



Coloradoans Against  
Resource Destruction

## WESTERN MINING ACTION PROJECT

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Administrator Lisa P. Jackson  
United States Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Administrator Jackson,

**Writing collectively on behalf of the undersigned organizations**, this letter concerns your agency's activities related to the recent resurgence of interest in potential domestic uranium development activities. We have two specific areas of interest to cover.

First, we would like to applaud the Environmental Protection Agency's (EPA) efforts currently underway and those planned to revisit and revise regulations and procedures which have become outdated since the last uranium boom went bust in the early 1980s. These include the NESHAP Subpart W regulations (40 C.F.R. Part 61 subpart W) and the regulations at 40 C.F.R. § 192. This is a wise decision, and we commend the agency for moving forward on a long overdue action. We have been in contact with EPA Headquarters Staff and look forward to working with the agency on a comprehensive review and update of the EPA program concerning uranium mining and processing activities. Among the many specific interests will be the regulatory provisions related to the industry's increased use of *in situ* leach (ISL) uranium mining, a procedure by which chemicals are injected into an aquifer for the purpose of extracting uranium from the underground ore body.

Second, it has come to our attention that EPA Region 8 has taken efforts to develop what it has referred to in internal documents as "guidance" with respect to how the agency will implement its permitting authority under the Safe Drinking Water Act ("SDWA") 42 U.S.C. §§ 300h, *et seq.*

Underground Injection Control (“UIC”) program, as it relates to ISL mining and processing of uranium. This information came to light in documents obtained via a Freedom of Information Act (FOIA) request submitted in February 2009 on behalf of multiple conservation and Native American organizations in both Colorado and South Dakota. A draft of the “guidance” is attached. It is unfortunate that it appears the “guidance” was developed under the last presidential administration in consultation with the uranium mining industry and without public notice or public involvement. This November, U.S. Sen. Michael Bennet (D-Colo.) and U.S. Rep. Betsy Markey (D-Colo.) have asked that the EPA to seek public involvement in the development of any future “guidance” or regulation of ISL uranium mining. We respectfully request that EPA Headquarters intervene and initiate a national rulemaking to ensure strong involvement from the public and stakeholders for the protection of underground sources of drinking water from the impacts of ISL uranium mining. We also request that EPA Headquarters suspend processing of currently filed applications for ISL uranium mining.

According to the agency’s documents, EPA Region 8 is currently engaged in the first instances in the nation where the EPA will be the direct permitting agency for a UIC Class III injection well for the purpose of injecting chemical fluids for dissolving and extracting uranium ores, through ISL uranium mining. Those documents also reveal EPA Region 8 staff concern with respect to the adequacy of the existing UIC regulations to provide the specificity necessary to directly implement the program. We agree with EPA Region 8’s assessment in this regard, which gives rise to our serious concern as to whether the regulations are sufficient to provide protection of underground sources of drinking water from threats posed by ISL uranium mining.

The projects at issue for immediate application of the “guidance” are Powertech Uranium Corp.’s (“Powertech”) proposed Dewey-Burdock ISL uranium mine near Rapid City, South Dakota, and Powertech’s proposed Centennial ISL uranium mine in Weld County, Colorado. Both of these projects have created considerable controversy and drawn opposition from citizens, local governments, Native American tribal groups, medical organizations, local business, agricultural interests, and conservationists based on the significant threats these ISL uranium mines pose to groundwater, local economies, public health, and cultural resources.

Overall, the documents obtained from EPA Region 8 via FOIA, including extensive email communications between EPA Region 8 staff and mining industry interests, reveal a troubling lack of transparency and public involvement in the development of the so-called “guidance” documents. Importantly, the proposed “guidance” appears to be highly substantive in nature and, at the least, sketches out several policy conclusions with respect to EPA’s regulation of ISL uranium mines. For example, the proposed “guidance” effectively defines the terms “area of review” and “aquifer exemption boundary” as they will apply to all future EPA Region 8 UIC Class III applications. Such decisions will not only establish the equivalent of an obligatory policy for Region 8, but also have national policy implications and long-term environmental impacts. Thus, it appears that Region 8 may be engaged in drafting needed changes to regulations in advance of EPA Headquarters and

without the benefit of the substantive and procedural protections of notice and comment rulemaking. This process neglects the rulemaking requirements of the APA and the SDWA requirement that only the Administrator may promulgate SDWA regulations. *See* 42 U.S.C. § 300h(a).

