Department of Environmental Quality

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

Dave Freudenthal, Governor

John Corra, Director

September 26, 2008

Mr. Wayne Heili
Lost Creek ISR, LLC
5880 Enterprise Drive, Suite 200
Casper, WY 82609

RE: Lost Creek ISR, LLC, In-Situ Recovery (ISR) Permit Application, **Partial Technical Review, TFN 4 6/268**

Dear Mr. Heili:

Land Quality Division (LQD) Staff (Ms. Amy Boyle and Mr. Matthew Kunze) have reviewed the above named Uranium In-Situ Recovery (ISR) Permit Application for Lost Creek ISR, LLC, also referred to as "The Lost Creek Project". The two attached memoranda summarize Ms. Boyle's and Mr. Kunze's **technical comments** on Appendices D5 and D6 of the application being reviewed under TFN 4 6/268.

Please submit the necessary changes per the above review as well as according to the meeting among LQD and Lost Creek personnel held on September 22, 2008 at the LQD office in Lander. This is considered a partial technical review because only Appendices D-5 and D-6 were addressed in the attached memoranda. The LQD plans to send the remaining technical review comments to Lost Creek ISR personnel by the end of October 2008.

Should you have any questions concerning this letter, please contact me at the WDEQ-LQD District 2 Office in Lander (307-332-3047).

Sincerely,

Melissa L. Bautz
District 2, Environmental Scientist 2
Land Quality Division

Enclosures Memorandum from Matthew Kunze to Melissa Bautz (4 pages with attachments)
Memorandum from Amy Boyle to Melissa (8 pages with attachments)

Cc: Mr. John Cash, Ur-Energy USA, 5880 Enterprise Drive, Suite 200, Casper, WY 82609 (w/encl)
Mr. Harold Backer, Ur-Energy USA, 10758 W. Centennial Rd. Suite 200, Littleton, CO 80127 (w/encl)
Mark Newman – BLM Rawlins, P. O. Box 2407, Rawlins, WY 82301 (w/encl)
Cheyenne WDEQ/LQD→Matthew Kunze→ TFN 4 6/268 File (Lost Creek ISR) (w/encl)
Mark Moxley/Amy Boyle - Lander WDEQ/LQD→ TFN 4 6/268 File (Lost Creek ISR) (w/encl)
United States NRC, c/o Alan B. Bjornsen, Environmental Project Manager, Mail Stop T-8F5, Washington, D.C. 20555-0001 (w/encl)
Chron (w.o./encl)

MEMORANDUM

TO: Melissa Bautz, Scientist 2

FROM: Matt Kunze, Scientist 2

THROUGH: Kathy Muller Ogle, Geological Supervisor

DATE: August 8, 2008

SUBJECT: Baseline Hydrologic Monitoring Data Submitted Electronically for Lost Creek Project (TFN 4 6/268)

The following are comments on the baseline hydrologic monitoring data submitted electronically by Lost Creek ISR, LLC for the Lost Creek Project (LQD TFN 4 6/268).

1. Please submit the station site information for the thirteen surface water monitoring stations (LC1 through LC13) shown on Figure D6-5 in Appendix D-6. An Excel spreadsheet template for surface water stations will soon be available on the LQD website, http://deq.state.wy.us/lqd/Uranium_Data.htm. A copy of this file is also attached to this memo. In particular, please provide the station type (stream station, reservoir, stockpond, etc.), stream or waterbody name, and the location coordinates for each station. Also please note that a separate spreadsheet (also attached and on the LQD website) can be used to submit surface water flow data if this type of monitoring will occur.

2. Please submit the baseline lab water quality data that were collected on April 17, 2007 at seven of the surface water monitoring stations. The lab data are shown in the permit application in Table D6-4 and Attachment D6-1 of Appendix D-6.

3. In future submissions of lab water quality data, please use the preferred list of parameter names. LQD staff in Cheyenne (Kathy Muller Ogle and Matt Kunze) are available to work with Energy Laboratories, Inc. to make them aware of the preferred formats for submitting water quality data electronically.

