BEFORE THE
ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

IN THE MATTER OF THE OBJECTION	)	
TO THE MINE PERMIT OF	)	Docket No. 11-4803
LOST CREEK ISR, LLC, TFN 4 6/268	)	

LOST CREEK ISR'S CLOSING ARGUMENT

Pursuant to the Presiding Officer's oral order given upon the close of evidence in the Hearing on the above-captioned matter, applicant Lost Creek ISR, LLC ("Lost Creek") respectfully submits this Closing Argument.

INTRODUCTION

The Department's Land Quality District 2 Supervisor notified Lost Creek on February 17, 2011 that In-Situ Recovery (ISR) Permit Application, TFN 4 6/268 (the "Application") was technically complete and ready for public notice. Following publication, the Wyoming Outdoor Council ("Petitioner") submitted an initial Notice of Written Objection on June 24, 2011, whereupon the Council issued an order on June 29, 2011 setting the matter for a hearing to commence on July 13, 2011. Pursuant to a prehearing status conference held on July 6, 2011, the Hearing was reset to begin on August 3, 2011, and Petitioner was permitted to supplement its four initial objections by introducing three additional multi-part objections – each challenging the Application's compliance with the Governor's Executive Order relating to sage grouse. Petitioner's Amended Written Objections (the "Amended Objections") are the subject of this proceeding.

SUMMARY OF ARGUMENT

Lost Creek initially submitted the Application on December 18, 2007. Over the ensuing three-plus years, the Department and Lost Creek engaged in an iterative process of review and

comment that focused intensely on every section, term, and condition set forth in the Application. The review process began with an initial list of 200 technical comments submitted by the Department, requiring Lost Creek to submit additional information, technical analysis, and documentation to support each aspect of the proposed mining operations. In total, the Application was submitted to seven rounds of technical review by the Department's technical staff of five, including Mr. Mark Moxley (a 34-year veteran of the Department and District 2 Supervisor for 20 years) and Ms. Amy Boyle (B.S. in Engineering Geology, and a Professional Geologist, with 18 years experience with the Department), who both testified at the Hearing. As the voluminous and detailed record plainly demonstrates, the Application has not suffered from a lack of evaluation and deliberation by those agency technical experts who are charged by statute with its review and approval.

Petitioner's Amended Objections include the four initial objections regarding the size of the aquifer reclassification boundary, the location of that boundary outside the monitoring well perimeter, the location of a fault line within the mining area, and the treatment of historic exploratory bore holes. However, *Petitioner designated no witnesses and no exhibits and presented no evidence at all on those issues* at the Hearing. By contrast, both the Department and Lost Creek presented extensive evidence regarding the characterization, analysis, and resolution of each of these issues during the permitting process. Because Petitioner failed by any measure to meet its burden of proof, these first four objections must be rejected outright.

Petitioner's remaining objections – that the Application does not adequately protect sage grouse habitat and populations – depend upon a rigid interpretation of Governor Mead's Executive Order 2011-5 (the "Executive Order") that would read out all flexibility that is an inherent component of the sage grouse core area strategy reflected in the Executive Order.

Petitioner's interpretation would further render numerous provisions of the Executive Order mere nullities, and would strip the agencies charged with implementing the policy of all professional judgment and discretion. While Petitioner presented limited evidence on what it might have done differently had it been charged with implementing the Executive Order, Petitioner fell far short of carrying its burden to demonstrate by a preponderance of the evidence that the Application is non-compliant with the terms, requirements, and stipulations of the Executive Order. By contrast, there is substantial evidence in the record to support the analysis and determination made by both the Department and the Wyoming Game and Fish Department ("WGFD") that the Application does indeed comply with the law and that the stipulations are adhered to in a manner that will not cause a decline in sage grouse populations. Indeed, Petitioner's own witness agreed that the Application complies with the Executive Order within a reasonable range of professional judgment.

Petitioner has failed to carry its burden to demonstrate that the Application should be denied under any one of the statutory bases set forth in the Wyoming Environmental Quality Act (the "Act"), and the Council should deny each of the Amended Objections.[1] The determinations made by Department and WGFD technical experts are entitled to deference, and because the Application complies with the requirements of the Act and all applicable state and federal laws, the Council is required by statute to affirm the Department's approval of the Application.

[1] Petitioner also argued during opening statements that the timing and procedures governing the hearing may violate Petitioner's right to procedural due process. The principles of due process that apply in adjudicatory administrative proceedings provide that when the state seeks to terminate or infringe upon a property interest, the state must afford notice and an opportunity for a hearing, appropriate to the case, before terminating or infringing upon that interest. See Amoco Prod. Co. v. Wyo. State Bd. of Equalization, 882 P.2d 866, 872 (Wyo. 1994). The party claiming such infringement must first show the existence of a protected property interest and then demonstrate how that interest has been affected in an impermissible manner. See Pfeil v. Amax Coal West, Inc., 908 P.2d 956, 961 (Wyo. 1995). As a threshold matter, Petitioner has made no effort to identify any cognizable property interest that it holds that may be infringed by these proceedings. Furthermore, Petitioner did not avail itself of the opportunity to either (i) seek a continuance of the hearing pursuant to Section 10(b) of Chapter 1, WDEQ General Rules of Practice and Procedure, or (ii) seek leave for depositions and additional discovery in accordance with Section 10 of Chapter 2, WDEQ Rules of Practice and Procedure Applicable to Hearings in Contested Cases. Petitioner's due process arguments were not properly pleaded and have no basis in law or in fact, and should therefore be denied.

STANDARD OF REVIEW AND APPLICABLE LAW

The Hearing in this matter was conducted in accordance with the Department's Practice and Procedure regulations and the relevant provisions of the Act and the Wyoming Administrative Procedure Act ("APA"). Pursuant to those authorities, the initial burden of demonstrating that the Department's action in approving the Application is arbitrary or illegal, or is otherwise not supported by substantial evidence in the record, rests upon the Petitioner. See Knight v. Envt'l Quality Council, 805 P.2d 268, 273 (Wyo. 1991); Grams v. Envt'l Quality Council, 730 P.2d 784, 786 (Wyo. 1986); see also W.S.A. § 16-3-114(c) (standards of review under the APA). This burden requires that the Petitioner place evidence in the record that will sustain the Petitioner's position by *at least* a preponderance of the evidence. See Wyo. Bancorporation v. Bonham, 527 P.2d 432, 439 (Wyo. 1974); see also In the Matter of the Objection to the Mine Permit of Croell Redi-Mix, Inc., TFN 5 6/072, at 9, EQC Docket No. 09-4806 (Mar. 12, 2010).

In cases such as this, involving highly technical issues assigned by law to state agencies to evaluate and decide, this burden is even higher. Courts will extend deference to the specialized knowledge, experience and technical expertise of the administrative agency or agencies that made the decision being challenged – in this case, the Department's Land and Water Divisions and the WGFD – and will not disturb an agency's decision *unless* it is demonstrated to be *clearly contrary* to the overwhelming weight of the evidence on the record. See Joe Johnson Co. v. Wyo. State Bd. of Control, 857 P.2d 312, 314 (Wyo. 1993).

The statutory standard governing the Department's review and approval of an application for a permit to mine provides that:

> The requested permit . . . *shall* be granted if the applicant demonstrates that the application complies with the requirements of this act and all applicable federal and state laws.

Wyo. Stat. Ann. § 35-11-406(m) (emphasis added). The statute then identifies twelve specific and exclusive reasons for which the Department may deny a permit application. See id. § 35-11-406(m)(i) – (xvi); see also In the Matter of Objection to the Mining Permit Application of Mountain Cement Company Permit No. 298C, TFN 4 2/220, at 10, EQC Docket No. 07-4804 (Dec. 7, 2007) ("The permit can only be denied for the enumerated criteria in § 35-11-406(m)."). Petitioner does not allege that any of the twelve enumerated reasons for denial are present with this Application; its objections are framed more as issues of compliance with state and federal law. Moreover, Petitioner in its prayer for relief does not seek denial of the permit, but rather impliedly invokes Wyo. Stat. Ann. § 35-11-112(c)(iii) by requesting that the Council modify the Application in one or more ways. As was demonstrated at the Hearing, no such modification – requiring the Council to substitute its judgment for the specialized knowledge, technical expertise and professional judgment of the Department and WGFD personnel to whom deference is to be accorded – is appropriate in this case.

ARGUMENT

I. PETITIONER PRESENTED NO EVIDENCE RELATING TO THE FIRST FOUR AMENDED OBJECTIONS.

A. The Department and Lost Creek Presented Evidence on a Modified Aquifer Reclassification Boundary that Will Fully Comply with State and Federal Law, and which Will Fully Address the Concerns Raised by Petitioner.