As noted above, there has been a lack of transparency and public involvement. The EPA Region 8 documents obtained via FOIA demonstrate that while the uranium mining industry and its scientists and consultants have been extensively involved in the drafting and development of the new policies from the earliest stages, we are unaware of any efforts by EPA Region 8 to include the public or any public interest organization in the development of these important policies. An EPA Region 8 description of its activities in relation to its regulation of ISL uranium mining, including the extensive interaction with uranium industry representatives, is attached. This lack of public participation is difficult to harmonize with EPA Region 8's direct acknowledgement in the documents of the high level of public interest and controversy surrounding the subject of Powertech ISL uranium mining proposals, and its potential impact on local communities, economies, and natural resources in both South Dakota and Colorado. Indeed, as evidenced by the EPA's wise decision to revisit the uranium recovery standards, these are issues of national significance and interest.

Our suggestion on how to address the controversial impacts of ISL mining and the precedent-setting nature of any new regulations in this area is for EPA Headquarters to suspend processing of currently filed applications and initiate a Tier 1 Rulemaking. Such an action is well grounded in past agency practice and will provide the benefit of the sound science, public participation, and careful review of available technologies and SDWA standards which are conducted during formal rulemaking. The regulatory changes are required before any further permits are issued. The regulatory deficiencies and changes and details included in the Region's proposed guidance represent a substantive and controversial regulatory development that implicate the agency's obligations under the SDWA and the Administrative Procedure Act ("APA"), 5 U.S.C. § 553. As the EPA is no doubt aware, the APA requires public notice and comment rulemaking whenever a federal agency embarks on substantive changes in or development of regulations. *Id.* The SDWA itself specifically states that "[a]ny regulation under this section shall be proposed and promulgated in accordance with section 553 of title 5 (relating to rulemaking)...." 42 U.S.C. § 300h(a)(2).

While we recognize that not all federal agency policy pronouncements require APA notice and comment rulemaking, the federal courts have held that the critical factor in whether an agency policy is properly considered an agency rule requiring APA compliance on one hand or mere guidance on the other is the extent to which the policy is binding on future agency conduct. Compliance with the APA's notice and comment rulemaking provisions is required whenever such a policy establishes a "binding norm" that effectively dictates the agency's regulatory discretion with respect to individual permitting decisions. *See Pacific Gas and Electric Co. v. Federal Power*

Commission, 506 F.2d 33, 38 (D.C.Cir.1974); American Min. Congress v. Marshall, 671 F.2d 1251 (10<sup>th</sup> Cir. 1982).

The “guidance” being developed by Region 8 constitutes a “binding norm” in this instance. As we noted above, EPA Region 8’s proposed “guidance” contains detailed analysis defining critical terms in the EPA’s UIC regulations, which are to be applied to future UIC Class III permit applications. Such definitive terms applicable in all instances create binding norms, and these concepts should be defined by regulations promulgated through notice and comment rulemaking and approved by the Administrator, as required by law. Such notice and comment rulemaking is critical to the protection of groundwater in any proposed ISL uranium mining area. As such, APA notice and comment rulemaking in this instance is beneficial and legally required. At minimum, given the sharp controversy the Powertech ISL uranium mining projects have generated in both South Dakota and Colorado, public involvement and participation in this informal rulemaking process is essential.

We appreciate the opportunity to bring these concerns to your attention, and look forward to working with EPA in developing appropriate regulations through a formal national and public rulemaking regarding EPA oversight of and protection from ISL uranium mining proposals. We look forward to your response, and invite you or your staff to contact us directly to discuss this matter.