4. In future submissions of lab water quality data, please provide the laboratory detection limit used for parameters that were reported as "ND." LQD stores the value of the detection limit, even if a parameter is reported as not detected by the lab. LQD prefers the non-detect values be reported as negative numbers (i.e., -0.001). The baseline data submitted in *Lost_Creek_Uranium_Lab_Water_Quality_Data.xls* used both negative numbers and "ND."

cc: Amy Boyle, District 2
Brian Wood, District 2
LQD District 2 - TFN 4 6/268 - Correspondence
LQD Cheyenne Office - TFN 4 6/268 - Correspondence

SAMP_STATION_NAME	MEAS_DATE	FLOWRATE	FLOW_MEAS_METHOD	FLOW_MEAS_EQUIP	FLOW_MEAS_TYPE	COMMENTS
ISL-SW-01	6/23/2003	0.86	RATING CURVE	WEIR/RECORDER	PEAK DAILY	Recording
ISL-SW-02	8/23/2004	7.1	RECORDER	PARSHALL FLUME	MEAN DAILY	General Storm
		(ft3/sec)	(i.e., recorder, rating curve, formula, etc)	(i.e., crest gage, weir, Parshall flume, recorder)	(i.e., peak daily, mean daily, instantaneous)	

New surface water station

EASTING	DATUM	FLOW MEAS EQUIP	TOWNSHIP	RANGE	SECTION	FIRST QUARTER	SECOND QUARTER	COMMENTS
856394.88	NAD 1927	CREST GAGE	41N	71W	23	NW		GRAB SAMPLES TAKEN

(i.e., crest gage, weir, Parshall flume, recorder)

New surface water station

STATUS	MINE_NAME	SAMP_STATION_NAME	SAMP_STATION_TYPE	ELEV	STREAM_NAME	DRAINAGE_AREA	NORTHING	EASTING	DATUM	FLOW_MEAS_EQUIP	TOWNSHIP	RANGE	SECTION	FIRST_QUARTER	SECOND_QUARTER	COMMENTS
ACTIVE	ISL Inc.	ISL-SW-01	STREAM STATION	6850	ANTELOPE CREEK	13.5	1146987.21	856394.88	NAD 1927	CREST GAGE	41N	71W	23	NW		GRAB SAMPLES TAKEN
			(i.e., stream station, reservoir, spring, stockpond)	(in feet)	(stream or waterbody name)	(in square miles)				(i.e., crest gage, weir, Parshall flume, recorder)						

MEMORANDUM

TO : Melissa Bautz

FROM: Amy Boyle

DATE: August 26, 2008

SUBJECT: Ur Energy Permit Application Review, D-5 and D-6, TFN: 4 6/268

I have completed my review of the Ur Energy – Lost Creek permit application Section D5 – Geology and D6 – Hydrology (Excluding D.6.1 Surface Water Hydrology). Additional pump test data is expected, so my review of this information was cursory. My review of the Operation and Reclamation Plans will be provided under separate cover. In general, additional groundwater monitoring wells will need to be installed to better define the permit area, and the potentially impacted aquifers. The majority of the wells are located within the proposed mine units. Background upgradient and downgradient wells outside the mine units must be established. The fault zone poses another challenge in terms of site characterization, since it acts as a hydrologic barrier. Wells will need to distributed north and south of the fault to define these areas separately. My comments are listed below:

Section D-5 Geology

1. Section D5.1.1, paragraph 2, Section D5.1.1 paragraph 1, and Table D5-1(Permit Area Stratigraphy) state that within the permit area the Ft. Union Formation is 4,650 feet thick yet the Geologic Cross Section (Figure D5-2a) Schematic only illustrates the Ft. Union as being 1,000-2,000 feet thick. This is the same for other formation thicknesses (e.g. Battle Springs and Wasatch are said to be 6,200 feet thick, yet the cross section only shows them to be 4,000 feet thick). This discrepancy between Figure D5-2a, Table D5-1and the text needs to be corrected.