Petitioner's first objection relates to the proposed reclassification of a defined area of the HJ Horizon of the Battle Spring Formation as Class V (Mineral Commercial) ground water,[2] on the basis that the reclassification boundary was not justified and encompassed too large an area.

[2] It is important to note that, as Ms. Boyle testified, the current classification of the aquifer is Class IV (Industrial), which is unsuitable for drinking water and for stock watering.

Petitioner's second and related objection argues that the monitoring well boundary should be the absolute outside limit for any groundwater reclassification boundary.

The Department's testimony confirms that the reclassification request originally submitted to the U.S. Environmental Protection Agency ("EPA") conforms to the requirements of Chapter 8 of the Water Quality Division's Quality Standards for Wyoming Groundwaters regulations, as well as Chapter 11 of the Land Quality Division's Noncoal In Situ Mining regulations. The boundary initially submitted and approved by the Department complies with Chapter 11 regulations requiring that the portion of the aquifer being reclassified be defined out to "the next quarter quarter (¼ ¼) section boundary that is at least one quarter (¼) mile from the monitor well ring." Ch. 11, Noncoal In Situ Mining, §10(b)(ii)(B)(II). After approving the proposed reclassification, on April 28, 2011, the Department submitted its Statement of Basis and supporting documentation to EPA Region 8 for review in accordance with the 1983 Memorandum of Agreement between the Water Quality Division and EPA (the "MOA").

Pursuant to the MOA, the EPA reviewed the Statement of Basis submitted by the Department for consistency with the criteria set forth in EPA's regulations at 40 CFR 146.4. On June 8, 2011, the EPA responded by requesting additional information in support of the proposed boundary. Since receipt of EPA's response, the Department and Lost Creek have engaged EPA staff in multiple meetings to reach agreement over a modified boundary that remains within the reclassification boundary approved by the Department and which also conforms to EPA's aquifer exemption regulations, all while providing the technical justification sought by EPA. As described in the expert testimony of Mr. Errol Lawrence, Petrotek Engineering Corporation, the revised aquifer reclassification boundary is based upon a scientific method developed by Petrotek and accepted by the Department and EPA. The revised boundary was designed to

ensure that Lost Creek can detect and address any excursion from the production zone before it could travel beyond the reclassification boundary.

At the Hearing, there was a discussion on and off the record of the prospect of resolving the Petitioner's objections to the aquifer reclassification by means of a stipulation. As contemplated, that stipulation would be to modify the Application by requiring a condition that Lost Creek not commence operations until receipt of the EPA approval of the aquifer exemption, and the Council requested the parties submit proposed stipulation language no later than August 31, 2011. Subsequent to the Hearing, the Department submitted to EPA the revised Statement of Basis on August 11, 2011 (see Revised Statement of Basis and revised boundary map attached as Exhibit 1). On August 23, 2011, EPA approved the aquifer exemption at Lost Creek as set forth in the August 11 Statement of Basis (see EPA Region 8 approval letter attached as Exhibit 2). The EPA's approval is the final approval required for Lost Creek's application and request for aquifer reclassification and exemption. This approval nullifies the need to submit a stipulated condition to the Council on August 31, 2011.

This testimony and evidence presented by the Department and Lost Creek applies equally to Petitioner's second objection, in which Petitioner asserts that the monitoring well perimeter must serve as an absolute outside boundary for any aquifer reclassification. As explained by both Mr. Moxley, and Mr. John Cash of Lost Creek, the monitoring wells serve as an early warning operational protection against groundwater excursions, not as points of compliance. If the reclassification boundary were drawn so narrowly, any excursion would result in a violation of the Safe Drinking Water Act ("SDWA") even prior to it being detected. Mr. Moxley underscored the importance of having a buffer zone immediately outside the monitoring well perimeter in order to prevent pre-detection SDWA compliance issues, and described the limits

proposed by Petitioner as not being "operationally feasible." In response, Petitioner presented no testimony or evidence to support its assertion that the limitation proposed by Petitioner is either required or even contemplated by the regulatory scheme established by the EPA and delegated to the State of Wyoming. Further, the approvals by the Department and EPA of the revised aquifer boundary (encompassing only the monitoring well perimeter plus an additional 120 feet), which have technical justification, should fully address Petitioner's concerns, and resolve the second objection.

B. The Department and Lost Creek Have Characterized and Tested the Lost Creek Fault and the Exploratory Bore Holes Located in the Area, and the Application Includes Adequate Terms and Conditions to Address the Possibility of Excursions.

Petitioner contends in its third and fourth objections that the Application includes inadequate precautions to prevent lixiviant and associated minerals and contaminants from migrating outside the production zone, via either a geologic fault line or historic exploratory bore holes, and contaminating adjacent aquifers. Again, Petitioner presented no evidence or testimony to support these objections. By comparison, the Department and Lost Creek presented evidence documenting the extensive analyses already conducted to characterize and test both the Lost Creek fault and historic bore holes, and described the binding commitments set forth in the Application that have been designed to ensure that neither feature will serve as a conduit for fluids during operations.

The State offered the testimony of Mr. Moxley and Ms. Boyle, who together have more than half-century of experience with the Department. Mr. Moxley testified that his team of four reviewers analyzed the fault feature of the Lost Creek project through examination of the pump tests conducted by Lost Creek, review of a series of approximately 25 geologic cross sections

constructed by the company at the Department's request, and analysis of the data returned from monitor wells installed by Lost Creek.

Lost Creek presented the expert testimony of Mr. Lawrence, who was qualified at the Hearing as an expert in the areas of geology, hydrogeology, groundwater modeling, aquifer testing, aquifer restoration, and wellfield monitoring and design. Mr. Lawrence testified that the analysis performed by Lost Creek confirms that the fault acts not as a hydraulic conduit – as Petitioner's unsupported allegation suggests – but as a substantial impediment to groundwater flow. (Mr. Moxley referred to it as a "pretty hard barrier.") Mr. Lawrence further described the methodology and results of an aquifer pump test, by which the company hydraulically stressed the fault and collected water level response data via monitoring wells completed on both sides of the fault and in the production, overlying, and underlying aquifers. The results of the test demonstrated that even under significant hydraulic stress, in which a maximum drawdown of 63.5 feet was achieved over two days of pumping at the drawdown well, measured drawdown on the opposite side of the fault and in both the overlying and underlying aquifers was generally less than one foot. Based on these results, Mr. Lawrence opined that the data do not support Petitioner's hypothesis that the fault can serve as a conduit for fluids.

Notwithstanding these results, the Department and Lost Creek both testified to the additional commitments set forth in the Application that were designed specifically to ensure that the fault does not serve as a conduit for fluids during mining operations. Those commitments are: (1) none of the production well patterns will be designed across the fault line; (2) monitoring wells will be installed and data collected at locations along the fault to promptly identify cross-fault excursions; (3) in accordance with standard industry practice, Lost Creek will maintain a constant hydraulic "sink" as an operational and engineering control that will maintain a cone of

depression and inward flow of fluids toward the production well and away from the fault; and (4) no production well will be located within 25 feet of the fault.

Mr. Moxley also testified about the historic bore holes at the Lost Creek site, which he characterized as "not unique" among uranium in situ recovery sites in Wyoming. Mr. Lawrence also offered his expert testimony on the objection concerning bore holes, explaining that static water levels in the overlying and underlying aquifers differ substantially from those measured in the production zone aquifer. This variation indicates a significant degree of confinement between the aquifer layers and a lack of hydraulic communication between them. Moreover, the aquifer pump test described above also confirmed the efficacy of the procedures designed to re-abandon any bore holes that may potentially serve as fluid conduits.[3]

Mr. Moxley explained that many of the historic bore holes were drilled prior to Wyoming's adoption of bore hole abandonment requirements in 1978, so their number and actual locations were never reported to state regulators. However, as Mr. Cash explained, Lost Creek purchased a database containing the locations of the historic drill holes. As a result, Lost Creek agreed and the Application requires that, upon receipt of the permit to mine and in relation to Mine Unit 1, Lost Creek, prior to any injection of mining solution, will attempt to locate and properly abandon, in accordance with modern abandonment standards, all historical drill holes within the monitor well boundary of Mine Unit 1. Lost Creek has further agreed to conduct an additional aquifer pump test prior to mining, which test will be designed to mimic the prior aquifer pump test described above. With these commitments in place, Mr. Moxley testified that Lost Creek "has done as much as they can to address" the incidence of historic bore holes. After

[3] During Petrotek's initial aquifer pump test, monitoring well data revealed a drawdown in an isolated location of the underlying aquifer. Investigation indicated that the breach in the underlying aquitard was caused by a defective casing in a monitoring well. After plugging the well, Petrotek performed a second pump test and confirmed that the remediation had eliminated the excursion potential associated with the bore hole.

offering similar testimony detailing these commitments, Mr. Lawrence further testified that the network of installed monitoring wells will provide further indication of potential excursions via bore holes that extend into either the overlying or underlying aquifers. Any such detection would trigger an investigation into the source of the excursion and the required remedial action.