/s/ Jeffrey C. Parsons

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Enclosure

## **Discussion of Zone of Influence, Area of Review, and the Aquifer Exemption Boundary for Class III Injection Wells used for the In-Situ Leaching (ISL) of Uranium**

**Introduction:** The purpose of this discussion is to provide information about the proposed criteria the EPA Region 8 UIC program will use to evaluate acceptable locations for the Area of Review and an aquifer exemption boundary requested by the permit applicant in UIC Class III injection well permit applications for in-situ mining of uranium. This document also explains how the concepts of the Area of Review and zone of endangering influence will be applied to Class III injection well permit applications.

The EPA Region 8 will consider an acceptable location for the aquifer exemption boundary to be a line circumscribing the minimum area that allows full extraction of the ore proposed in the mining plan and restoration of the area affected by lixiviant flow within the subsurface, without having the chemical effects of the lixiviant reach beyond the aquifer exemption boundary. The criteria EPA Region 8 will use for evaluating the placement of the aquifer exemption boundary will be based on prudent operating procedures in which excursions are controlled within 90 days after they are detected at the monitoring well ring.

The area within the aquifer exemption boundary should be minimized to protect as much of the aquifer surrounding the mining project as is practically possible, and to minimize the area that will need to be restored upon the completion of mining.

This document also includes proposed permit requirements, including response actions, when excursions occur.

**Background Information:** The method for determining Area of Review around an injection well or injection project area is defined in 40 CFR 146.3 as "the area surrounding an injection well described according to the criteria set forth in §146.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either 1/4 of a mile or a number calculated according to the criteria set forth in §146.06." Regulation 146.06 states that the "Area of Review for each injection well or each field, project or area ...shall be determined..." using the zone of endangering influence calculation in 146.06(a) or a fixed radius according to 146.06(b). (Specific regulations are located at the end of this document for reference.)

In the regulations, the zone of endangering influence for a single injection well is the radius encompassing the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water. For an area permit, the zone of endangering influence includes the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.

Regulation 40 CFR 146.4 states that criteria for EPA to use in determining the aquifer exemption area for an ISL mining project is the portion of the aquifer that is mineral producing, or can be demonstrated by a permit applicant as part of a permit application for a Class III operation to contain minerals that are expected to be commercially producible based on quantity and location.

The EPA Region 8 will consider an acceptable location for the aquifer exemption boundary to be a location large enough to allow the mining operation to fully extract the ore and restore the area affected by the flow of lixiviant without having the chemical effects of the lixiviant reach beyond the aquifer exemption boundary. Hydrologic modeling should be used to

demonstrate that the entire area within the aquifer exemption boundary is required to meet these criteria. The area within the aquifer exemption boundary should be minimized to protect as much of the aquifer surrounding the mining project as is practically possible, and to minimize the area that will need to be restored upon the completion of mining.

For the purposes of this discussion, the term “project area” used in reference to the Area of Review above, is considered to be equivalent to the area where lixiviant is moving within the subsurface. The project area contains the wellfields and the surrounding “flare” of lixiviant around the wellfields. The project area will be delineated in the permit application with reference to the commercially producible portion of the ore body. Justification should be based on reasonable market projections of uranium price fluctuations over the life of the mine. In the following discussion, the aquifer exemption boundary will be determined based on a distance relative to the project area and the monitoring well ring around the project area.

**Discussion:** The intent of the Area of Review in the regulations is to set a boundary around an area that will be thoroughly investigated to locate any potential breaches in the confining zones above and below the proposed injection interval, and to perform corrective action, if needed, to mitigate those breaches so injectate cannot move up or down into another aquifer.

