



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

March 8, 2011

Certified Mail, Return Receipt Requested 7008 1830 0004 7094 7462

Mr. Joe Brister
Interim Manager, Safety Health, Environment and Quality
Cameco Resources
P.O. Box 1210
Glenrock, WY 82637

RE: 2009-2010 Annual Report Review, Permit 603, Cameco Resources (CR)

Dear Mr. Brister:

The Land Quality Division (LQD) has completed the review of the above referenced report with comments. Please provide formal written responses to comments with the corrections necessary to deem the report complete. The LQD requests that responses be provided **within 60 days** of receipt of this letter to ensure the necessary corrections are addressed before the next report is due.

In addition, it is imperative that the previous 2008-2009 Annual Report review comments also be addressed with formal responses with corrections deemed necessary to that report as soon as possible. The SRHUP operations are highly dynamic, therefore, it is essential that the Annual Reports be deemed complete in a timely manner.

If you have any questions regarding the review comments, please contact me at 307-777-7048 or prothw@wyo.gov.

Sincerely,

Pam Rothwell
District 1 Assistant Supervisor
Land Quality Division

cc: Cameco Resources, Cheyenne, WY
Doug Mandeville, NRC

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002 • <http://deq.state.wy.us>

ADMIN/OUTREACH
(307) 777-7937
FAX 777-3610

ABANDONED MINES
(307) 777-6145
FAX 777-6462

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(307) 777-7391
FAX 777-5616

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(307) 777-7369
FAX 777-5973

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(307) 777-7756
FAX 777-5864

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FAX 777-5973

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(307) 777-7781
FAX 777-5973



PERMIT 603, HIGHLAND URANIUM PROJECT, CAMECO RESOURCES (CR)

2009-2010 ANNUAL REPORT REVIEW

INTRODUCTION

The Land Quality Division (LQD) received the above referenced report on July 30, 2010 for report period June 1, 2009 through May 31, 2010. LQD had granted an extension to submit the report late at CR's request. LQD's review of the report was delayed due to multiple permitting and compliance priorities of the Cameco permits. LQD staff reviewers included Steve Ingle (SI), Jonathan Stauffer (JS), Lowell Spackman (LS), Robin Jones (RJ) (no comments) and Pam Rothwell (PCR).

Due to the request for a surety reduction, a comprehensive review of the surety estimate was conducted. The proposed estimate is a \$14,244,776.00 reduction from the current surety amount of \$57,026,000.00, therefore, a substantial number of comments pertain to the changes in the surety. **CR is required to make corrections to the 2009-2010 Surety Estimate and resubmit the hardcopy and electronic copy with the corrections in each round of review.**

COMMENTS

- 1 The legend on the maps contains numerous errors:
 - a. The plates show a large number of linear features that are shown on the legend as paved roads. These features appear to be stream channels. Please correct the legend to show the proper symbol.
 - b. Plate 1-7(HUP) and others show a heavy purple line, which is shown in the legend as Proposed Production. This feature does not appear to be proposed production. Please properly identify this line.
 - c. The Connecting Road on the plates is shown as two gravel roads and a paved road. Please properly identify the Connecting Road.
 - d. Page 19 of the text states that an extension is planned for Mine Unit J during this period. The extension area is not shown on the plates. Please show the extension area on Plate 1 and Plate 1-7(HUP).Please provide the map changes in the 2011 Annual Report. **(SI)**
- 2 The Mine Unit J spill should be discussed further, because the spill did not meet the reporting criteria of 420 gallons. **(SI)**
- 3 Soil water sampling. The sampling technique is incorrect. A better technique would be to add distilled water, let stand for several days, pump out about a third of the water and then take the sample. Please correct the sampling technique in the 2011 Annual Report. **(SI)**
- 4 Page 27, PSR #2 leakage. There is no discussion of what further actions, since the meeting with LQD, have been taken as part of the investigation. At a minimum the Annual Report should contain a discussion of the activities taken by the consultant.