In stark contrast to this extensive technical testimony and evidence, Petitioner presented no documentary evidence or witnesses of its own in support of the third and fourth objections. Instead, Petitioner relied solely on the testimony of State witnesses, but the State witnesses testified unequivocally that Lost Creek's pump tests and other data satisfied the State's concerns with respect to both the fault line and the bore holes, and that the monitor wells and other conditions in the Application are sufficiently protective of groundwater. Accordingly, without evidence to contravene that which is in the record and in recognition of the technical expertise applied to the characterization and testing of both the fault and the historic bore holes, Petitioner's third and fourth Amended Objections should be denied.

II. THE APPLICATION INCLUDES TERMS AND CONDITIONS RELATING TO SAGE GROUSE PROTECTION THAT COMPLY WITH EXECUTIVE ORDER 2011-5.

Petitioner's fifth, sixth, and seventh Amended Objections each purportedly relate to the adequacy of terms and conditions in the Application to protect sage grouse habitat and populations pursuant to Governor Mead's Executive Order 2011-5.[4] It is clear, however, from the evidence presented by Petitioner, that these objections represent little more than an unfounded disagreement with (1) the adequacy of the framework recommended by the Sage

[4] The Order is the third executive order signed by consecutive governors that incorporates and implements the Core Population Area strategy developed by the Sage Grouse Implementation Team ("SGIT"). The SGIT represents an ongoing and multi-disciplinary public process that was designed to develop sound strategies for sage grouse conservation at the state level, based in science, in order to preclude the listing of the species under the federal Endangered Species Act.

Grouse Implementation Team ("SGIT") and the terms of the Executive Order, and (2) the exercise of professional discretion by the WGFD technical experts who reviewed the Application.

Petitioner's overarching concern with the adequacy of the Executive Order is misguided and irrelevant to the issue at hand. The SGIT was directed to consider and did consider all available and best science relating to sage grouse conservation and the core area strategy. Each of the studies presented and relied upon by Petitioner predates the June 2, 2011 Executive Order, and were therefore already considered by the SGIT and by WGFD personnel. Petitioner's effort to replace the balanced approach mandated by the Executive Order with the strict teachings of its preferred studies – the individual terms of which are not reflected in the Executive Order – has no bearing upon the only determination that the Council is required to and permitted to make under the Act: whether WGFD and the Department properly determined that the terms and conditions included in the Application conform to the requirements of the Executive Order itself.

With respect to whether the Application complies with the Executive Order, Petitioner may disagree with the determinations made by WGFD and the Department's acceptance of those determinations, but to successfully challenge the agencies' decision in this proceeding, Petitioner must prove that the State acted arbitrarily, capriciously or contrary to law. Mere disagreement, absent credible evidence that the State either made decisions unsupported by the record or failed to fulfill its legal obligations, is not enough to overcome the discretion afforded the WGFD and the Department on areas squarely within their technical expertise. Petitioner did not meet its burden, and the evidence presented by the Department and Lost Creek witnesses, as outlined below, clearly demonstrates that the Application complies with the Executive Order.

A. Evidence Presented By Petitioner.

The evidence presented by Petitioner consisted of (1) the introduction as exhibits of voluminous and redundant scientific studies (supported by little or no related testimony), all of which represents known science predating the SGIT's years of work and issuance of the series of Executive Orders, and (2) the testimony of two witnesses who were not formally qualified as experts at the Hearing and who each testified that they had never visited the Lost Creek site. On repeated occasions during the Hearing, the Presiding Officer sustained objections to Petitioner's effort to introduce evidence and testimony regarding protective standards advocated by Petitioner that are not included as terms or stipulations in the Executive Order. While Petitioner's witness Sophie Osborn was passionate in her presentation of her concern of raven predation, the Executive Order (which is based upon best available science) does not even mention ravens, much less impose requirements to address raven populations. Petitioner was repeatedly directed to focus its presentation toward sustaining its burden of proof by demonstrating any manner in which the Application fails to comply with the Executive Order.

Petitioner asserted generally that the Department and WGFD had not shown that permitted activities will not cause declines in sage grouse populations, and that the Application contains inadequate mitigation measures. More specifically, Petitioner argued that the Application failed to conform to General Stipulations 2 (Surface Occupancy), 4 (Transportation), and 5 (Overhead Lines). Petitioner also expressed concern that the Application does not address Petitioner's concerns regarding potential sage grouse predation by ravens, a consideration that is not a part of the Executive Order. Petitioner's witnesses both testified on direct examination that a project must strictly comply with each of the Executive Order's general and specific

stipulations before the project can be afforded the protections inherent in Section 4, but their testimony as a whole was conflicting on this point. Upon cross examination, neither witness could square their rigid and selective reading of the Executive Order with the express provisions of Section 18, which allows that "adjustments to the stipulations may be necessary based upon local conditions and limitations," or with General Stipulation 12, which provides that "any exceptions to these general or specific stipulations will be considered on a case by case basis." Furthermore, Petitioner's witness Vicki Herrin had no substantive response to the observation by Council Member Searle that under the terms of the Executive Order the General Stipulations "are recommended to apply" to activities in core areas, but are not expressly required. Ms. Osborn, conversely, actually testified on cross-examination that the stipulations in Attachment B to the Executive Order "are recommendations." Ms. Osborn also conceded on cross-examination that the Executive Order provides for flexibility in the review of projects by WGFD.

Notably, Ms. Herrin testified that although she is not normally a proponent of new disturbances within core habitat, her concerns relating to the locations of the east and west roads could be alleviated by constructing a new road extending from the south, bisecting core habitat that is presently undisturbed. As an initial matter, this proposal contradicts Ms. Herrin's earlier testimony that fragmentation of habitat by roads and other infrastructure is the "leading threat" to sage grouse conservation. Moreover, quite inadvertently, Ms. Herrin's opinion on this issue underscores perhaps the most fundamental issue presented to the Council in this proceeding – the ability of the agency charged with interpreting and administering the Executive Order to exercise its best professional judgment and discretion when reviewing projects for consistency with the terms of the Executive Order. If Ms. Herrin can, in the exercise of her own personal discretion, advocate for the construction of an entirely new road that would disturb and bisect previously

undisturbed core habitat, then certainly the WGFD experts charged with implementing the law may consider the value of co-locating with existing roads within already disturbed areas in order to conform to the direction of Section 18 of the Order.

Petitioner's witnesses testified that any level of vehicle traffic is detrimental to sage grouse, and sought to equate the type of traffic at an in-situ facility to that of a coal mine or an oil and gas field development, despite having no science to support such assertions and neither having ever visited an in-situ facility. In her testimony, Ms. Osborn agreed that none of the scientific studies that Petitioner introduced is a study of an in situ recovery project. These unsupported assertions cannot measure up to the weight that must be given to the WGFD's professional analysis, which relied upon certain factual considerations, including: (1) the size of trucks and the frequency of trips, both of which are considerably less than other mining and oil and gas operations; and (2) limiting access to the east road would be both impracticable and inconsistent with safety and physical limitations of the road network to the east of the project and with the needs of Lost Creek's employees.

These important considerations were perhaps best represented and acknowledged by Ms. Herrin herself. At the conclusion of Ms. Herrin's testimony, Council Member Searle asked her whether she considered the WGFD's determination that the Application complies with the Executive Order to be within a reasonable range of professional opinion on the subject. Ms. Herrin replied that, in her opinion, the WGFD's determination was within the range of the intent underlying the terms of the Executive Order. While patently inconsistent with her earlier testimony that reflected a very rigid reading of the terms and stipulations of the Executive Order, Ms. Herrin's candid response implicitly acknowledges that the Executive Order simply cannot be read as providing a singular, one-size-fits-all approach to sage grouse habitat and population

management. Instead, the Executive Order expressly vests the WGFD with the discretion to consider existing site and habitat conditions, and to weigh project-specific limitations as well as opportunities in order to determine a reasonable range of terms and conditions that may be applied to a specific project.