The intent of the zone of endangering influence in the regulations is to determine the farthest distance away from the injection well or project area that the pressure effect of injection activity is anticipated to reach over the life of the injection well or project area. In the case of ISL injection wells, the overall effect of injection and recovery in ISL well fields is a groundwater flow gradient directed toward the project area. The zone of endangering influence calculation in the regulations is not appropriate for an in-situ mining project, because the formula applies to injection wells that only inject, with no extraction taken into account.

For this reason, the Area of Review boundary for an ISL project should not be equivalent to the zone of endangering influence. Instead of a zone of endangering influence, the concept of importance for Class III injection wells used for in-situ mining is the area chemically affected by injection. The term “project area” described above will be applied to the area within the subsurface where lixiviant is causing chemical changes. The project area is limited to the area of lixiviant flow under normal operating conditions, i.e. where lixiviant flow is being controlled by proper balancing of injection rates and recovery rates within the wellfields. (The project area does not include excursions, where the flow of lixiviant is not considered to be under direct control.)

The aquifer exemption boundary has a horizontal and a vertical extent. The vertical extent is bounded by upper and lower confining zones. The horizontal extent is proposed by the permit applicant based on the extent of commercially producible ore deposits and the area around the ore body where the lixiviant is expected to travel during mining of the ore deposits and post-mining aquifer restoration. It is important to minimize the extent of the area inside the aquifer exemption boundary, because it is forever exempted from protection under the UIC Program, specifically the provisions of 144.12.

**Proposal:** In the permit application and aquifer exemption request, the permittee identifies the location of the monitoring well ring around the project area, and proposes an Area of Review boundary and an aquifer exemption boundary. The aquifer exemption boundary may be located at some distance outside the monitoring well ring, but no further out than the Area of Review boundary. Because the aquifer exemption boundary is the area within which mining-related contaminants are allowed to move, the area should be subject to Area of Review requirements.

Monitoring well Ring: The monitoring well ring should be placed at some distance beyond the project area to detect excursions of lixiviant outside the project area within a reasonable amount of time. The monitoring well ring location may be set a fixed distance beyond the project area. The permit application should include estimations of

- how long it will take an excursion to reach the monitoring well ring,
- based on sampling frequency, how far an excursion could potentially flow before it is detected at the monitoring well ring, and
- how long it will take to recover an excursion detected at the monitoring well ring.

This information will be considered in evaluating the proposed location of the aquifer exemption boundary.

Area of Review: Within the Area of Review, the permittee will investigate the need for corrective action and perform corrective action as needed. The Area of Review boundary may be set at the aquifer exemption boundary or at some distance beyond the aquifer exemption boundary. The location of the boundary should be justified using well constrained hydrologic modeling of worse case scenario excursions, taking into account these factors stated in the regulations:

*...the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.*

The permit application should include a discussion of how the Area of Review was determined, including pertinent hydrologic modeling results that support the proposed boundary locations. The discussion should also include how applicable factors in the paragraph above were taken into consideration.

Aquifer Exemption boundary: The aquifer exemption request is included as part of the permit application. The permittee submits a proposed aquifer exemption boundary that is placed at some distance outside the project area based on the following considerations:

*Excursion recovery.* Because the monitoring well ring is the first place where the presence of an excursion is detected, the aquifer exemption boundary should be placed at some distance beyond the monitoring well ring that will allow a reasonable time for an excursion detected at the monitoring well ring to be recovered before it crosses the aquifer exemption boundary. The aquifer exemption boundary is considered a Point of Compliance. The determination should be based on prudent operating procedures in which excursions are controlled within 90 days after they are detected at the monitoring well ring.

*Hydrologic modeling.* Hydrologic modeling should be used to verify that the extent of the aquifer exemption boundary is justified and the entire area is needed for uranium to be extracted to the fullest planned extent and for groundwater restoration within the affected area after completion of mining.

Justification for the position of the aquifer exemption boundary should be included in the aquifer exemption request. The justification should include hydrologic modeling results, aquifer data and measurements, information on variability of flow rates in different directions within the aquifer, and an estimation of how long it would take an excursion to reach the aquifer exemption boundary.