Please submit a date for the leakage investigation results and recommendations to be submitted. **(SI)**

5 Annual Report Maps. It is unclear if the drill holes shown in the K-North wellfield are existing or proposed delineation drilling. Please clarify what these locations represent. **(SI)**

6 Please describe the status of Well OWD-9. **(SI)**

7 Appendix B. The mining and restoration schedule presented in the Annual Report is essentially the same as the mining and restoration schedule presented in Attachment 1B of the permit combination, except that the length of mining is approximately one year longer in the Annual Report version. Please refer to Comment 12 of the 2008-2009 Annual Report which states:

*The text states that Figure 7-Mine Unit Operations Schedule is from the unapproved permit combination proposal. The mining and restoration schedule should be from the approved Permit #603 document. Please provide the approved mining and restoration schedule. **(SI)***

CR will need to follow the approved schedule until a revised schedule is approved by LQD. Please include the current approved schedule in the report. **(SI)**

8 Page 9. The new deep disposal well (SRHUP #9) is discussed on this page. However, the Morton 1-20 and Vollman are not discussed. Please include a discussion of the Morton 1-20 and Vollman deep disposal wells in this section of the report as well. The information may be included in the 2011 Annual Report. **(SI)**

9 Page 15. Wellfield A Long Term Stability Monitoring. This section does not discuss the selenium values in Well MP-4. The geochemical model predicted substantial attenuation within the wellfield at Well MP-4 within the first 27 years. The attenuation prediction at the monitor well ring depends on attenuation of the selenium and uranium concentrations in Well MP-4. The text suggests there may be a higher level of oxidized water in the system than was used in the geochemical model. The Eh field study performed by Lewis Water Consultants and LQD in January 2003 did not indicate the presence of higher levels of oxidized water in the wellfield. Please review the text and make appropriate corrections in the 2011 Annual Report. **(SI)**

10 Page 28. The text states that the samples were below the 0.05 mg/l standard for selenium for the Boner Brothers Partnership sampling. The selenium values were 0.076 mg/l, which exceeds the Class I and Class III standard. Please correct the text. **(SI)**

11 Page 30. The text for item 10 states that the LQD Abandoned Drill Hole Program Supervisor will receive the abandoned drill hole reports. The LQD has not had an

- Abandoned Drill Hole Program Supervisor for many years. Please correct the text in the 2011 Annual Report. **(SI)**
- 12 Page 1 of the Annual Report Attachment states that the phone numbers for all officers, etc. are listed. The phone numbers for item C are not listed. Please list the phone numbers for Item C. **(SI)**
 - 13 Page 18. The text states that one well in Mine Unit F is being pumped to “control bleed” or more correctly maintain a cone of depression. Please show the location of this well on a plate and discuss the adequacy of this well to maintain a cone of depression. **(SI)**
 - 14 Page 22. The text states that the windmills/solar wells were sampled and were in compliance with NRC requirements. The text states that the sampling results are included in the Semi-Annual Effluent Report. The Semi-Annual Effluent Report has been included in the Annual Report in previous years, but is not included this year. Please include a copy of the Semi-Annual Effluent Report. **(SI)**
 - 15 Please provide potentiometric surface maps for all wellfields not currently in production. **(SI)**
 - 16 The loading of deleterious constituents in the irrigation circles used for disposal of waste water remains a concern to the LQD. Time will determine if the reduction of Se through the Se Plant will reduce the Se in the soils and vegetation of the Irrigator No. 2. Results thus far show that the soils are loading with increasing concentrations of several parameters being monitored. The soils are clayey and natural precipitation is limited, therefore, restoring baseline values of elevated concentrations of deleterious constituents may be difficult. CR is currently working on the characterization of the extent of the contamination of the soils, substrate, and vegetation. A mitigation plan to reduce the contaminants to acceptable levels will be likely be required. **(LS)**
 - 17 Section (g) Vegetation Data – CR states that the laboratory analysis procedures for Se concentrations in vegetation changed in 1998, which may account for the increase in Se during 1998 through 2008 as a result of more complete digestion. Regardless of this conclusion, recent vegetation analysis shows vegetation Se in Irrigator No. 1 above 12.0 mg/kg and for Irrigator No. 2 at 16.6 mg/kg, which is a drop from the 24.0 mg/kg measured in 2008. The threshold for toxicity in vegetation is 5 mg/kg, therefore the vegetation in both areas still requires mitigation based on the most recent analysis. **(LS)**
 - 18 Land Application: Soil and Figure 7-3, Irrigator No. 1 and Irrigator No. 2 Radium-226 concentration. The Radium 226 concentration trend showed an increase in Radium over the three year period of 2006-2008, even in the Irrigator No. 1, which has not been used. In 2009, there was a significant drop in the concentration. However, the concentration remains elevated. CR should continue to monitor radium in these soils. **(LS)**