B. Evidence Presented By the Department.

In contrast to the Petitioner's presentation, the Department and Lost Creek both presented the scientific, technical and factual bases upon which WGFD approved the Lost Creek Wildlife Plan, and which support the Department's incorporation of that Plan into the Application. The Department presented the testimony of Scott Gamo, Staff Terrestrial Biologist for WGFD (B.A. Biology; M.S. Wildlife). Mr. Gamo testified that the Executive Order designates WGFD as the agency responsible for reviewing mining and other project applications for conformance with the Executive Order. According to Mr. Gamo's testimony, the purpose of the Executive Order is to conserve greater sage grouse habitat and populations in Wyoming while also allowing development to continue throughout the state. Mr. Gamo testified that both Governor Mead and his predecessor recognized that Wyoming is an energy state, and that the Executive Order's industry-specific stipulations were developed by the SGIT to allow for new development and accommodate a degree of flexibility, discretion, and professional judgment on the part of WGFD as the reviewing agency.

As reflected in Mr. Gamo's testimony, section 3 of the Executive Order permits new development and land uses within core population areas when it is demonstrated that those activities will not cause declines in sage grouse populations. Section 4 further provides that development consistent with the stipulations set forth in Attachment B to the Executive Order will be "deemed sufficient to demonstrate that the activity will not cause population declines."

Mr. Gamo described the Maximum Disturbance Process included in Attachment B, which utilizes a Density/Disturbance Calculation Tool ("DDCT") to determine the maximum allowable disturbance of suitable sage grouse habitat within the area affected by the project. As Mr. Gamo testified, Lost Creek prepared this analysis on three separate occasions and each analysis confirmed the Project's compliance with the disturbance limits imposed by the Order.

Mr. Gamo testified that upon WGFD's initial review of the Project, the agency expressed concern regarding the east and west roads servicing the property, because both roads are located within 0.6 miles of certain sage grouse leks. WGFD requested topographical information for those areas located between the roads and the leks in order to assess visibility issues, and also considered various directives set forth in the Executive Order that favor use of existing disturbances, co-location of disturbances, and prevention of habitat fragmentation. *See, e.g.*, Executive Order, Section 18, General Stipulation 1. After determining that the prevailing topography would eliminate line-of-sight disturbance, WGFD weighed the various factors and concluded that use of the existing roads would be preferable to the habitat fragmentation and new disturbances that would result from the construction of all-new access roads. In his testimony, Mr. Gamo noted the WGFD's previous "success with having topography in between leks and roads." He further noted that the agency's decision is consistent with the flexibility and discretion afforded to WGFD under the Executive Order, given that no two projects are alike and the review process is intensively fact-specific.

Mr. Gamo also testified to the 1.9-mile buffer that applies to the location of "main roads used to transport production and/or water products," as set forth in General Stipulation 4. Mr. Gamo noted generally that existing roads are exempt from these limitations, and that in any event the intent of the SGIT was to apply the 1.9-mile limit to main haul roads that handle a high

volume of over-sized truck traffic. Acknowledging that the SGIT might have expressed this intent more clearly in the language of the stipulation, based upon his experience and personal involvement in the development of the policy Mr. Gamo testified that the one eighteen-wheeler trip per day on average contemplated by Lost Creek is not in the same category of use that is addressed by this limit.

On other issues, Mr. Gamo testified that General Stipulation 5 allows a permittee the alternative of either raptor-proofing or burying overhead lines, and that Lost Creek's election to raptor-proof the power line being installed is therefore in full compliance with the Executive Order. Mr. Gamo testified that the wildlife monitoring plan included in the Application is comprehensive and was developed by noted sage grouse biologist Matt Holloran, who authored much of the research that the SGIT relied upon in crafting certain of the terms of the Executive Order. Mr. Gamo further noted that the monitoring plan provides ongoing oversight of the Project, and provides for adaptive management enforcement under General Stipulation 9 if population declines are noted using a 3-year running average during any 5-year period.

The Department also entered into evidence an August 1, 2011 letter from WGFD Deputy Director John Emmerich to Melissa Bautz of the Department's Land Quality Division. In the letter, Mr. Emmerich confirmed that WGFD had requested Lost Creek conduct a DDCT for the Project under the terms of the new Executive Order approved on June 2, 2011, and that the results of that DDCT analysis do comply with the Executive Order. Mr. Emmerich further confirmed that (i) the sage grouse monitoring plan is sufficient and appropriate and complies with the Executive Order, (ii) the planned upgrade and use of the existing east and west roads is preferable to the construction of new roads, (iii) Lost Creek's commitment to adaptive management for mitigation is sufficient to reverse any negative population trends caused by

mining activities, and (iv) development and operations will conform to the required seasonal use restrictions.

C. Evidence Presented By Lost Creek.

Mr. Cash, Vice President of Regulatory Affairs for Lost Creek's parent company Ur-Energy, also testified to each of the sage grouse objections raised by Petitioner. Mr. Cash, who attended SGIT meetings and served as the In Situ Working Group Chair during the SGIT process, testified consistent with Mr. Gamo's description of the WGFD's review process, and confirmed that the wildlife monitoring and adaptive response plan in the Application were drafted for the express purpose of implementing further protections as may be required based upon population data that will be gathered and analyzed as mining operations proceed. Responding specifically to questions raised by Petitioner concerning the potential for increased "raven" predation, Mr. Cash testified that Lost Creek's commitment to raptor-proof installed overhead lines fully complies with the requirements of the Executive Order, which includes no specific provision to otherwise address predation by ravens.

During his testimony, Mr. Cash explained the DDCT analysis step-by-step, describing how the DDCT analysis boundary was determined and the manner in which existing manmade disturbances were identified using aerial photography of the area. Certain disturbances that may have been naturally occurring but which were inaccessible were recorded as manmade disturbances, which had the effect of building a conservative bias into the analysis. After itemizing and quantifying both the incidence and size of the various disturbances, Lost Creek determined that the total percentage disturbance equaled 0.9% of the total DDCT area, well within the 5% limit required by General Stipulation 1 of the Order, and that the number of active

development areas is well under the average of one site per square mile as required by Mining Stipulation 2(c).

Contrary to the Petitioner's attempt to characterize the two-road access as one of convenience or choice only, Mr. Cash testified extensively on the regulatory and operational considerations that require use of the two existing east and west access roads. As a regulatory matter, the fire and safety requirements imposed by Sweetwater County require that there be two access routes for ingress and egress, and the County has already approved the use of both roads. The two-route plan also satisfied the objectives of Section 11 of the Executive Order which provides that "public and firefighter safety remains the number one priority for all fire management activities." Mr. Cash testified that the U.S. Nuclear Regulatory Commission has already completed its NEPA analysis of the Project, which was based upon the use and continued existence of the two roads, and the same analyses are currently under consideration by the U.S. Bureau of Land Management. Any changes to the planned roads would require re-review by these two federal agencies, and by Sweetwater County, which has already approved the Lost Creek Development Plan.

Operationally, the east road is necessary to ensure access for those employees who will be commuting from eastern locations, both for ease of access and to limit vehicle miles travelled and the potential for sage grouse mortality due to vehicle hits. The west road is the only road that connects to roads capable of accommodating eighteen-wheeler truck access for product shipment and delivery of chemicals. Mr. Cash reiterated earlier testimony that the roads are 'co-located' in areas of existing disturbance – the preferred planning method of the Executive Order. Finally, Mr. Cash confirmed in his testimony that any other choice for roads would require extensive new baseline studies and revised planning: the current road plan was devised only

after completion of detailed archeological, vegetation, soils, wildlife, drainage and engineering studies.

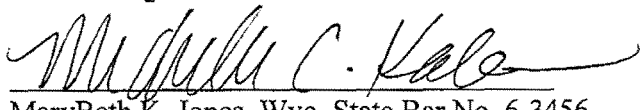
Nothing in the evidence and testimony presented by Petitioner demonstrates that the WGFD's and the Department's decision was an abuse of their expertise and discretion, or was not supported by adequate and substantial evidence in the record, or that the decision was arbitrary, capricious, or otherwise not in accordance with law. Petitioner's objections regarding compliance with the Executive Order must therefore be denied.

CONCLUSION

For the foregoing reasons, Lost Creek respectfully requests that the Council approve its Application and deny the Petitioner's Amended Objections.

Respectfully submitted this 26th day of August, 2011.

