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Cover letter copy

JAN 2 4 2008

Ref: 8P-W-GW

The Honorable Ken Salazar
United States Senate
702 Hart Senate Office Building
Washington, D.C. 20510-0606

RE: Powertech Uranium Mining Project
in Weld County, Colorado

Dear Senator Salazar:

This letter follows my earlier response of November 27, 2007, to your letter of November 9, 2007, to the Environmental Protection Agency (EPA) which expressed concerns regarding the Powertech Uranium Corporation's (Powertech) proposed Centennial Project for in-situ extraction of uranium in Weld County, Colorado, and the potential for contamination of ground water from Class III solution mining injection well operations. The enclosure to this letter provides the summary information you requested in your letter.

Our Region 8 EPA office has worked with EPA Headquarters offices to gather information and generate the requested summary information regarding the history of known impacts from in-situ extraction of minerals in the continental U.S., and EPA's cumulative experience with remediation of aquifer excursions and other site contamination at these sites. I regret that gathering the requested information and preparing this response took longer than my anticipated 30 days, and I appreciate this further opportunity to provide the enclosed summary information.

Again, I appreciate your writing on behalf of the many citizens of northeast Colorado regarding this proposed uranium in-situ leach (ISL) project. I hope this information, in addition to my earlier letter, helps to assure you and the public that EPA remains diligent in its responsibilities related to proposed uranium ISL projects and UIC Class III injection well permitting decisions, particularly with respect to the Powertech Uranium Corporation proposed project in Weld County, and protection of the larger Denver Basin aquifer system. If you or your staff has questions or comments regarding

the information provided in this letter or enclosure, please contact me or Sandy Fells, our Regional Congressional Liaison, at 303-312-6604.

Sincerely,

Robert E. Roberts
Regional Administrator

Enclosure

cc: Mr. James B. Martin
Executive Director
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Mr. Harris Sherman
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1313 Sherman St.
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Mr. Ron Cattany
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1313 Sherman St.
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Attachment

UIC Class III Injection Well Overview

Wells which inject for extraction of minerals include those mining of sulfur by the Frasch process, in-situ production of uranium or other metals, and solution mining of salts or potash. 40 CFR 144.6(c). Alternately referred to as In-Situ Leach (ISL) mining, in-situ extraction, and solution mining, these in-situ extraction operations began as experimental technology in the 1960's for extraction of minerals from generally shallow depths (typically 400-1700 feet below the land surface). For the purpose of consistency, this response uses the term " ISL " to refer to Class III wells used for in-situ production of uranium, and " Class III solution mining " to refer to injection wells used for solution mining of salts or potash. Of the uranium extracted in the United States, 80 percent is now produced by ISL.

The Nuclear Regulatory Commission (NRC) licenses uranium mills and ISL facilities. ISL facilities, due to the use of chemical solutions to extract uranium, are referred to by NRC as uranium milling underground. Under the authority of the Atomic Energy Act, NRC regulates all ISL facility operations, including the injection of fluids, using environmental and ground water protection standards developed by EPA in accordance with the Uranium Mill Tailings Radiation Control Act (UMTRCA). Thus, in accordance with standards developed by EPA under UMTRCA, NRC implementing regulations and guidance require the licensee to restore groundwater in the license area, which includes the exempted aquifer, and to prevent excursions or pollution of surface waters.

EPA also has complementary authority under the Safe Drinking Water Act to regulate the injection of the fluids at these sites. Consequently, prior to any ISL mining at these sites, a mine owner/operator receiving a license from the NRC or NRC Agreement State must as well receive an Underground Injection Control Program (UIC) permit provided by either EPA or a State with UIC primary enforcement authority. Please note that an Agreement State means a State to which NRC has relinquished a portion of its authority for licensing and regulating of uranium extraction facilities. Colorado is an Agreement State. The EPA is currently providing assistance to NRC which is drafting new regulations for ground water protection at ISL facilities. These new NRC regulations must receive EPA concurrence before promulgation.

