



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

Todd Parfitt, Director

October 31, 2013

Mr. Mike Gaither
Lost Creek ISR, LLC
5880 Enterprise Drive, Suite 200
Casper, WY 82609

Re: 2012/2013 Annual Report Review, Lost Creek ISR Project, Permit #788, Lost Creek ISR, LLC

Dear Mr. Gaither:

Enclosed is WDEQ/LQD's review of the above-referenced Annual Report (AR), received at the WDEQ/LQD Lander (District 2) office on October 22, 2013. The review is summarized in the attached nine-page memorandum. The review contains a total of 35 comments (i.e. requests for clarification or additional information). The 35 comments are divided into the following categories: Two (2) general comments, nine (9) comments on the AR narrative, four (4) comments on the AR's tables, five (5) comments on the AR's figures, and fifteen (15) comments on the bond estimate.

When responding to the enclosed comments, please reference the comment number indicated in the review memorandum. If you have any questions regarding this correspondence, please contact Melissa Bautz in the Lander Land Quality Division office at (307) 332-3047.

Sincerely,

Melissa L. Bautz, P.G.
Natural Resources Analyst
Land Quality Division - Lander

Enclosure Memorandum – Review of 2012/2013 Annual Report for Permit 788 (9 pages)

cc: Mark Newman – BLM, P. O. Box 2407, Rawlins, WY 82301
 John Saxton – US Nuclear Regulatory Commission
 Tanya King - WDEQ-LQD, District II Supervisor → Pt. 788 Annual Report File
 Ramona Christensen - Cheyenne LQD Records Specialist → Pt. 788 Annual Report File
 Chron

E:\MELISSA_WDEQ_WORK_FOLDER\MLB Work Files\My WorkStuff\Mines\Fremont County_Sites\Lost-Creek-ISR_Pmt_788\Pmt_788\Pmt_788_Annual_Reports_&_Reviews\Pt_788_2013_AR-Pt-788_2013AR-Revu_covlet_10-31-2013.docx

Lander Field Office • 510 Meadowview Drive • Lander, WY 82520 • <http://deq.state.wy.us>

ABANDONED MINES
(307) 332-5085
FAX 332-7726

AIR QUALITY
(307) 332-6755
FAX 332-7726

LAND QUALITY
(307) 332-3047
FAX 332-7726

SOLID & HAZARDOUS WASTE
(307) 332-6924
FAX 332-7726

WATER QUALITY
(307) 332-3144
FAX 332-7726

Wyoming Department of Environmental Quality (WDEQ) – Land Quality Division (LQD)

File: Lost Creek ISR, LLC – Permit 788, Lost Creek Uranium Project
Date: October 31, 2013 *MLB*
Prepared by: Melissa L. Bautz, P.G. – WDEQ/LQD District 2 Natural Resources Analyst
Subject: Review of 2012/2013 Annual Report (AR) for Permit 788

The 2012/2013 Annual Report (AR) for Permit 788 was received at the Lander (District 2) WDEQ/LQD office on October 22, 2013 and the electronic copy of the AR was received via electronic mail on October 21, 2013. Below is a review of that AR.

Comments on Lost Creek 2012/2013 AR

The review comments below are separated into the following five types: general (G) comments, comments on the AR narrative (N), comments on the AR tables (T), comments on the AR figures (F), and comment the AR bond estimate (B).

General Comments on the 2012/2013 AR

General comments on the AR are indicated with the abbreviation “G1” and “G2”.

General Comment #1 (G1): A tabulation of the Changes that have been approved for Permit 788 should be presented in the Annual Report. Below is an example.