FOR APPLICANT LOST CREEK ISR, LLC



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Denver, CO 80202

CERTIFICATE OF SERVICE

I hereby certify that on this 26th day of August, 2011, a true and correct copy of **LOST CREEK ISR'S CLOSING ARGUMENT** was filed by electronic mail to *kim.waring@wyo.gov* and served by electronic mail and U.S. Mail, postage prepaid, to the following:

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Shirley M. Bingham

13725\1\1574480.6

EXHIBIT 1

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Matt Mead, Governor

John Corra, Director

August 11, 2011

Mr. Steven J. Pratt, P.E.
Director
Ground Water Program
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202

Re: Lost Creek ISR, LLC, Lost Creek Project
Groundwater Reclassification-Revision

Dear Mr. Pratt:

In accordance with the 1983 Underground Injection Control (UIC) program Memorandum of Agreement (MOA) between the State of Wyoming and the United States Environmental Protection Agency (US EPA), the Wyoming Department of Environmental Quality (WDEQ) provided the following materials related to the above-referenced in-situ mining project for your review: definition of the permit area and map, description of regional and site specific geology, including the mineralized zone, description of the groundwater within the permitted area, including map and description of groundwater used, and mine plan, including extraction techniques and process detail. This original document was provided on April 27, 2011. By letter dated June 8, 2011, the USEPA responded to the original request stating that the US EPA "cannot at this time approve WDEQ's proposed reclassification ..." Subsequent meetings between the US EPA, WDEQ, and Lost Creek ISR, LLC were held, and an agreement in principle was reached regarding an acceptable scientific approach to demonstrating an additional area outside the monitoring ring that would be acceptable for inclusion in the aquifer reclassification boundary. Documents reflecting and supporting that agreement are enclosed.

Attached to this letter is a copy of the Revised Statement of Basis (SOB) for the Water Quality Division's (WQD) proposed reclassification of groundwater within the mine units to Class V (Mineral Commercial) containing WQD's findings regarding the current use of the affected aquifer as a drinking water source and the presence of commercially producible minerals within that aquifer. Please note that there have been several changes made to the attachments provided for the Revised Statement of Basis. These revisions are listed in the attached Index Sheet which indicates where they are to be added into the previously provided 3-Ring binder.

As the revised aquifer reclassification boundary is substantially smaller than the previously proposed and published boundary, WDEQ's Land Quality Division is not requiring republication of the public notice.

In accordance with the MOA and Wyoming's UIC program description as accepted for program delegation by US EPA, please review these materials for conformance with Wyoming's groundwater classification criteria and the US EPA's regulations at 40 CFR 146.4.

You may contact Kevin Frederick, Groundwater Section Manager, at (307)777-5985 if you have any questions. We look forward to your review and response.

Sincerely,

Bill DiRienzo (for)

John Wagner
Wyoming Department of Environmental Quality
Administrator
Water Quality Division

JFW/KDF/DH/rm/11-0735

Attachments: *Revised Statement of Basis* including enclosures

cc: Mr. John Cash, Lost Creek ISR, LLC, 5880 Enterprise Dr., Ste. 200
Casper, WY 82609 (w/o enclosures)
John Corra, WDEQ Director (w/o enclosures)
Nancy Nuttbrock, LQD Administrator (w/ enclosures)
Alan Bjornsen, NRC, Env. Project Manager, Mail Stop T-8F5, Washington, DC 20555-0001 (w/o enclosures)
Kevin Frederick, Groundwater Section Manager, WQD/Cheyenne (w/o enclosures)
Deborah Harris, WQD/GPC District Supervisor, Lander (w/ enclosures)
Amy Boyle and Melissa Bautz, LQD Geologists, Lander→Mark Moxley, LQD District Supervisor, Lander (w/ enclosures)
Mark Newman, BLM Geologist, POB 2407, Rawlins, WY 82301-2407 (w/o enclosures)

WYOMING

Revised
Statement of Basis
Groundwater Reclassification
Class V Mineral Commercial

Project:	Class III UIC Permit: Lost Creek ISR Project
Operator:	Lost Creek ISR, LLC 5880 Enterprise Drive, Suite 200 Casper, WY 82609
Operator Contact:	John Cash Manager EHS and Regulatory Affairs Telephone (307) 265-2373
Aquifer Names:	HJ Horizon within the Battle Spring Aquifer
Aquifer Locations:	Red Desert, Sweetwater County, Wyoming (See Section II below)
Review Officials:	LQD, Melissa Bautz, WY P.G. #3690 Land Quality Division, Natural Resources Analyst WQD, Deborah Harris, WY P.G. #1331, West District Groundwater Section Supervisor 8/17/2011 LQD, Amy Boyle, WY P.G. #3376, Land Quality Division, Project Geologist 8/12/11
Date:	April 26, 2011, revised August 9, 2011
Action:	Groundwater Reclassification from Class IV to Class V Mineral-Commercial

I. Groundwater Reclassification Justification:

The Consolidated Permits Regulations (40 CFR §146.04 and §144.7) allow EPA, or approved State programs with Environmental Protection Agency (EPA) concurrence, to exempt underground sources of drinking water from protection under certain circumstances. An underground source of drinking water may be exempted if:

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 it can be demonstrated by a permit applicant as a 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.

Lost Creek ISR, LLC has submitted an application to the Wyoming Department of Environmental Quality (WDEQ) to operate an in-situ uranium mine in Sweetwater County, Wyoming. Pursuant to Wyoming Water Quality Rules and Regulations (WQRR) Chapter VIII, Section 4(d)(viii): Groundwater of the State found closely associated with commercial deposits of hydrocarbons and/or other minerals, or which is considered a geothermal resource, is Class V (Hydrocarbon Commercial), Class V (Mineral Commercial) or Class V (Geothermal) Groundwater of the State.

WQRR, Chapter 8, Section 4(d) (viii) (B) further states: A discharge into a Class V (Mineral Commercial) Groundwater of the State shall be for the purpose of mineral production and shall not result in the degradation or pollution of the associated or other groundwater and, at a minimum, be returned to a condition and quality consistent with the pre-discharge use suitability of the water.

II. Geographic Extent of Aquifer

The Lost Creek project consists of an area located in Sections 13, 14, and 25, Township 25N., R. 93W. and Sections 16 – 20, and 30, in T. 25 N., R. 92 W., Sweetwater County, Wyoming (see Figure II-1).

Lost Creek ISR, LLC currently proposes to inject fluids into the aquifer referenced in the Mine Plan application as the HJ Horizon of the Battle Spring Formation. The vertical extent of the HJ horizon is

described in greater detail in "Section VI – Aquifer Properties" (below). The horizontal boundary of the aquifer proposed to be reclassified to Class V (mineral-commercial) is depicted on the attached map (Figure II-1) The basis for the horizontal/lateral boundary of the aquifer proposed to be reclassified is based upon the following five (5) considerations:

1) The operation's ability to control fluids, as demonstrated in Attachment II-1 (enclosed);
2) An acknowledgement of the spatial relationship between the known economic mineralization (Figure II-1) ;
3) An acknowledgement for the need to have room to operate and monitor outside the monitor well rings, currently planned and future (see *Note below);
4) The fact that the entire region (**Figure II-2) is managed by BLM and can, therefore, be held under mining claims as provided for in the 1872 Mining Law; and
5) The fact that uranium mineralization and deposits are ubiquitous across the entire region (Figure II-2).

*Note about Figure (II-1) This figure was developed from the recently published Canadian Instrument 43-101 report for the Lost Creek Project and considers all drill hole information collected to date. Figure II-1 encompasses the known uranium mineralization of grade and quality that it is expected to be commercially producible in the Permit Area. The area of the aquifer proposed to be exempted beyond the commercially producible zone is the 500 foot distance for the monitoring well ring and an additional 120.0 ft. buffer (119.3 ft, rounded up).

This buffer beyond the monitor well ring was calculated based on three components:

ΔT: The potential extent of contamination beyond the monitor ring boundary when first detected at the monitor ring well, based on trigonometry and radial flow. This component is 59.0 ft.

Δd: The distance of excursion migration between time of detection and initiation of recovery. This component is 4.0 ft.

DF: Distance of excursion migration due to dispersivity factor (0.1 times the total travel distance of the excursion) This component is 56.3 ft.

The scientific theory behind each of these components and the related calculations are discussed in greater detail in Attachment II-2, Technical Memorandum from Petrotek Engineering Corporation, dated July 27, 2011. The proposed aquifer reclassification boundary of 120 ft. beyond the monitoring well ring is significantly more conservative than the April 2011 proposal. The acreage encompassing the boundary which was based on ¼ ¼ sections totaled 1,970.7 acres, whereas this revised approach encompasses 1,070.8 acres.

**Note about Figure II-2: This figure shows the regional uranium leasing activity around the Lost Creek Project. The majority of the land in this region is managed by the Bureau of Land Management and can therefore be held under mining claims as provided for in the 1872 Mining Law. Uranium mineralization and deposits are ubiquitous throughout the region. Known deposits include the Kennecott Sweetwater Mine, Lost Creek Project, Jab Project, Antelope Project, Green Mountain, Big Eagle, Lost Soldier, and Sheep Mountain. Countless additional areas of significant mineralization are also known to exist as a

result of extensive exploration performed from the 1960's through the 1980's. In 2008 LC ISR drilled a deep exploration hole in an effort to better understand the regional stratigraphy. A downhole geophysical log of the hole showed that nearly every sand horizon from surface to 6,000 feet below ground surface contains radioactive elements. It is likely that much of the groundwater in this region contains significant quantities of uranium and its radioactive daughter products thus rendering the water unfit for human and possibly livestock consumption.