Known History and Environmental Impacts

The Energy Information Administration reports five licensed and operating ISL facilities as of the end of the third quarter in 2007. One is in Wyoming, one in Nebraska,

and three are in Texas. Although no ISL facilities are listed on the Superfund National Priorities List, ISL license violations have been documented through State agencies and the NRC's Agencywide Documents Access and Management System or "ADAMS." Locations to note are the Crow Butte mine in Nebraska, Kingsville Dome in Texas, and Christensen Ranch/Irigaray in Wyoming. Information concerning environmental impacts at individual uranium milling sites can be found on ADAMS at http://www.nrc.gov/reading-rm/adams.html.

Definitive published studies specifically regarding environmental impacts of uranium ISL operations and mills in the United States do not currently exist. EPA's Office of Radiation and Indoor Air (ORIA) has been conducting technical studies on uranium mining and associated wastes since the mid-1990s. Two EPA reports released in 2006 and 2007 provide detailed information on ISL operations, wastes, reclamation, regulatory controls, and potential health risks to members of the public and on-site employees. These are: *"Technologically Enhanced Naturally Occurring Radioactive Materials from Uranium Mining, Volume 1: Mining and Reclamation Background"* and *"Technologically Enhanced Naturally Occurring Radioactive Materials from Uranium Mining, Volume 2: Investigation of Potential Health, Geographic, and Environmental Impacts of Abandoned Uranium Mines"*. Both reports are available through the EPA website at:

Volume 1: http://www.epa.gov/radiation/docs/tenorm/402-r-05-007-rev0607.pdf;
Volume 2: http://www.epa.gov/radiation/docs/tenorm/volume-ii/402-r-05-007.pdf.

Specific examples of ground water excursions and contamination at ISL sites with references to various other studies, compiled by the United States Geological Survey and others organizations, are included in Appendix III of Volume 2.

The NRC also is at present researching information regarding the impacts of uranium milling facilities and will publish for public comment a Generic Environmental Impact Statement (GEIS) for ISL facilities. The NRC published a revised scoping notice for its GEIS in the Federal Register on November 1, 2007. 72 Fed. Reg. 61912 (Nov. 1, 2007). The public comment period on the GEIS ended on November 30, 2007. Id. The GEIS will focus on ISL facilities and is " intended to address the common issues associated with environmental review of such milling facilities located in the western United States... The GEIS will focus on the construction, operation and decommissioning [of ISL facilities] and also assesses alternative methods of uranium recovery. " Id. Resource areas tentatively identified by NRC to be analyzed in the GEIS include public and occupational health, waste management, land use, transportation, geology and soils, water resources, ecology, air quality, noise, historical and cultural resources, visual and scenic resources, socioeconomics, environmental justice and cumulative effects. Id. at 61913. It should be noted that it is unclear at this time whether

the GEIS will include ground water remediation and restoration data. According to the November 1, 2007 NRC Federal Register notice, the draft GEIS is scheduled to be published in April 2008, and will allow for 3 weeks of public comment and/or public meetings. The final GEIS is expected to be published in January 2009. Id.

Possible environmental impacts from ISL facility operation would primarily be to ground water at the facility, although contamination of soil, surface water and air also may occur. Ground water contamination from ISL generally can occur in three ways: (1) through unavoidable contamination of the exempted portion of the aquifer in which the uranium deposit is localized, (2) through unintentional contamination due to contaminants moving outside of the exempted aquifer area, and (3) as a result of facility structural failure and surface spills.

Case 1: While the injected oxidized water lixiviant is not itself a contaminant, the lixiviant does solubilize the uranium, and can move into solution heavy metals that may be present in the ore production zone such as arsenic, selenium, vanadium, molybdenum.

Case 2: Ground water pressure differential is used to control movement of lixiviant within the mining area. However, faults crossing aquifer systems, underground mine shafts or exploratory drill holes, and natural changes in permeability within the mined zone could possibly cause lixiviant excursions and/or cause contaminated groundwater to move beyond the NRC licensee's point of compliance.

Case 3: Contamination of the soil, surface water and/or ground water may occur through unintentional spills from leaking surface facility structures such as tanks or piping, injection or production well integrity failure, or evaporation pond liner failure. Solid waste from ISL consists of soil, bedrock material and the by-product waste from the drilling of injection and production wells, and solids precipitated from fluid holding ponds. Surface water contaminated by erosion from mines and mine wastes may percolate into ground water. Both solid and liquid waste from ISL uranium mine operations have some residual uranium and radium-226 that when improperly disposed or handled may be carried in particulate form by flowing water, potentially leach through soil into ground water, or pollute the air by release of radon.