Summary of Changes approved to date for Lost Creek ISR - WDEQ/LQD Permit 788

| <u>Change Number</u> | <u>Change Type</u> | <u>Description</u> | <u>Approval Date</u> | <u>TFN Number</u> |
|----------------------|--------------------|---|----------------------|-------------------|
| 1 | NSR | Update TOC and Binder Cover Pages | 05-Dec-11 | 5 5/287 |
| 2 | NSR | Add Section 2.13 to the Operations Plan | 25-May-12 | 5 6/327 |
| 3 | NSR | Add Class 5 UIC Permit to Volume 1 (ADJ-5 tab) | 14-Sep-12 | 5 4/353 |
| 4 | NSR | Relocation of Deep Disposal Well | 04-Oct-12 | 5 2/357 |
| 5 | NSR | Update Surety Estimate, Address temp fuel storage, Update TS stripping for pipeline trunk lines | 11-Dec-12 | 5 6/374 |
| 6 | NSR | Redrilling of three MU1 Monitoring Ring Wells | 07-Mar-13 | 5 3/389 |
| 7 | NSR | Addition of Water Quality Results of MU1 ReCompletes to Vol 6A (includes new UCL table) | 18-Oct-13 | 6 1/025 |

General Comment #2 (G2): The reporting period is indicated as September 21, 2012 through September 20, 2013. Normally the reporting period is from the anniversary date of the Permit’s approval to the next anniversary date the following year. If that reporting period format were applied to Permit 788, the reporting period would be October 21, 2012 through October 20, 2013.

In order align the timing of LQD’s annual bond review with NRC’s annual bond review, it was agreed (between LQD and Lost Creek) that the reporting period for Permit 788 would be altered

to September 21 through September 20. A brief explanation of this should be provided in all annual reports. Please provide an explanation of the Permit's reporting period in Section 2.3.

Comments on the Annual Report's narrative

Comments on the AR's narrative will be indicated with the abbreviation "N1", "N2", et cetera...

N1 - Section 3.2.1 – "Well field Water Balance": This section is comprised mainly of Table 3.2.1. The table flows from the bottom of Page 3 to the top of Page 4 such that the column headings are not visible on Page 4. Additionally, the row in Table 3.2.1 that does appear on Page 4 has no information provided in the spreadsheet cells for "Mine Unit", "Date Range", or "Method of Determining Flow". Please reconfigure Table 3.2.1 such that it appears on one page and that all data cells are filled in.

N2 - Section 3.6.1 – "Topsoil": This section of the AR explains the long term topsoil stockpiles but does not address the short term topsoil stockpiles. Short term topsoil stockpiles must be addressed in this section. Table 3.6-1 provides a summary of long-term topsoil stockpiles but it needs to have a row at the bottom of the table for "Total". The total volume of topsoil stockpiled in long term stockpiles on site, based upon the information provided in Table 3.6-1 is 86,126 cubic yards.

It is presumed that the topsoil stockpiles whose numbers are missing from Table 3.6-1 (TS piles 6, 7, 8, 9, 10, 13, 15, and 19) are short term stockpiles. An accounting of those stockpiles is needed. Their (previous) location, where their topsoil was spread, the area over which their topsoil was spread, what their volumes were, et cetera must be provided. Please add information regarding the site's short term topsoil stockpiles to Section 3.6.1.

N3 - Subsoil inventory must be provided: A brief discussion and inventory of the site's "subsoil" must be provided in Section 3.6. The "overburden" stockpiles at the deep disposal wells are considered "subsoil" and must be tracked. Please add to the topsoil discussion, an inventory and status of the site's subsoil stockpiles.

N4 - Section 3.6.3 – "Ponds": This section describes the sites two ponds. Table 3.6-3 indicates the OP 2.9.4 of the Permit requires that pH and Conductivity of the pond water be analyzed and reported quarterly in addition to the nine (9) parameters in Table 3.6-3. Please include pH and Conductivity in a revised version of Table 3.6-3.

The existence of the Permit-required freeboard of 3 feet in the ponds should be indicated in the Annual Report. Please add a statement to Section 3.6.3 that addresses the ponds' freeboard.

Did LCI ever receive an approval from the Wyoming State Engineer's Office (WSEO) for the as-built of the ponds? If so, the WSEO approval for the ponds should be submitted for inclusion into the Permit (in the "Other Permits" section) as a non-significant revision (NSR).

N5 - Section 3.6.4 – "Infrastructure": This section indicates that roads and power lines as well as trunk lines are depicted on Figure 3.6-1. However, as indicated below in the comments on

Figure 3.6-1, secondary and two-track roads are not presented on Figure 3.6-1. Secondary and two-track roads must be depicted on Figure 3.6-1; and their areas must be accounted for on Table 3.6-2.