- 19 Land Application: Soil. In the previous Annual Report responses, CR explained that in 2006 and 2007 that the contract lab changed the analytical methods, thus accounting for the apparent rise in the Radium 226 values. CR should place a footnote or notation on these figures to explain the anomaly between the different analysis. (LS)
- 20 Land Application: Soil Water – A brief explanation was provided as to why water samples couldn't be obtained from the lysimeters in either of the irrigators. CR attempted to prime the lysimeters, but still no water from the irrigation was obtained. The poor permeability of the soils is likely one reason the lysimeters aren't collecting water. This poor permeability is one reason why leaching will likely not be beneficial in reducing the deleterious constituents in the soils. As a reminder, in the 2007-08 responses to comments, CR made a commitment to assess the merit of changing the sampling period to August, 2009. **Please continue to include an update of the maintenance evaluation of the lysimeters and include the assessment of taking the samples in August of each year as outlined in the Soil Water Comment No. 14 from the 2007-08 Annual Report review. (LS)**
- 21 During the review of the Surety Bond calculation early in 2010, both CR and the LQD Agreed that in the interim, the contingency portion of the reclamation bond would be used to cover the cost of mitigating toxic and phytotoxic constituents in the soils and vegetation within the irrigation circles. Including the mitigation of the elevated constituents in the contingency was agreed pending the completion and results of the Golder Associates characterization study that was initiated to address the comments listed below from the 2007-2008 Annual Report. Since the results of the characterization study have not been included in this Annual Report, the cost associated with the mitigation remains unresolved. In an email from Tom Young dated February 11, 2010, CR stated that further cost analysis will be reviewed for removal of the irrigators through the next annual report. **CR should include the cost analysis as agreed to by Mr. Young. Please provide the characterization information to determine if it will be necessary to remove soils and vegetation within the irrigation circles; if this is not available the LQD will require the surety include the cost for a minimum depth of soil and vegetation removal and their proper disposal. (LS)**

NOTE:

THE FOLLOWING COMMENTS WERE INCLUDED IN A LETTER DATED MAY 7, 2010. THESE COMMENTS WERE UPDATED FROM THE ORIGINAL COMMENTS INCLUDED AS PART OF THE 2007-2008 (Comment Nos. 19-22) and 2008-2009 (Comment Nos. 27-30) ANNUAL REPORT REVIEWS. THESE COMMENTS HAVE NOT BEEN YET ADDRESSED BY CAMECO. CAMECO HAS CONTRACTED THE CHARACTERIZATION OF THE SOILS AND VEGETATION. RESULTS OF THE CHARACTERIZATION STUDY ARE PENDING.

19. **Further response is pending** for the completion of the characterization study of soils and vegetation on the irrigation circles. Golder Associates suggests that the trend in the Se data

shows that the concentration of Se in the soils is decreasing. If the current trends are maintained for Irrigator No. 1, Golder anticipates the concentration will be below the 5 mg/kg threshold after 2011. These are trends based on a few years of sampling. The current trends may not continue. Based on the LQD's observations of disturbed environments, the decrease in concentration could flatten out above the threshold values if no further mitigation of the Se in the soil is done. As discussed during the May 4, 2010 meeting, CR will be proposing to harvest and dispose of the vegetation in the irrigation circles as one means to reduce the plant available Se. Other methods of mitigation may be developed after the characterization is completed.(LS)

20. Livestock and Wildlife

A) **Further response is pending.** Golder has suggested harvesting of the vegetation to reduce the exposure of the high Se vegetation. As discussed in the May 4, 2010 meeting, the problem with harvesting is the disposal/use of the vegetation. CR will investigate the possibility of incineration or other disposal of the harvested vegetation. Incineration may require an Air Quality permit and ash disposal must be addressed. Golder suggested using this vegetation as a supplemental Se feed source. Se is not a deficient nutrient in feed from the Western U.S., so this idea has limited merit. During the May 4th meeting, using the vegetation as mulch was also suggested. Using the vegetation as mulch should be limited to soils low in soluble Se. This use would also be limited unless the hay was certified weed-free.