2. Figure D5-1 is a Regional Geologic Map. This map indicates the faults in the area, but does not indicate the Lost Creek Fault within the permit area. This is a significant and well documented feature within the permit area, and should be indicated on the Figure.

3. Section D5.1.2, paragraph 2. This section discusses the presence of the Lost Soldier Anticline to the northeast of the permit area. Looking at Figure D5-1 it is not readily apparent where the axis of this anticline is located. If possible, please delineate the Lost Soldier Anticline on Figure D5-1.

4. Plates D5-1a – D5-1e. These plates provide one generalized and several detailed geologic cross sections down the centerline of the ore body, and across the centerline of the ore body. In addition, Figure D5-2a provides a very generalized geologic cross section across the northern portion of the permit area. LQD Non-Coal Rules, Chapter 11, Section 3(a)(viii) requires cross sections that show geologic features within the entire permit area, and how they relate to the production zone. Extending cross sections F, G, and H to the boundaries of the permit area with any available drill hole data, will help to provide this information.

5. Figure D5-2b and Figure D6-10. These figures show a stratigraphic column against a geophysical log, yet the type and scale for the log is not provided. Also the description is generalized and does not indicate the stratigraphic detail that should have been recorded in the field. It is requested that the Figure title be changed to read 'Generalized Stratigraphic column'.

6. Several of the Plates, beginning with Plate D5-1a indicate the mine unit boundaries, yet the proximity of Mine Unit 6 to the eastern boundary of the proposed permit area, will need to be changed to allow for the monitor well ring and aquifer exemption boundary to be within the permit boundary.

7. Section D5.3.5 discusses the Short-Term Probabilistic Hazard Analysis, yet does not explain how the potential estimated accelerations would affect the well structure, pipelines or buildings on site. Please add this information to the text.

8. Section D5.2.2, Structure. This section discusses there being one minor fault, the Lost Creek Fault, within the permit area, yet the maps in this section indicate a second fault to the west of the Lost Creek fault, yet within the permit area. This fault should be discussed in detail.

9. Plate D5-1a. On the cross sections please show the formations present to the total depth of the boring, i.e. if the boring (e.g. TE61, P2-19, TT40, LC3) crosses into the no name shale and or Middle KM horizon, and below, this should be indicated on the cross sections.

10. Plates D5-1a through D5-1e. Geologic Cross Sections should be reviewed, approved and stamped by a licensed Wyoming Professional Geologist, as per the Wyoming Geologists Practice Act.

11. Plates D5-1b – D5-1e show many places where the Sage Brush Shale has mineralized zones of ore, e.g. TG19-20, TG68-20, TG12-20, TG58-20, TG2-10, TG9-17, TG10-17, and TG11-17. The presence of mineralized zones within the Sage Brush Shale brings to question the ability of this unit to act as an adequate aquitard between the LHJ and UKM sands. The Sage Brush Shale is defined as a fine sand and shale unit. How fine is the sand if it had enough transmissivity to be a receiving unit for the Uranium? The overlying Lost Creek Shale also has some minimal mineralization within it. What is the likelihood that these shales could leach out Uranium altering the integrity of the unit. It is requested that the MKM be fully characterized for baseline, north and south of the fault, as it may end up being the underlying aquifer that needs to be protected during mining of both the HJ horizon and potentially the UKM horizon.

12. Plate D5-2a, and D5-2c Isopach Maps of the Lost Creek Shale and Sagebrush Shale (respectively). For areas where the isopachs indicate the unit thickness is less than ten feet thick, please indicate at specific drill hole sites, what the thickness is at that location, so the reviewer knows how much less than ten feet in thickness the aquitard is at a given location.