N6 - Section 3.7 – “New Wells/Well fields Installed During the Reporting Period”: This section should include a summary statement of how many of each type of well was installed. For example: “A total of 95 monitoring, supply, and/or disposal wells were installed (see Table 3.1-2A) and a total of 680 pumping or injection wells were installed in MU1 (see Table 3.1-2B) during the Reporting Period.” The current text in this section refers to Table 3.1-1, which is in Section 3.1 (Page 3) of the AR. Please add a summary statement at the beginning of Section 3.7 and please provide a reference to the Section or page number in the AR where Table 3.1-1 is located.

N7 - Section 3.9.1 – “Groundwater Monitoring”: This section should indicate that the new UCL table was added to the Permit via Change No. 7. This section refers to Table 3.9-3 which shows operational monitoring results for UCL values. A brief sentence explaining this table would be helpful. That is, the three UCL parameters (alkalinity, chloride, and conductance) presented on Table 3.9-3 all indicate a negative “percent difference”. A negative percent difference indicates that no UCL exceedances occurred during the Reporting Period.

Lastly, the table entitled “Groundwater Quality Results” in Appendix A, which is referenced in this section, should include two additional columns to help clarify that the approved Groundwater Monitoring Plan (Attachment OP-8 to the Permit) is being followed. A column indicating “well type” (i.e. public, regional, well field, or storage pond) and a column indicating the wells’ required “sampling frequencies” (i.e. quarterly, monthly, semi-monthly) should be added to the Appendix A table. The addition of these column headings match the well types on the table on page 4 (of 10) of Attachment OP-8 in the Permit.

Please add to Section 3.9.1 the following: 1) a reference to Change No. 7, 2) an explanation of Table 3.9-3, and 3) add two columns (“well type” and “sampling frequencies”) to the table entitled “Groundwater Quality Results” in Appendix A.

N8 - Section 4.3 – “Surface Reclamation Activities”: This section summarizes the reclamation that has occurred during the Reporting Period. As mentioned previously, a map depicting all the areas that were reclaimed during the Reporting Period is needed. Figure 3.6-1 which depicts Disturbance and Infrastructure, might be a good map on which to depict reclaimed area polygons.

It is also necessary that reclamation areas be named and tracked as time progresses. For example, the three (3) acres that were reclaimed in the Plant Site area should be depicted on a map and named (e.g. PS-2013 for “Plant Site-2013). Another example is the acreage associated with the reclamation of the main trunk line (e.g. MTL-2013 for “Main Trunk Line-2013”). It may be necessary to provide additional insets on Figure 3.6-1 to depict the level of detail being requested.

Please either add reclaimed area polygons to an existing map or provide a new map with this information. NOTE: LQD acknowledges that it is unrealistic to expect the access-road borrow ditches to be depicted as reclamation polygons, because of their narrowness. So, these areas may be simply tabulated similar to the way drill pad reclamation is tabulated in Section 5.3 of the AR. The road borrow reclamation areas should be identified on a map (at least) symbolically and they should still be tracked with a unique name (e.g. AR-2013 for “Access Road-2013”).

N9 - Section 5.3 – “Disturbance/Reclamation”: The 3.6 acres associated with the backfilling and reclamation of mud pits are tabulated here. However, it is unclear whether those 3.6 acres accounted for (for revegetation retainer) in Table 3.6-2 or the Bond Estimate. Please clarify the accounting of the revegetation of this acreage.

Comments on the Annual Report’s Tables

Comments on the AR’s tables will be indicated with the abbreviation “T1”, “T2”, et cetera...

T1 – Table 3.1-1 – “Operating Zones”: Please add a row for totals to the bottom of this table.

T2 - Appendix A – “Groundwater Quality Results” Table: As indicated above in the comments on Section 3.9.1 of the text portion of the Annual Report, two columns should be added to the Appendix A table: one indicating “well type” and one indicating “sampling frequency”.

