review. The state code insuring the proper depth of the well may also have requirements for well construction such as necessary well casing and grouting depth. If these details are not in the state code, DOE needs to provide the ordinance or code that governs details of domestic well construction.