13. Section D5.2.4 Historic Uranium Exploration Activities, and Plate AD5-2a-c Location Map of Historical Drill Holes. It is stated that there are at least 560 exploration holes in the area, and Attachment D5-2 lists the holes northing and easting, year drilled and ID. Please also include depth of hole and discuss further the efforts made to locate the old drill holes, and whether or not it was confirmed that the hole had been properly abandoned. If the hole was abandoned through recent efforts, the plugging procedure and date should be indicated as well. The map should be updated to indicate the status of each drill hole location. Once operations commence, it is important that these historic drill holes do not provide a pathway for production fluids to migrate to underlying or overlying aquifers.

Section D-6 Hydrology

14. Section D-6. Detailed stratigraphic and well completion logs should be provided within the permit document for all monitoring wells. It is preferable if this information can be compiled on one log form. Notation of each horizon within the stratigraphic column would also be helpful. LQD Guideline 8, Appendix 5 describes the information to be included for each well.

15. Figure D6-10, Site Hydrostratigraphic Units. Please indicate the well ID for the geophysical log presented. Also please indicate the type and scale of the log on the figure. Also, the actual geophysical logs for all monitoring wells should be included as part of the permit application.

16. Figure D6-27a, Piper Diagram – Average Water Quality at Individual Monitoring Wells. The legend designates which well is represented by which symbol, and the wells are grouped by color, yet it does not indicate which horizon the wells are monitoring. Please add the horizon noted by each color. (*The colors are not consistent with which formation they represent, i.e. other Figures use green to indicate the DE horizon wells, whereas the Piper diagrams use red*).

17. Figures D6-6 through D6-28b (maps), Figures in Attachment D6-2a and D6-2b. Petrotek maps. Please add a layer of topography to these maps.

18. Figures D6-11a through D6-11c. The potentiometric surface maps are limited in scope and only represent a small portion of the permit area. The potentiometric surface maps should be representative of the entire permit area. Also given the barrier nature of the fault, both sides of the fault need to be adequately characterized. Additional baseline groundwater monitoring wells with adequate distribution across the permit area will need to be installed for this purpose.

19. Figures D6-11a through D6-11c. No potentiometric surface map for the DE horizon has been provided. All potentially affected aquifers are to be characterized, and the potentiometric surface for the aquifers should be presented for the entire permit area, both north and south of the fault. Additional monitoring wells will be necessary to obtain this information.

20. Section D6.2.2.1, Hydrostratigraphic Units, HJ Horizon. If the UKM sand ends up being mined, it is stated that the LHJ sand will be the overlying aquifer. Yet for the purposes of protecting the overlying and underlying aquifers, if the UKM becomes a mineable unit, after the HJ unit has been impacted, then the relative overlying aquifer to be protected would be the LFG, and the underlying aquifer would be the MKM.

21. Section D6.2.2.2, page D6-14, paragraph 2 references Figure D6-11d, as indicating the differences in water levels across the fault based on 1982 and 2006 data. It goes on to state that the data is insufficient. It is not clear what is gained by this figure since Figure D6-11a clearly shows the difference in water level within the HJ Horizon and across the fault zone.

22. Section D6.2.2.2, Potentiometric Surface, Groundwater Flow Direction and Hydraulic Gradient, page D6-14. Although hydraulic gradient is the change in head over distance between two wells, for the sake of the permit application, the hydraulic gradient across the potentiometric surface needs to be determined. As stated in comments 18 and 19, the potentiometric surface of each aquifer needs to be established, on both sides of the fault, and then the hydraulic gradient of this surface calculated with a minimum of three wells. The potentiometric surface should be representative of the permit area, and not just the area in the center of the permit area, adjacent to the fault zone. It seems possible that the gradient may be more generally to the south, yet when the fault zone is encountered, it changes to parallel this hydrologic barrier. Additional groundwater monitoring wells will need to be installed to obtain this information.

23. Section D6.2.2.3, Aquifer Properties, Page D6-16. The 1982 Pump tests were performed by Hydro-Search, the 2006 Pump tests were performed by Hydro-Engineering. Please reference who (*Petrotek*) conducted the 2007 Pump tests.