T3 - Table 3.6-2 – “Disturbance and Reclamation Summary”: This table appears to provide the projected and actual disturbances at the site, as well as the areas reclaimed; however, the following aspects of this table need clarification:

1. The column entitled “Estimated Reclamation Area” is misleading. For example, this column indicates that all 38.05 acres associated with the MU1 pattern area have been reclaimed. But, on the ground, this is not the case. None of the land within MU1 has been reclaimed (scarified and seeded, with travel routes established). It is true that the 38.05 acres within MU1 don’t need to be spread with topsoil (because topsoil was never stripped). However it is still unclear what this column is intended for. Please clarify.
2. There is a need for a column in Table 3.6-2 indicating the current on-the-ground-disturbance at this moment in time. This will be used, in conjunction with the reported volume of topsoil stockpiled on site to determine an average topsoil respreads thickness for all the currently-affected lands at the site. The following paragraph demonstrates how the information in Table 3.6-2 is used in conjunction with the reported topsoil stockpile volumes on Page 6 of the AR.

Table 3.6-2 currently indicates that 83.95 acres are currently affected at the site. Given the stated volume of topsoil (of about 86,126 cy), the currently affected area could be covered with about 7.6” of topsoil right now. A topsoil respread depth of 7.6” is very low when compared with the topsoil stripping depths indicated on Plate OP-3 of the

Permit (which range from 14” – 24”). Either the total topsoil tabulation (on page 6 of the AR) is incomplete, or the total affected acreage is inaccurate (Table 3.6-2), or the actual topsoil stripped during the construction of infrastructure was significantly lower than the topsoil depths indicated on Plate OP-3. An explanation of this apparent topsoil “discrepancy” must be provided in the AR or the appropriate tables must be fixed or added (e.g. short term topsoil stockpiles).

3. It is unclear where the acreages reported for “Secondary” and “Two-track” roads were derived. One of the Annual Report maps should depict all of the site’s “Secondary” and “Two-track” roads, with associated acreages. Those acreages should be tabulated somewhere, either on the map or in the text of the Report. Then those acreages should be included in Table 3.6-2. Please note: An acreage of 0.34 for secondary roads in MUI seems to be too low. To prevent this type of confusion, a map depicting the secondary and two-track roads is imperative. It appears the Figure 3.6-1 (“Disturbance and Infrastructure Map”) was intended to depict secondary and two-track roads, but they weren’t apparent on that map.
4. The “Activity” column on Table 3.6-2 includes a category for “Deep Wells”. It is presumed that the 3.0 acres that are reported as being reclaimed in this category is for DDW-1. However, that is not stated in the table. It might be better to indicate each DDW in its own row in this table to help clarify. It is presumed that the nine (9) acres attributed to DDW’s is for the three deep disposal well pads at the site: DDW-1, DDW-3, and DDW-4. But nowhere is this stated. Please clarify this portion of Table 3.6-2.
5. The three acres indicated as being reclaimed at the Plant Site should be depicted on a map somewhere in the Annual Report. The acreage should also be cross-referenced to Table 3.6-2.

Please address the above-listed five (5) comments on Table 3.6-2 as indicated.

T4 - Table 3.9-4 – “Groundwater Level Measurements”: The data in this table should be plotted against time for each well (or groups of wells) so trends over time can be discerned. Please add time vs. water level plots to the 2012/2013 AR and continue to provide those plots in future AR’s.

Comments on the Annual Report’s Figures

Comments on the AR’s Figures (maps) will be indicated with the abbreviation “F1”, “F2”, et cetera...

F1 - Figure 3.1- 1A – “Site Wells” Map: The Permit Boundary symbol should encompass the site’s access road. The map’s contour interval (of 10’) should be stated on the map. The

meaning of the dates in parentheses in the map legend on should be explained. Please make the above changes to this Figure.

F2 - Figure 3.2-1B – “Site Wells Mine Unit 1” Map: The Permit Boundary symbol should encompass the site’s access road. The dashed rectangular box on the map should be identified either with a label or in the map legend (i.e. as the inset box from Figure 3.1-1A). The map’s contour interval (of 10’) should be stated on the map. The meaning of the dates in parentheses in the map legend should be explained. Please make the above changes to this Figure.