A second idea suggested by Golder to reduce the soil Se and thus reducing the vegetation Se is to add amendments to the soil. They suggest adding elemental sulfur, gypsum, or organic matter to the soils. Since CR does not wish to disturb the vegetation on the irrigation circle, it would seem that the use of soil amendments would be limited in that this type of mitigation would require incorporation of the amendments into the soil by tilling or ripping. If it were decided to use amendments, the type of sulfur or form of organic matter would need to be determined. Also, the particle size and source of amendments such as gypsum would need to be determined to get the best reaction possible. Since Irrigator No. 1 is no longer operative, the use of a wet-dry cycling would likely be impracticable on this site.

During the meeting of May 4, 2010, it was agreed that mitigation of Se in the vegetation will need to be developed after the characterization plan is finalized and completed.(LS)

B) **Further response is pending.** As stated in Comment No. 19 above, Golder suggests that the trend in the Se data shows that the concentration of Se in the vegetation is decreasing in Irrigator No. 1. The current trends may not continue. The decrease in Se concentration of the vegetation could flatten out to be above the threshold if no further mitigation of the Se in the soil is done. The statement is based on the soils showing a continued increase in plant available Se, including Irrigator No. 1 where irrigation was stopped in 2004. Also intermittent irrigation could be a problem in Irrigator No. 1 since the irrigator is currently inoperable.(LS)

- C) **No response received.** CR did not offer to remove this statement from the Annual Report.(LS)
- D) **Further response is pending.** CR stated that another consultant will be considering a response to this comment. It was discussed during the May 4, 2010 meeting that CR should be using their wildlife surveys to monitor and record animal fatalities and any negative characteristics of wildlife such animals as small mammals and birds (eggs).(LS)
- E) **Further response is pending.** One solution to mitigate the high Se vegetation source is to harvest it annually. However, as discussed above, the disposal of this harvested vegetation must be addressed. Solutions to this concern will also be addressed in the characterization plan and the resulting plan to further mitigate plant available/soluble Se from the soil rooting zone. (LS)
21. **Further response is pending.** Golder has provided a generalized characterization plan for the irrigation circles. Golder refers to TVA's perimeter or TVA's irrigation. Who or what is TVA? The LQD has the following additional questions related to the sampling plan:
- What will be the sampling depth intervals? During the May 4, 2010 meeting, it was agreed that a statistically valid determination of the depth would be acceptable. The intervals for the sampling depths would be determined by a phased approach, ensuring that the rooting depths and the Se concentrations immediately below the rooting depths would be included. The sampling plan would also include an interval of 0-2 inches where it has been shown the organic layer can store soluble Se. This phased approach requires that CR have a good understanding of proper storage and holding times for accurate and precise analyses.
 - All parameters to be analyzed in Irrigator No. 2 should also be analyzed in Irrigator No. 1 as discussed during the May 4, 2010 meeting.
 - The significance of Se speciation is not fully developed in the proposal. This significance should be provided.(LS)
22. **Response is conditionally acceptable.** The Golder proposal provided a discussion of the Ramirez findings. This discussion needs to be included, attached, or referenced in the Annual Report. (LS)

22 Appendix C: 2009 Annual Monitoring Report For Boner Brothers Partnership, Section C, Water Monitoring. CR states that the mean Selenium concentration at the East Pumpback Sump(EPS) was 0.76 mg/L, and that this mean concentration is below the Class I AND Class III standard of 0.05 mg/L. The reported mean concentration at the EPS is higher than the Class I and Class standard of 0.05 mg/L. As reported in Table 1 of this section, the quarterly monitoring concentrations of Selenium at the EPS exceeded

standards in all quarters except the second quarter of 2009. Please revise the text in this section to accurately reflect quarterly monitoring results. **(JWS)**