EPA Experience with Remediating Aquifer Excursions and Other Types of Site Contamination Caused by ISL

EPA has already approved primary enforcement authority (primacy) for Class III injection wells for the states where ISL currently occurs (i.e., Wyoming, Nebraska and Texas). To date, there are no licensed ISL operations in States or Indian Country where EPA directly enforces UIC regulations and oversees ISL remediation. Consequently, EPA's experience with remediating aquifer excursions and other types of site

contamination at ISL facilities has thus far been limited to an oversight role of the three state UIC programs with primacy.

EPA does have experience with a Class III solution mining facility in Colorado. Between 2001 and 2003, injection operations at the American Soda LLC (American Soda) Class III solution mining facility in Rio Blanco County, Colorado, appeared to cause sodium carbonate and sodium bicarbonate-laden water to move out of the approved injection mining zone and into an overlying saline aquifer. American Soda used the solution mining process to extract and produce sodium carbonate and food-grade quality soda bicarbonate from nahcolite deposits found in the upper Green River Formation in the Piceance Basin of western Colorado. Nahcolite is the mineral name for sodium bicarbonate, or baking soda.

In this case, a gradual ground water level rise of approximately 160 feet was detected in a dissolution zone monitoring well, which led EPA to conclude that the American Soda mining operations had breached the confining zone. The breach was thought to be caused by a crack in the mining zone that allowed injected fluid to move through the confining zone and into the overlying dissolution zone aquifer. The operator initiated an approved plan to remediate the situation by injecting highly saturated fluid so that, upon cooling, the nahcolite would precipitate out and "plate over" the breach. In order to proceed with the approved remediation plan, EPA also modified the Class III UIC Permit by expanding the approved injection zone to include the dissolution zone directly above the original overlying salt confining zone.

The remediation operation did not fully conclude because American Soda "mothballed" these operations in 2004, and there has been no injection or mining after 2004. Since August 2003, the ground water elevation in the monitoring well has gradually receded, and most recently was recorded at a level about 14 feet above where it had been prior to rising.

EPA Class III UIC Well Permit Requirements

Review of an application for a Class III injection well includes a rigorous evaluation that the proposed injection activity will not endanger Underground Sources of Drinking Water (USDW). EPA promulgated the criteria and standards applicable to Class III injection wells at 40 C.F.R. Part 146, Subpart D. 40 C.F.R. §§ 146.31–146.34. As noted in our letter of November 27, 2007, EPA issues Class III UIC permits in Colorado. EPA regulations require certain information be considered prior to permit issuance. 40 C.F.R. 146.34. This information includes maps and cross sections indicating the vertical limits of all USDWs within the area of review, the position of the USDWs relative to the injection formation, the direction of water movement where known, in every USDW which may be affected by the proposed injection, expected

changes in pressure, native fluid displacement or direction of movement of injection fluid, and contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into USDWs; well construction requirements; operating, monitoring, and reporting requirements; closure plans and a certificate that the applicant has assured, through a performance bond, or other appropriate means, the resources necessary to close, plug, or abandon the wells as required. Id.

In conclusion, ISL facility operators are required to comply with groundwater protection standards developed by EPA, in accordance with the UMTRCA. The NRC or the Agreement State that issues the license for the uranium mill and ISL facility (licensing agency) enforces these ground water protection and restoration regulations. The licensing agency also must enforce all other applicable environmental requirements, and the operator must comply with orders from the licensing agency for any required site cleanup. In general, the operator/owner has the most experience in site remediation; however, the plan for a remediation response usually is developed in coordination with the licensing agency. Should a contamination event occur at an ISL facility, the licensing agency will order the licensee (operator) to take necessary steps to correct a violation, and the licensing agency has the regulatory responsibility to order the cleanup and approve its completion. Should the contamination event also constitute a violation of the Class III UIC Permit, the contamination event will trigger enforcement of the UIC Permit requirements by the UIC permitting agency. Additionally, EPA has authority to oversee remediation should the NRC or the Agreement State fail to achieve appropriate remediation or environmental law compliance under the Clean Water Act, Safe Drinking Water Act, Clean Air Act, Resource Conservation and Recovery Act (RCRA), or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).