F3 - Figure 3.3-1 – “Spill Map”: The Permit Boundary symbol should encompass the site’s access road. The contour interval (of 10’) should be stated on the map. Labels indicating the affected area of each spill should be added to this map. Please make the above changes to this Figure.

F4 - Figure 3.6-1 – “Disturbance and Infrastructure” Map”: The Permit Boundary symbol should encompass the site’s access road. There is an unlabeled topsoil stockpile symbol in “Inset 1” just north of culvert C-W3. If a topsoil stockpile exists at the indicated location, it should be identified with a topsoil stockpile number. If it’s just a stray mark on the map, it should be removed. The map’s contour interval (of 10’) should be stated on the map. Cattle guards should be indicated on this map. The symbol for a new two-track road (a double dashed line) does not appear anywhere on the map. However, from field inspections, it is apparent that there are numerous two-track roads strewn across the site. This map should depict those roads. Subsoil stockpiles should be identified on this map (E.g. the subsoil stockpiles for the deep disposal wells). Please make the above changes to this Figure.

F5 - Figure 5.1-1 – “Exploration Activity” Map”: The Permit Boundary symbol should encompass the site’s access road. The map’s contour interval (of 10’) should be stated on the map. The meaning of the dates in parentheses in the map legend should be explained. Please make the above changes to this Figure.

Comments on the Annual Report’s Bond Estimate

Introduction

The revised Surety Bond Estimate for Permit 788 was provided in Appendix B (Table RP-4) of the 2012/2013 Annual Report (AR). It should be noted that the current version of LQD’s Guideline 12 (which is used for bond estimates) is dated October 2013. However, because the reporting period for this AR is through September 21, 2013, the 2012 version of Guideline 12 will be invoked for this bond estimate. There are several instances in the review comments below that indicate the need to apply the 2012 version of Guideline 12 to Permit 788’s bond

estimate. Comments on the AR's bond estimate are indicated with the abbreviation "B1", "B2", et cetera...

B1: The introductory paragraph on Page 13 of the AR under the heading "Update in Bond Amount" has a typographical error: It indicates the year "2010" while it should read "2012". Please fix this error.

B2: The "explanation" column for Worksheets 2 – 8 have text that is cut-off. Please expand the explanation columns on Worksheets 2 – 8 (e.g. via text wrapping) to render this column visible.

B3 – Worksheet 1, Page 7: Pump efficiency must be accounted for in the Reverse Osmosis (RO) stage of reclamation. It is unclear whether pump efficiency has been accounted for in this worksheet; however, it appears that it has not. Please either indicate and clarify where in this worksheet pump efficiency is accounted for or please add a pump efficiency multiplier to the RO pumping worksheet/calculation.

B4 - Worksheet 1, Page 11: The hourly labor rates listed on this portion of Worksheet 1 is indicated (in the explanation column) as "Based on URE surveys and recent hiring, includes 25% for benefits." However, in the event of a forfeiture, LQD is required to operate restoration activities at the state-incurred third party rates.

Third party labor rates are meticulously calculated by LQD staff on an annual basis and are provided in LQD's Guideline 12. The 2012 version of Guideline 12 indicates an hourly labor rate of \$45.41 for seven of the nine "crew" types listed on Worksheet 1 Page 11. That is, the hourly rate for EHS Techs, Plant and Field Operators, Maintenance workers, Office Support workers, Equipment operators, Reclamation laborers, and a Foreman is \$45.41. The actual (third party) hourly rate incurred by WDEQ in recent reclamation projects for a Project Manager is \$100.00. The actual (third party) hourly rate incurred WDEQ in recent reclamation projects for a Project Supervisor (who is also a radiation safety officer) is \$80.00. Lastly, the 2012 version of Guideline 12 indicates an hourly rate for vehicles of \$3.43. The cost of \$3.41 is currently indicated in Worksheet 1, Page 11 for vehicles (i.e. it is \$0.02 too low). Please adjust the hourly rates on Worksheet 1 Page 11 as indicated above.

B5 – Worksheet 3, Page 1: The units cost for the "Demolition Cost per Cubic Foot" is now \$0.28 (from the 2012 version of Guideline 12) instead of \$0.2649. Please change this unit cost.