- 23 The LQD attempted to inspect delineation drill holes as reported in the 2009-2010 Annual Reports for Permits 603 and 633 on November 5, 2010. The drill sites were found to be backfilled, topsoiled and seeded without a marker to locate the holes. An attempt to locate the plugs using a GPS locator was not successful. LQD made the decision that another means of locating the holes would be necessary such as excavating the sites to confirm the plugs are in place. This effort will commence during the spring/summer of 2011 for approximately 20-30% of the drill sites. In addition, during the excavation of the drill holes, CR will need to remove the well caps to verify the plugs are intact at the correct level in the hole. The surety for plug and abandonment is required on all holes until LQD can verify the holes have been adequately plugged. No response required **(PCR)**
- 24 The surety includes reclamation costs for six monitor wells at PSR2. These wells are not described in the permit. CR should revise permit 603, page OP-11 to include a description of the wells (location), purpose of the wells and the monitoring schedule for the wells with a commitment to report the monitoring information in the Annual Report. Please include this information in the Permit/Combination/Amendment. CR is advised that changes such as addition of monitor wells, pipeline construction, facilities/structures, etc. should be proposed in the Annual Report prior to construction or should be submitted as a non-significant permit revision prior to construction. **(PCR)**
- 25 Plate 1-4. The map includes a text statement and reference to the D-Extension Monitor Well Ring stating that it is not in operation. Please explain this statement. **(PCR)**
- 26 Plates. Please add the header houses with associated numbers for the wellfields to the maps in the 2011 Annual Report. **(PCR)**
- 27 Page 10, Accidental water discharge, dam failure, etc. The report briefly discusses the reportable spills during the report period. Please provide water and soil sampling results and any mitigation conducted for the spills in the Annual Report. **(PCR)**
- 28 Page 9, Shop, facilities, erection sites. The report describes installation of deep disposal well #9 and the associated access road and pipeline. Construction of facilities such as these must be reviewed by the LQD prior to construction either through the previous annual report identifying proposed disturbance/constructions for the next period or through a permit revision. CR must begin to seek LQD concurrence for all disturbances/constructions prior to implementation to ensure the permit adequately addresses the disturbance and surety. CR is advised that the permit is the central document that requires updates for changes due to mining and reclamation activities (i.e., disturbances). Please provide permit revisions for all proposed disturbance or identify them in the annual report prior to the disturbance. No response required. **(PCR)**

- 29 Page 18, Mine Unit E. CR explains the status of 73 wells that have previously been plugged and abandoned (P&A) with non-continuous or inaccurate reporting of the P&A. The wells are included in the list of wells under Appendix A of the report. As these wells were not previously reported in an Annual Report the LQD reserves the opportunity to inspect the wells for proper abandonment. Please identify which of the wells listed in Appendix A are those not accurately reported. The LQD plans to investigate the proper abandonment of these wells during the next field season (2011). In addition, to assist with the tracking of the P&A for these wells, a copy of page 18 and Appendix A will be placed in the Mine Unit E, P& A notebook. No response required. **(PCR)**
- 30 CR has referenced § 35-11-411 (a)(iii) to extend the restoration schedule for MU's D, Dext., F, H, I and J. Typically, LQD will allow mining schedules (and restoration/reclamation) schedules to be modified through the annual report by one to two years. The schedule is not acceptable. CR is required to follow the approved schedule or resubmit the schedule in the annual report for review. **(PCR)**

SURETY COMMENTS

- 31 CR provided a letter to LQD on July 2, 2010 in response to LQD's email questions regarding plug and abandonment notification. In the letter, CR explains as follows:

Regarding the surety, when a well is plugged and abandoned, dollars are no longer required in the surety bond for plugging and abandonment or that well as the work has been performed. However, when this happens, CR typically does not immediately remove the plugged and abandonment wells from the surety estimate. The wells and associated dollars are left in the surety estimate so that adequate coverage will be available should the decision be made to replace the wells.