### **Permit Requirements for Delineating Extent of Excursion**

When an excursion is detected at the monitoring well ring, the permit will require the permittee to verify that the excursion has not reached the aquifer exemption boundary. Upon detecting an excursion at the monitoring well ring, the permit will require action to intercept the excursion plume before it reaches the aquifer exemption boundary. The effectiveness of the remedial action must be physically demonstrated. Duration and frequency for sampling the response wells will be based on the travel time of the excursion. If the excursion goes beyond the aquifer exemption boundary, the permit will require verification that the plume has been pulled back within the aquifer exemption boundary. More frequent sampling of the monitoring ring wells will be required until the excursion has been pulled back in.

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## 40 Code of Federal Regulations (CFR)

### §§144.3 and 146.3 Definitions

**Area of Review** means the area surrounding an injection well described according to the criteria set forth in §146.06 or in the case of an area permit, the project area plus a circumscribing area the width of which is either 1/4 of a mile or a number calculated according to the criteria set forth in §146.06.

**Contaminant** means any physical, chemical, biological, or radiological substance or matter in water.

**Underground source of drinking water (USDW)** means an aquifer or its portion:

- (1)(i) Which supplies any public water system; or
- (ii) Which contains a sufficient quantity of ground water to supply a public water system; and
- (A) Currently supplies drinking water for human consumption; or
- (B) Contains fewer than 10,000 mg/l total dissolved solids; and
- (2) Which is not an exempted aquifer.

### § 146.6 Area of Review.

The Area of Review for each injection well or each field, project or area of the State shall be determined according to either paragraph (a) or (b) of this section.

(a) Zone of endangering influence.

(1) The zone of endangering influence shall be:

(i) In the case of application(s) for well permit(s) under §144.31 that area the radius of which is the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water; or

(ii) In the case of an application for an area permit under §144.33, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.

(2) Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. [*equation and parameter list not included here*]

(b) Fixed radius. (1) In the case of application(s) for well permit(s) under §144.31 a fixed radius around the well of not less than one-fourth (1/4) mile may be used.

(2) In the case of an application for an area permit under §144.31 a fixed width of not less than one-fourth (1/4) mile for the circumscribing area may be used.

In determining the fixed radius, the following factors shall be taken into consideration:

Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

(c) If the Area of Review is determined by a mathematical model pursuant to paragraph (a) of this section, the permissible radius is the result of such calculation even if it is less than one-fourth (1/4) mile.

**§146.4 Criteria for exempted aquifers.**

An aquifer or a portion thereof which meets the criteria for an “underground source of drinking water” in §146.3 may be determined under 40 CFR 144.8 to be an “exempted aquifer” if it meets the following criteria:

- (a) It does not currently serve as a source of drinking water; and
- (b) It cannot now and will not in the future serve as a source of drinking water because:
  - (1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
  - (2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
  - (3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
  - (4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or
- (c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

**§144.12 Prohibition of movement of fluid into underground sources of drinking water.**

(b) For Class I, II and III wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under part 146 [*I take that to mean aquifer exemption under 146.4*], the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit in accordance with §144.39, or the permit may be terminated under §144.40 if cause exists, or appropriate enforcement action may be taken if the permit has been violated.

## **In-Situ Uranium Leaching-Related Activities by OPRA's Underground Injection Control Program**

The Region 8 UIC Program is preparing to receive Class III UIC permit applications at two ISL uranium sites. Injection wells at both sites will be regulated by EPA Region 8. These UIC Class III ISL Permits will be the first nationally that EPA would issue and directly regulate under a direct implementation program. Powertech (USA) Inc. (Powertech) is proposing to submit permits for the Centennial Site in Weld County, CO, and the Dewey-Burdock site south of Rapid City, SD. The target receipt date for the Dewey-Burdock permit application is December 31, 2008. No target date has been set for the Centennial permit application.

Region 8 UIC program staff are engaging in the following activities to prepare for handling the permit applications in an efficient and informed manner.