The description of the polygon which provides the boundary of the aquifer reclassification area is provided as a series of 78 state plane coordinates in Attachment II-3.

III. Commercial Producibility of the Ore Deposits

Estimated uranium oxide (U_3O_8) or "yellow cake" reserves at the Lost Creek Project are 10,900,000 pounds. The plant at the Lost Creek Project will have a flow rate of approximately 6,000 gpm and a designed annual production of 1,000,000 pounds of U_3O_8. The enclosed map entitled "Uranium Mineralization within the HJ Horizon" (Figure III-1) as well as a copy of "Technical Report NI 43-101" (Attachment III-1) are presented to demonstrate the reserves in the project area.

IV. Geologic Properties

A. Regional Geology

The proposed facility will be located in the Great Divide Basin of south central Wyoming (Figure IV-1). The Great Divide Basin is an asymmetrical oval-shaped structural depression whose axis trends roughly west-northwest to east-southeast. The basin is bounded by the Wind River and Granite Mountains to the north, the Rawlins uplift to the east, the Wamsutter Arch to the south, and to the West by the Rock Springs uplift. There are several anticlines and synclines within the Great Divide Basin. In the location of the proposed Lost Creek Project area, which is located on the distal southern flank of the Lost Soldier Anticline (about 15 miles to the northeast), the beds dip gently to the west at about three degrees (3°).

The 6,200 foot thick Eocene aged Battle Spring Formation crops out across the northern and eastern portion of the Great Divide Basin. The Battle Spring Formation contains fine-to coarse-grained arkosic sandstones and conglomerates, a typical alluvial fan complex. The Battle Spring Formation inter-tongues with the time-equivalent Wasatch Group into the south and west portions of the Great Divide Basin. Large portions of the Great Divide Basin are covered with Quaternary alluvium and Pliocene pediments. However, at the proposed Lost Creek ISR site, the Battle Spring Formation outcrops at the surface.

B. Site Geology

The Battle Spring Formation was deposited in a high energy multi-channel fluvial environment interpreted as an alluvial fan derived from the south flank of the Granite Mountains to the north. The Battle Spring Formation outcrops at the surface at the proposed location for the Lost Creek ISR project (Figures IV-1 and IV-2). The uranium mineralization is found in the top 700 feet of the Battle Spring Formation (Figures IV-3 and IV-4).

Stratigraphy
In the project area, the top 700 feet of the Battle Spring Formation is divided into five (5) mineralized sandstone units, referred to (from top to bottom) as BC, DE, FG, HJ, and KM. Separating the mineralized sand units are horizons composed of siltstones, mudstones, and shales, ranging in thickness from four (4) to 40 feet (Figure IV-4).

The Lost Creek Project is a typical Great Divide Basin type roll front deposit. Uranium ore is found at the interface of a naturally occurring chemical boundary between reduced sandstone facies and oxidized sandstone facies.

Within the Lost Creek Project's Permit Area, the mineralization being proposed for in-situ recovery in this Permit is found in a 120-foot thick sandstone body known as the HJ sand. The HJ sand is bound on the top by the Lost Creek Shale and the bottom by the Sagebrush Shale (Figure IV-4). Both the Lost Creek Shale and the Sagebrush Shale are interpreted as leaky aquitards, and the HJ sand is interpreted as a semi confined aquifer (refer to Section VI-D below).

Structure
The Lost Creek project area is bisected by a near-vertical fault system comprised of three faults. The fault system trends generally parallel to the trend of the mineralization, roughly east-west. The most significant of the three faults in the fault system is referred to as the Lost Creek Fault (Figure IV-5). The portion of the Lost Creek Fault in the central and western portion of the site has a downward displacement on the south block of approximately 70 – 80 feet. The Lost Creek fault has a splay (referred to as a splinter fault) at the east edge of the property that has led to the formation of a (subsurface) graben in that portion of the project area. The displacement in the graben is no greater than 20 feet. Displacement along the subsidiary faults in the fault system are closer to 50 feet or less.

The displacement on the Lost Creek Fault juxtaposes portions of the HJ sand horizon with the overlying FG and underlying KM sands (Figure IV-6). Because of that juxtaposition, Lost Creek ISR has committed to monitoring all cross-fault locations where fluids from the HJ could come in contact with the overlying FG or underlying KM horizons. Refer to Section VII-B-2 of this document for details on the Ground Water Monitoring Plan for the Lost Creek Project.

V. WDEQ Groundwater Classifications

A. WDEQ Groundwater Classification Based on Use (Current Use of Aquifer)

Currently, the applicant has numerous monitoring wells and three water supply wells within the proposed permit area for the baseline analysis and studies required to permit the site (Figures V-1 and V-2). The nearest wells within a mile of the permit area are four BLM wells which supply water to stock ponds. Two of those four wells are within a ¼ mile of the permit boundary.

Water supply wells within ¼ mile of the Permit boundary
The BLM Battle Springs Draw Well No. 4451 is located in the NW ¼ NE ¼ NE¼ of Section 21, T25N, R92W (Figure V-1). It was originally drilled in 1968 as a 900 ft.

exploration drill hole for Uranium. It was then completed as a water supply well and is permitted to produce up to 19 gpm. The screened interval is unknown though the water was analyzed in 2009 and 2010 and found to have a TDS of 700 ppm, but an average gross alpha of 1,210 pCi/l, and average Uranium of 1.01 mg/l. Ra-226 + Ra-228 measured an average of 16.2 pCi/l. This well was permitted with the State Engineer's Office (SEO) by the Rawlins BLM office.

The BLM Battle Springs Well No. 4777, SE¼ NW¼ of Section 30, T25N, R92W, (Figure V-1) was drilled as a stock well in 1981. It is 280 feet deep (Total Depth) and is permitted for 25 gpm use. This well was permitted with the SEO by the Rawlins BLM office.

Water supply wells beyond ¼ mile (but within 1 mile) of the Permit Boundary
BLM Boundary Well No. 4775, SE¼ NE¼ SW¼ of Section 10, T25N, R92W (Figure V-1) was drilled as a stock well in 1981. It is 220 feet (Total Depth) and is permitted for 25 gpm use. This well was permitted with the SEO by the Rawlins BLM office.

An unpermitted stock well, East Eagle Nest Draw Well is located in the NW¼ NW¼ NW¼ of Section 13, T. 25 N., R. 93 W. (Figure V-1). This well pumps water at 5 gpm for 6-8 hours per day from mid-May to mid-September each year.

Monitoring Wells between a 1 and 3 mile radius from the Permit Boundary
Beyond a one mile radius of the permit area and within three miles of the permit area (Figure V-3) there are a number of monitoring wells associated with the Rio Tinto Sweetwater Mill and Uranium Mine (WDEQ/LQD Permit #481). These wells are associated with the dewatering and monitoring of the groundwater for the open pit operation and surface operations (1979-1983). This mine is now reclaimed.

B. WDEQ Groundwater Classification Based on Ambient (Background) Quality

The aquifer referenced as the HJ Formation aquifer of the Battle Spring Formation (Figure IV-4) contains uranium mineralization and is the production zone for the Lost Creek Project. Pages 9 – 12 of Table V-1 presents data on the HJ Horizon aquifer. 112 groundwater samples have been collected in the HJ aquifer (Pages 9 – 12 of Table V-1). Based on the elevated Radium, Gross Alpha, Uranium, and Arsenic concentrations, the WDEQ, Groundwater Section classifies the ambient (pre-mining) groundwater as a Class IV (industrial) quality. The summaries below utilize data presented in Table V-1 as well as Figures V-4 through V-13.

The Radium (226+228) values range from below 5.0 to 706 picocuries/liter (pCi/L), with an average value of 105.4 pCi/L. The Wyoming standard for Radium (226+228) in Class I (domestic), Class II (Agriculture) and Class III (Livestock) groundwaters is 5.0 pCi/L. The EPA MCL for Radium (226+228) is also 5.0 pCi/L.

The Gross Alpha (α) values range from below 20.9 to 1722.5 picocuries/liter (pCi/L), with an average value of 346 pCi/L. The Wyoming standard for Gross α in Class I (domestic), Class II (Agriculture) and Class III (Livestock) groundwaters is 15.0 pCi/L. The EPA MCL for Gross Alpha (α) is also 15.0 pCi/L.

The Uranium values range from below 0.030 to 0.594 miligrams/liter (mg/l), with an average value of 0.149 mg/l. The EPA MCL for Uranium is 0.030 mg/l.