CR is advised that drill hole abandonment costs must be carried in the surety until a formal request for release of plug and abandonment liability is reviewed (or through the Annual Report review) and approved by the LQD. This review often includes field verification of the abandonment. CR should not assume costs can be rolled into new replacement wells until there is formal approval for the liability release on abandoned wells. No response required. **(PCR)**

- 32 The number of Wells MIT'd for Life of Mine Unit has increased considerably in most wellfields. Is the increased number for wells a result of new restoration wells? Have the wells been installed to date? Please explain these changes. CR is advised that due to the complication of tracking surety changes throughout the Annual Report period for new well construction, well abandonments, approvals for new wellfield mining, and other changes to the permit, LQD will require a surety revision review with each permit revision that affects the surety. The necessary increases to the surety will be required prior to approving the revisions. **(PCR)**

- 33 CR has not included MIT costs for each 5 year increment for the life of the wells. Please add a line item in Section VI, MIT Costs, showing the number of MITs needed for the life of the wells and calculate the additional costs. **(PCR)**
- 34 Groundwater Restoration. In the section on Monitoring and Sampling Costs, the number of months indicated for groundwater sweep, reverse osmosis and reductant do not reflect the approved restoration schedule. Please revise the months for each of the restoration operations to match the approved restoration schedule. The number of sampling events will also need to be corrected to reflect the months of operations. **(PCR)**
- 35 The calculation for the number of bi-monthly monitor well samples during the stabilization period could not be followed. Please examine the number of samples for each wellfield and provide corrections or an explanation for the numbers. **(PCR)**
- 36 Supervisory Labor Cost. Please explain the decrease in the active and total restoration periods without an approved change in the restoration schedule. The approved water balance indicates restoration for the wellfields will extend at least through year 2026 (including stability). Please correct the total restoration period from 9 years to 15 years and make the corrections to the labor costs. **(PCR)**
- 37 The deep disposal wells (DDW) are needed for the life of the mine which is shown on the approved restoration schedule extending through 2031. This would require four MITs for each DDW. Please correct the Number of MITs per DDW. **(PCR)**
- 38 The well abandonment costs have been reduced to \$1.06. CR will need to use the abandonment costs found in Guideline 12 (i.e., \$6.28.00/ft for wells deeper than 500 feet). **(PCR)**
- 39 Waste disposal costs have been reduced substantially with the change to a new disposal facility (August 17, 2010 approval of NRC License Condition 9.6 for a new 11e.(2) byproduct material disposal agreement). A change in the waste disposal facility is of importance to the LQD due to the potential modification to the surety. CR is advised that a permit change is necessary to identify the disposal facility locations in the permit. The type of wastes and where they are disposed must be described in the permit. Please submit a permit revision to explain the various types of wastes, how they are transported and where they are disposed. **(PCR)**
- 40 The LQD requests formal documentation of the disposal fees and transport costs that support the surety cost changes (i.e., disposal receipts, haulage fees including vehicle cost, labor cost, fuel cost and any other associated costs transport costs). In addition, CR will need to provide documentation confirming the disposal fees would be transferred to the State of Wyoming upon bond forfeiture of the permits. **(PCR)**
- 41 Well Pumps and Downhole Tubing. The number of production wells reflects the same number of wells as shown in the Wellfield Abandonment section of the estimate. However, the number of production wells with pumps has increased in many of the