24. There are 14 potentially active groundwater wells within 0.5 miles of the permit area, and many more historic groundwater wells within the permit boundary or 0.5 mile perimeter with abandoned or canceled permits. What is the status of the abandoned and cancelled wells? Is their proper abandonment documented? If not, are there well completion logs for these wells to indicate if they have a specific screened interval? The current status of these wells needs to be clearly defined to ensure that they are not a potential pathway between aquifers.

25. Section D6.3, Table D6-12a. There are numerous Kennecott, Tg and BLM/Tg groundwater permits within or adjacent to the permit area. The status is listed as adjudicated, abandoned, or cancelled. Further discussion regarding the status of these permits needs to be included in Section D6.3 and Table D6-12a. Were wells drilled under all of the permits listed? Are there abandonment records for any of the wells? Has any effort been made to locate these wells and verify their status? There needs to be assurances that these wells will not act as a potential conduit for the movement of production fluids between aquifers.

26. Section D6.3, Page D6-21. Will the public and private wells near the permit area be impacted by mining operations? Will they be within the zone of influence of the pumping operations? If they are within or near the zone of influence, and the completion details of

the well are unknown, these wells should be replaced by the operator, prior to mining. Otherwise these wells could become a conduit for the movement of production water between aquifers.

27. Table D6-14, Baseline Water Quality Monitoring Parameters. Please indicate on the table whether the analysis is for Total or Dissolved. For Iron, both total and dissolved analysis must be performed.

28. In addition to Table D6-14, the permit application must provide the Groundwater Monitoring Program for the site. It should include a list of the monitoring wells, sampling frequency, sampling protocol, QA / QC procedures etc. As new monitoring wells are added in the future, the permit will be revised by a Non-Significant revision to the permit to add or drop monitoring wells.

29. Section D6.3 Groundwater Use. Paragraph 4 references the East Eagle Nest Draw Well, it should be made clear if this is the fourth BLM well. In addition, although not officially permitted, the fourth BLM well and/or Eagle Nest Draw well should be documented in Table D6-12a, and Plate D6-1a.

30. Section D6.3, Page D6-21, last paragraph states that throughout the phases of the project the operator will correspond with BLM to ensure the wells that provide stock water are not adversely impacted. Since it is not clear where any of these wells are screened [Well 4775 (at 280 ft. depth), and 4777 (at 200 ft. depth), 4451at 900 ft. depth, and the Eagles Nest Draw well (at 370 ft. depth)], it may be necessary to replace these water supplies prior to mining operations, to ensure that they are clearly isolated from any mining influence.

31. Tables D6-12a and D6-12b, Groundwater Permits. These tables list Map ID and therefore need to cross reference Plates D6-1a, and D6-1b and vice or versa.

32. Section D6.3 and Table D6-12a. An explanation should be provided when there are two or more line items for the same permit number. For example there are two listing for the BLM Battle Springs Draw Well No. 4451, yet the only distinction is that one listing is indicated as a headgate outlet well, and one listing is 'Information not provided by the WSEO database." Figure D6-19 appears to be a photo of the well, yet the table and Plate D6-1a, seem to indicate there are two wells. Please clarify how the wells are designated on the table and map.

33. Section D6.4.2.1 Groundwater Monitoring Network and Parameters. Paragraph one references 12 wells within the permit area that were installed by Conoco prior to 1982. This is the first mention of these wells. What is the status of these wells? Why are they not included in Table D6-12a? Are there well completion logs available? If they were abandoned, are there any abandonment records? Have these wells been located to determine their status? Table D6-12a should be a comprehensive source of information of any well that is known to once exist within or near the permit area, regardless of whether there is a SEO permit on file.

34. Table D6-13 Lost Creek Project Groundwater Permits. In addition to this table, a separate table should be presented which is the comprehensive groundwater monitoring network wells. If viable information is available from historic monitoring wells (e.g. the Conoco wells), i.e. the screened interval is known, then these wells can be presented as a subset of the table. If the water supply wells are going to be sampled they should also be included.