B6 – Worksheet 4, Page 1: The cost for "Sludge Handling Cost Per Load" is indicated as \$235. While the explanation column indicates this is from Appendix J of Guideline 12, it is still unclear how Appendix J was used for this calculation. Is it the hourly cost of a front end loader (\$115.78) being applied and then multiplied by 2 hours? Please clarify this line item of the bond in the "explanation" column.

B7 – Worksheet 4, Page 3: The cost for “Backfill Cost per Cubic Yard” under the “POND BACKFILL” category on this page indicates a cost of \$0.47. This cost comes from Appendix E of Guideline 12 (the 2012 version) and assumes a 1% grade and a 200’ distance. Please indicate these assumption (1% grade, 200’ distance) in the “explanation” column.

B8 – Worksheet 6, Page 2: The method of calculating costs for well pump removal should use Guideline 12, Appendix L values. Specifically, the pump removal cost of \$0.40 / linear foot (LF) should be applied. If this is done, the pump removal costs change. The following table demonstrates the calculation.

| | MU-1 (I/P wells) | MU-2 (I/P wells) | Site Wells (monitor and water supply) | Explanation |
|----------------------------|------------------|------------------|---------------------------------------|---|
| II WELL PUMPS | | | | |
| A. Pump Removal | | | | |
| Number of Wells with Pumps | 282 | 60 | 234 | data |
| Average well depth (feet) | 413 | 480 | 602 | data |
| Pump Removal Cost per foot | \$0.40 | \$0.40 | \$0.40 | LQD Guideline 12, Appendix L (2013 version) |
| Average per well cost | \$165 | \$192 | \$241 | calculation |
| Pump Removal Cost | \$46,586 | \$11,520 | \$56,347 | calculation |

Please revise the above portion of Worksheet 6, Page 2 accordingly.

B9 – Worksheet 7, Page 1: The cost for “Grading Cost per Acre” is \$75.25 according to the 2012 version of Guideline 12. The worksheet indicates this cost to be \$74.60. Please update this cost.

B10 – Worksheet 7, Page 2: For the line item entitled “Hauling/Placement Cost per Cubic Yard”, the Appendix being used (B or C) should be stated in the explanation column. Additionally, the assumptions made (e.g. one-way distance and % grade) should also be stated in the explanation column. Lastly, for the line item entitled “Grading Cost per Acre”, please use the current cost of \$75.25 instead of the outdated cost of \$74.60 here. Please revise the table in accordance with the above comments.

B11 – Worksheet 7, Page 5: For the line item entitled “Hauling/Placement Cost per Cubic Yard”, the Appendix being used (B or C) should be stated in the explanation column. Additionally, the assumptions made (e.g. one-way distance and % grade) should also be stated in the explanation column. Also, for the line item entitled “Grading Cost per Acre”, please use the

current cost of \$75.25 instead of the outdated cost of \$74.60 here. Lastly, for the line item entitled “Scarify Compacted Area per Acre”, the current cost is \$69.02, not \$50.59. Please revise the above items.

B12 – *Worksheet 7, Page 6*: For the line item entitled “Hauling/Placement Cost per Cubic Yard”, the Appendix being used (B or C) should be stated in the explanation column. Additionally, the assumptions made (e.g. one-way distance and % grade) should also be stated in the explanation column. Please revise the above items.

B13 – *Worksheet 7, Page 7*: For the line item entitled “Hauling/Placement Cost per Cubic Yard”, the Appendix being used (B or C) should be stated in the explanation column. Additionally, the assumptions made (e.g. one-way distance and % grade) should also be stated in the explanation column. Please revise the above items.

B14 – *Worksheet 8, Page 1*: Under category I entitled “Fence Removal & Disposal”, the removal and disposal cost per foot is now \$0.32/LF, not \$0.28/LF. Please revise accordingly.

B15 – *Worksheet 8, Page 1*: Under category II entitled “Culvert Removal & Disposal”, the removal and disposal cost per foot is now \$6.89, not \$3.33. Please revise accordingly.

*****End of 2012/2013 Annual Report Review for Permit 788*****