The Arsenic values range from below 0.000 to 0.026 miligrams/liter (mg/l), with an average value of 0.003 mg/l. The Wyoming standard for Arsenic in Class I (domestic) ground water is 0.05 mg/l; the standard for Class II (Agriculture) and Class III (Livestock) ground waters is 0.02 mg/l. The EPA MCL for Arsenic is 0.010 mg/l.

The Selenium values range from 0.000 to 0.037 mg/l, with an average value of 0.003 mg/l. The Wyoming standard for Selenium in Class I (domestic) is 0.05 mg/l; the standard for Class II (Agriculture) is 0.02 mg/l and the Class III (Livestock) ground water standard is 0.05 mg/l. The EPA MCL for Selenium is 0.05 mg/l.

The Total Dissolved Solids TDS for the HJ Formation aquifer range from 236 ppm to 706 ppm milligrams/Liter (mg/L) with an average value of 366 ppm.

VI. Aquifer Properties

A. Name of Formation

The aquifer referenced as the HJ Formation aquifer contains uranium mineralization and is the proposed production zone.

B. Aquifer Elevations

Within the mine permit area the elevation of the top of the shallowest portion of the HJ aquifer/horizon is approximately 6,650 feet MSL, while the bottom of the deepest portion of the HJ aquifer/horizon is approximately 6,295 feet MSL. Figure VI-1 depicts the elevations of the top of the HJ formation across the Mine Unit 1 area.

C. Aquifer Thickness

The thickness of the HJ horizon/aquifer ranges from 100 – 160 feet averaging approximately 120 feet thick. However, the HJ's range elevations (from top of formation to bottom of formation) is greater than 120 feet because of the displacement caused by the Lost Creek Fault.

D. Confining Formations

The HJ aquifer is overlain by the Lost Creek Shale (LCS) and underlain by the Sagebrush Shale (SBS). The HJ aquifer is interpreted as semi-confined, the details of which are discussed below.

Figure IV-3 presents the (leaky) aquitard thickness for the shale, referred to as the Lost Creek Shale, between the HJ and overlying FG sand. The Lost Creek Shale (LCS) varies from 5 to 25 feet thick (see Figure VI-2). The overlying aquitard therefore should be adequate for confinement between the HJ sand and overlying FG sand in the proposed reclassification area.

Figure IV-3 presents the (leaky) aquitard thickness for the shale, referred to as the Sagebrush Shale, between the HJ sand and the underlying KM sand. The Sagebrush Shale (SBS) varies from 5 – 40 feet thick (see Figure VI-3). The underlying aquitard

therefore should be adequate for confinement between the HJ sand and underlying KM sand in the proposed reclassification area.

(Semi)-confinement of the HJ horizon is demonstrated by the 1) 2007 and 2008 pump test results for the project, 2) the vertical hydraulic conductivity of the Lost Creek and Sagebrush Shales, and 3) the different potentiometric surfaces demonstrated by the overlying FG aquifer and underlying KM aquifer (Figures VI-4, VI-5, and VI-6). Specifically, during the 2007 and 2008 pump tests, the drawdown observed in the overlying and underlying (FG and KM, respectively) aquifers was an order of magnitude less than what was observed in the HJ aquifer (Figures VI-7, VI-8, and VI-9).

E. Hydraulic Properties

The table below summarizes the aquifer properties for Mine Unit 1, the only mine unit (of the three proposed for the Lost Creek Project) for which pump tests have been completed.

The data in this table are derived from Table VI-1 (attached).

Aquifer	*Transmissivity	*Hydraulic Conductivity	Storativity
FG	4 – 40 ft^2/d	0.08 - 0.24 ft/day	n/a
HJ	29 – 361 ft^2/d	0.2 – 3.0 ft/day	3.5E-05 to 9.1E-04
KM	26 – 115 ft^2/d	0.5 – 1.9 ft/day	n/a

*Transmissivity and Conductivity values are "effective".

The range of transmissivity and conductivity values presented above are a reflection of the range of properties of the aquifers both north and south of the Lost Creek fault, which bisects Mine Unit 1. As an example, as indicated on Table VI-1 (attached), the range of transmissivity values for the FG aquifer is 4 – 12 ft^2/d north of the fault and 15 - 40 ft^2/d south of the fault.

Also included in Table VI-1 is the vertical hydraulic conductivity of the confining layers above and below the HJ horizon; the Lost Creek and Sagebrush Shales. The vertical hydraulic conductivity for the overlying Lost Creek Shale is 0.016 – 0.15 ft/day and for the underlying Sagebrush Shale is 0.0009 – 0.004 ft/day. Those values support the interpretation of the shales as leaky aquitards.

VII. Mine Plan Considerations

A. Description of Mineral Zone

1) Mineralogy

The ore bodies are generally in the (C-shaped) form of a typical Wyoming-type roll front; however there are some tabular deposits as well. The ore body occurs at the interface between oxidizing and reducing conditions (redox boundary). The uranium mineralogy of the ore zone consists of mostly uraninite and possibly coffinite on the surfaces of sand grains and in the voids between grains. The altered sandstone where the ore occurs contains iron oxide staining and kaolinitized feldspar. As described on Page D5-6a of Volume 2 of the

Permit Application, the grade of the ore body ranges from 0.03% to 0.2% equivalent uranium oxide (eU_3O_8). Economic uranium mineralization is associated with fine- to coarse-grained poorly sorted arkosic sandstone.

2) Geochemistry

As described in the Operations Plan of the Permit, the uranium recovery solution or lixiviant will consist of varying concentrations and combinations of sodium carbonate, sodium bicarbonate, carbon dioxide, oxygen, and/or hydrogen peroxide and antiscalent added to the native groundwater. The combined carbonate/bicarbonate concentration in the injected solution will typically be maintained at less than five (5) grams per liter (g/L) and the hydrogen peroxide and /or oxygen concentration will typically less than one (1) g/L. This will promote the dissolution of uranium as a uranyl carbonate complex. The primary chemical reactions expected in the aquifer are described on Figure VII-1 (attached).

B. Process Description

1) Well Field

a) Well Construction and Completion

Well construction and completion methods are depicted in the attached Figures VII-2 through VII-5. Typical well casings will be polyvinyl chloride (PVC) SDR-17, and cemented into holes with about 1.7 inches of annular spacing (4.5" diameter casing within a 7 7/8" diameter hole). Casing joints will be spline-locking connections to avoid the use of screws. PVC well screens will be used along with sand and gravel packs. To ensure the casing is centered in the hole, casing centralizers will be placed every 40 feet.

b) Mechanical Integrity Testing

Mechanical integrity testing (MIT) procedures can be found on Page OP-39 of Volume 5 of the Permit Application. MIT will be required on all Class III wells after they are completed and before the wells are used and every five (5) years. The results of MIT will be reported to the Land Quality Division at the end of each quarter. The MIT method is based on pressuring the water-filled well casings and monitoring the pressure drop-off over time. For Production Wells, MITs are performed at the same pressure as the injection wells within the same header house. For Injection Wells, MITs will be performed at 125% of the maximum injection pressure.

c) Hydraulic Containment

Hydraulic containment in the mining zone is accomplished by maintaining a cone of depression in the vicinity of the well fields. A "bleed" for the well field will be maintained by pumping more water from the well field than is injected into it, causing groundwater

movement toward the well field. The HJ sand horizon is in a semi-confined aquifer and will require a bleed rate ranging from 0.5% to 1.5%, or about 20 - 60 gpm. The section at the end of Attachment II-1 entitled "Operational Controls" is provided to demonstrate with specificity how Lost Creek plans to control mining fluids in the HJ.

2. Groundwater Monitoring Plan

a) Ore Zone

Potential movement of the mining solution (lixiviant) out of the ore zone aquifer will be monitored by the means of perimeter monitor wells (Figure VII-7) installed at an approximate distance of 500 feet from the outer edge of the well field at distances no more than 500 feet apart. The monitor wells will be sampled twice per month (and no less than 10 days apart) for the excursion parameters of chloride, total alkalinity and conductivity. The groundwater elevation or potentiometric surface will be also measured prior to sampling of each well. The pH will also be measured in the field. Excursion verification and Corrective Action procedures are discussed in detail in Section OP 3.6.4.3 on Pages OP-64 and OP-65 in Volume 5 of the Main Permit. The groundwater monitoring plan is presented as Attachment VII-1.

b) Underlying and Overlying Aquifers

Monitor wells will be installed in the overlying and underlying aquifers at a minimum density of one well per every four (4) acres of well field as described. As described in the groundwater monitoring plan (Attachment VII-1), the monitor wells will be sampled twice per month (and no less than 10 days apart) for the excursion parameters of chloride, total alkalinity and conductivity. The groundwater elevation or potentiometric surface will be also measured prior to sampling of each well. The pH will also be measured in the field. Excursion verification and Corrective Action procedures are discussed in Section OP 3.6.4.3 on Pages OP-64 and OP-65 in Volume 5.