35. Section D6.4.2 Site Groundwater Quality. The majority of the baseline groundwater monitoring wells are located within the footprint of the mineralized zone and the mine units. Additional baseline groundwater monitoring wells need to be established outside the mine unit, up gradient and downgradient of the mine units, and north and south of the fault(s).

36. Section D6.4.2.2 Groundwater Quality Sampling Results. Page D6-26, paragraph 3 states that "there is no significant difference in major water chemistry between the production zone and overlying and underlying aquifers". The next paragraph explains some constituents that exceeded WQD Class I standards at individual wells. Please provide a separate section for each aquifer (*similar to Section D6.2.2.1*) which discusses their individual water quality, based on the baseline monitoring.

37. Table D6-15. Analytical Results of Baseline Monitoring. If an analyte has exceeded the WQD Class I standard please flag that value within the table, noting the designation with a footnote.

38. Section D6.5.2 Site Groundwater Conceptual Model. LQD Non-Coal Rules, Chapter 11, Section 3(xiv) regulations require that the following parameters be described for each potentially affected aquifer: aquifer thickness, velocity and direction of groundwater movement, storage coefficients or specific yield, transmissivity or hydraulic conductivity, direction of preferred flow under hydraulic stress , extent of hydraulic connection between the receiving strata and overlying and underlying aquifers, and hydraulic characteristics of any influencing boundaries in or near the propose well field area. The attached table indicates information that has been presented in the application, and where there are gaps in the aquifer characteristics required.

39. Section D6.5.2.2 Potentiometric Surface and Hydraulic Gradients. Paragraph one provides the hydraulic gradient for the HJ Horizon. As mentioned in previous comments, the Division is requesting that both sides of the fault be characterized separately.

40. Section D.5.2.2 Potentiometric Surface and Hydraulic Gradients. Paragraph one states that from the pump tests the communication between the HJ aquifer and the overlying and underlying aquifers may be through historic boreholes that were improperly abandoned, leakage through the confining shale units, or contact of sands juxtaposed across the fault. All work done to relocate and either verify proper abandonment or re-abandon old drill holes, should be included within the permit application. Any additional work completed to better define the cause for the communication must be submitted as a revision to the permit document.

41. Section D.5.2.3 Aquifer Properties. The second paragraph states that additional long term multi-well pump tests were to be performed in the fall of 2007. These tests would provide more data on overlying and underlying aquifer characteristics. If this information is now available, it should be submitted for review as part of the permit application.

42. Attachment D6-2a, Figures 6-2, 6-6,6-8, and 6-10. The y-axis titles are backwards, the Pumping Well (PW) elevation should be on the right handed axis. Please correct and replace the Figures.

43. Attachment D6-2a, Figure 7-1 is the Theis curve for the LC16M pumping well, yet this attachment is the evaluation of the LC19M pump test.

44. Attachment D6-2a, Appendix A. As stated in Comment 14, please provide well completion details, boring logs, and any geophysical logs for all monitoring wells. If the information is not inserted into Appendix A, its location should be referenced.

END OF MEMORANDUM

Attach: Table

Lost Creek Aquifer Characteristics

	Thickness (ft)	Velocity & Direction north of fault	Velocity & Direction south of fault	Storage Coefficient	Specific Yield	T (gpd/ft)	Hydraulic concuctivity (ft/d)	Preferred flow under stress	Connection between aquifers
DE					*	10 - 1,000			
Upper No Name Shale	0-50								
UFG MFG									
LFG	20-50			*		30 - 300			
Lost Creek Shale	5-45								minor under large stresses
UHJ MHJ LHJ	100-160			5.0 x 10(-5) to 5.0 x 10(-4)		260-3,000	effective 0.5 - 0.67 actual 1 - 1.5		
Sage Brush Shale	5 - 75								minor under large stresses
UKM	30 - 60			*		195- 860			
No Name Shale	10 - 30								
MKM									

* Long term multi-well pump tests to be performed in the fall of 2007.