**I.** Meetings and conference calls with the co-regulating agencies in Colorado and South Dakota to initiate an informal coordinated effort for permit application review and permit issuance for the ISL sites. These agencies include:

1. Colorado Department of Natural Resources (CDNR)  
Division of Reclamation, Mining, and Safety  
State Engineer's Office under the Division of Water Resources
2. Colorado Department of Public Health and Environment (CDPHE)  
Hazardous Materials & Waste Management Division Radiation Program, which issues the radioactive materials license under agreement with the Nuclear Regulatory Commission.
3. Weld County Commissioners, who requested a presentation on EPA's UIC program and its role in regulating ISL mining. Weld County will issue a land use permit.
4. South Dakota Department of the Environment and Natural Resources (SD DENR)  
Minerals and Mining Program  
Ground Water Quality Program

**II.** Review of amended state ISL injection well regulations proposed by SD DENR<sup>1</sup> agencies. These amended state regulations are at least equivalent to federal UIC regulations, and will allow for increased ground water protection and restoration requirements to be applied to in-situ uranium operations. These more detailed amended state regulations will facilitate ~~easier~~ (smoother?) coordination between the Region 8 UIC Program and the DENR programs that regulate ISL injection wells in South Dakota.

**III.** Establishing a contract with an independent, third party contractor. The contractor will observe aquifer tests at the Centennial project site in Colorado, review the aquifer test data, and perform hydrologic and geochemical models simulating active mining and

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<sup>1</sup> The CDRMS is currently updating state regulations related to ISL mining.

restoration in the project area. One reason the Centennial project is receiving ~~a much~~ **higher level of this level of** technical scrutiny is because many residences located near the proposed Centennial project rely on private wells for their drinking water, and many of those drinking water wells are completed in the same Fox Hills Formation aquifer as the mining zone aquifer. The data and models provided by the contractor will provide information how water withdrawal from those drinking water wells could affect and complicate ground water flow patterns in the project area, thus helping EPA develop permit requirements that better protect underground sources of drinking water (USDWs) in the Centennial project area. In contrast, the Dewey Burdock site in SD is mainly ranch land, with far fewer private drinking wells. At Dewey-Burdock, the private residences that did have drinking water wells completed in the mining zone aquifer agreed to have Powertech replace their drinking water wells with new, deeper wells that are not in hydrologic connection with the mining zone aquifer.

**IV.** The Region 8 UIC Program met with Powertech early on. Region 8 has developed permit application guidance documents and policy statements regarding criteria and processes used for permit application review, developing permit requirements, and for evaluating and approving exemption of a USDW aquifer for ISL mining. Federal regulations for UIC Class III facilities tend to be very general and do not provide detailed information helpful to companies developing permit applications and aquifer exemption requests.

**V.** In developing permit application guidance documents and policy statements, UIC staff also consulted or met with a number of mining companies with interests in Region 8, with consultants and experts on ISL mining, aquifer characterization and modeling, and with staff from state UIC programs and other EPA Regions.

**VI.** Coordination with WY DEQ Land Quality Division (LQD). In 2005, the LQD, the Division responsible for the delegated UIC Class III program, passed regulations governing noncoal rules (ISL regulations). At that time, Region 8 identified and commented to LQD regarding several issues that needed to be addressed prior to approving their regulations. One outstanding issue concerns the language used to describe the boundary of an exempted aquifer. EPA must approve any exemption of a USDW aquifer at an ISL project before injection is allowed. Region 8 EPA and LQD have met twice this year to discuss resolution of this issue. LQD intends to modify their regulations such that their aquifer exemption language is as strict as EPA regulations. At the request of LQD, EPA provided LQD with a formal letter denying approval of the already-passed noncoal ISL rules to provide to the Wyoming Environmental Quality Council (EQC). The LQD is expecting an ISL permit application with aquifer exemption in the near future which likely will need to be issued before any new noncoal rules become final.