Given the existence of the Lost Creek fault, and its tendency to juxtapose portions of the production zone (the HJ aquifer) with over- and underlying aquifers, Lost Creek has installed (in Mine Unit 1) cross fault monitoring wells to ensure that any excursions across the fault are detected. Figures MU1 5-1 through 5-4 are provided to depict in map view the potential juxtapositions of concern; that is, areas where there is a production zone on one side of the fault in contact with an over- or underlying sand on the opposite side of the fault. In conjunction with Figures VII-8 through VII-12, Table VII-1 and Figures VII-13a and 13b are provided to demonstrate that all instances of potential cross-fault communication will be adequately monitored.

VIII. Notification for Public Participation (Public Notice)

The first Public Notice comment period ended on June 24, 2011, and due to a written objection on June 24, 2011, from the Wyoming Outdoor Council a hearing was held before the Environmental Quality Council on August 3-4, 2011. A second Public Notice will not be made due to the fact that the revised aquifer reclassification boundary is a continuation from the first submittal, and a more conservative approach, reducing the acreage to exempt from 1,970.7 acres to 1,070.8 acres.

End of Document

Enclosures:
1) Figures - Provided in enclosed stand-alone binder (Figures Table of Contents below)
2) Copy of the April 12, 2011 original reclassification request letter from Lost Creek ISR, LLC to WDEQ/LQD
3) CD with Pertinent text from the WDEQ/LQD Permit Application (Appendices D5 and D6, Operations Plan, and Reclamation Plan)

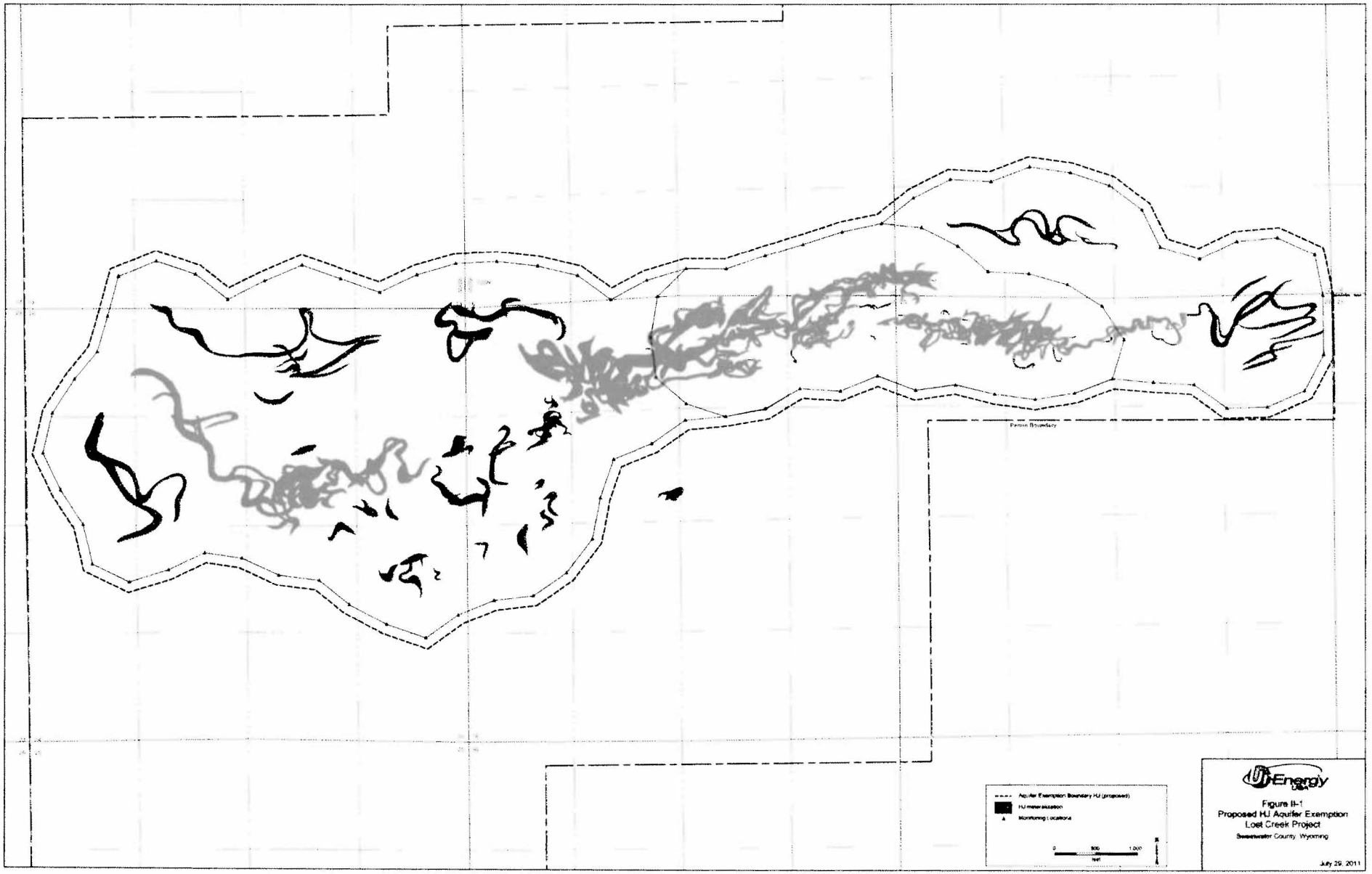
Permit Boundary
Aquifer Exemption Boundary HJ (proposed)
HJ mineralization
Monitoring Locations
0
500
1,000
feet
Figure II-1
Proposed HJ Aquifer Exemption
Lost Creek Project
Sweetwater County, Wyoming
July 29, 2011

EXHIBIT 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

AUG 23 2011

Ref: 8P-W-GW

Mr. Kevin Frederick
Wyoming Department of Environmental Quality
Water Quality Division
122 West 25th Street
Cheyenne, Wyoming 82002

Re: Lost Creek ISR, LLC Project
HJ Horizon Aquifer Exemption
Sweetwater County, Wyoming

Dear Mr. Frederick:

Based on a review of the revised application and additional supporting information provided by Lost Creek ISR, LLC and the Wyoming Department of Environmental Quality, the U.S. Environmental Protection Agency, Region 8 has no objection with the WDEQ's proposed reclassification of a portion of the HJ Formation of the Battle Spring Formation as Class V (Mineral Commercial) Groundwater of the State, pursuant to Wyoming Water Quality Rules and Regulations Chapter 8.

This proposed groundwater reclassification is consistent with aquifer exemption criteria established at 40 CFR §146.4. This response on reclassification of the referenced portion of the HJ Formation of the Battle Spring Formation, and the EPA approval of that area as an exempted aquifer, will be considered a final non-substantial revision of the WDEQ Underground Injection Control Program pursuant to 40 CFR §144.7(b)(3), §145.32 and Ground Water Protection Branch Guidance 34.

BACKGROUND

In conjunction with a Class III UIC in-situ recovery (ISR) uranium mining permit, an aquifer exemption is required to inject into and mine the HJ Formation of the Battle Spring Formation because this aquifer meets the definition of an Underground Source of Drinking Water. The HJ Formation of the Battle Spring Formation produces sufficient quantity of ground water to supply a public water system and the total dissolved solids ranges from 236 to 706 mg/L.

The HJ Formation of the Battle Spring Formation contains uranium mineralization and is the production zone in the Lost Creek ISR Project. Currently, there are no known domestic drinking water wells completed into the proposed exemption area of the HJ Formation of the Battle Spring Formation.

Based on a review of the information provided, the EPA concurs with the WDEQ's conclusions concerning the aquifer exemption criteria listed below:

- it does not currently serve as a source of drinking water, and
- it is mineral producing and can be demonstrated to contain minerals that considering their quantity and location are expected to be commercially producible.

DESCRIPTION OF THE EXEMPTED AQUIFER

The depth and extent of the aquifer reclassification/exemption is as follows:

> HJ Formation of the Battle Spring Formation with average thickness of 120 feet, located approximately 285 to 650 feet below ground surface (elevation range is greater than 120 feet because of displacement caused by Lost Creek fault), and horizontally described by the monitor well ring plus an additional 120 feet beyond the monitor well ring as shown in the July 29, 2011, Figure II-1 which was received by the EPA on August 17, 2011.

Please contact Wendy Cheung of my staff at (303)312-6242, with questions or concerns regarding this matter.

Sincerely,

for Stephen S. Tuber
Assistance Regional Administrator
Office of Partnerships and Regulatory Assistance

cc: Nancy Nuttbrock, WDEQ
Bob Smith, OGWDW