- wellfields and has surpassed the number of production wells reported for abandonment. Please correct the discrepancy. **(PCR)**
- 42 The chipped volume per Lft for the various pipelines used at the mines has increased for some pipe diameters and decreased for others. Please explain the changes in the chip volumes that would seem to be a constant value. **(PCR)**
 - 43 Disposal of the various disposal units is unclear. The well head covers show decontamination costs, yet they are disposed at an NRC Licensed Facility at a cost of \$173.20/ft³. The trunklines do not include a decontamination cost, yet they are disposed at an NRC facility at a cost of \$6.41/ft³. Please provide clarification for the disposal requirements of the various disposal units for the entire surety estimate (i.e., pipelines, pumps, tanks, ROs, PVC, buildings, contaminated soils, etc.). Please show the information in the surety estimate. **(PCR)**
 - 44 Please continue to use the Guideline 12 unit costs for vehicle operations. Also, the number of years (average) used by CR is 9 years. The vehicles will be used for the life of mine. Please revise the years of operation. **(PCR)**
 - 45 The walls of the Satellite buildings, warehouses and suspended walkway do not include decontamination costs. Please explain. **(PCR)**
 - 46 CR uses a disposal cost of \$8.04/cy for materials disposed at the County Landfill. . The LQD requests documentation of the acceptance of materials at this facility, the disposal fees and all costs associated with the transportation of these materials. **(PCR)**
 - 47 The estimate describes disposal costs for concrete floor as 75% off-site at the County Landfill and 25% at the NRC facility. The line titled *Subtotal On-Site Disposal Costs* should be corrected to off-site County facility disposal costs. Also, the transportation and disposal cost used for the NRC facility is \$6.28/ft³ which differs from the cost of \$6.41/ft³ used for other materials disposed at the NRC facility. Please explain. **(PCR)**
 - 48 Electrical costs for Satellite 3 are not included in the surety. The satellite is shown on the approved water balance for additional RO systems. Please include the electrical costs for the facility. **(PCR)**
 - 49 Satellite 2, the Selenium Plant and the deep disposal well electrical costs are shown for 7 or 9 years of restoration. The approved restoration schedule includes RO through mid-2025 (i.e., through MU-J restoration) which is 14 years. Please adjust the cost. **(PCR)**
 - 50 CR will need to include a cost to remove an estimated depth of contaminated soils (i.e., as agreed upon by CR and LQD) within the irrigation circles unless soil characterization information is provided to resolve this cost (see comment 21). **(PCR)**
 - 51 As recently discussed during the January 2011 inspection, the soils in the purge storage reservoirs are of equal concern for elevated selenium levels as the irrigation circles. CR

- will need to provide a similar evaluation of the soils in the ponds (i.e., characterization study) or a cost to remove an estimated depth of contaminated soils. Please discuss the plans to mitigate Se in the soils of the ponds. **(PCR)**
- 52 The surety indicates Irrigator No. 2 will be used for seven years. The approved water balance for Permit 603 indicates the evaporation system will be used through 2021. Please revise the Irrigation Maintenance and Monitoring Costs to show 10 years. **(PCR)**
- 53 Costs for Infrastructure, Equipment Maintenance, Replacement and Repairs should be extended for the life of the mine. Please revise the cost. **(PCR)**
- 54 CR has removed the capital costs for reclamation in the 2010 AR. Please provide detailed explanation explaining the removal for the items previously listed in the capital costs. **(PCR)**
- 55 CR has found that restoration of wellfields requires wellfield refurbishment including installation of new restoration wells, repairs/replacement of bellholes, wellheads, pipeline, header house repairs, etc. An estimate for the refurbishments for groundwater restoration must be included in the surety. Please provide an itemized estimate for wellfield refurbishment in the surety estimate. **(PCR)**
- 56 The reverse osmosis cost shown on the GW REST page of the surety calculation does not appear to include the pumping cost between the wellfield and the RO units. Please include the pumping costs from the wellfield to the RO units. **(SI)**
- 57 The selenium plant cost shown on the UC-GWSDDWSe Treat page of the surety does not appear to have included the pumping costs from the selenium plant to PSR #2. Please include the pumping costs from the selenium plant to PSR #2. **(SI)**
- 58 The well abandonment costs shown on the UC-WA page states that six wells can be plugged in an eight hour day. A more accurate number of holes per day would be three or four. Please correct the number of holes per day that can be abandoned. **(SI)**
- 59 The delineation hole abandonment costs shown on the UC-WA page uses a 600 foot estimated average depth of delineation holes. However, the average well depth is 700 feet. The delineation hole depth should be at least the same as the average well depth of 700 feet. Please correct the delineation hole depth. **(SI)**
- 60 The heating costs shown on the UC-Heating costs page only addresses Satellite 2 and the Selenium plant. Please include heating costs for the wellfield header houses. **(SI)**
- 61 The contaminated waste disposal cost on the MasterCosts table includes a Load Correction Factor. This factor does not appear to have been used properly. For example, for concrete the Tons/cubic yard is shown as 0.54, whereas one cubic yard of concrete is 2,176 pounds. Please clarify how this factor is used. **(SI)**

- 62 The well abandonment costs shown on the UC-WA page states that the abandonment fluid to be used is Plug Gel. Plug Gel is no longer produced. Please use a currently available product. **(SI)**
- 63 The Plug Gel calculations shown on the UC-WA page states that 9 sacks of Plug Gel are needed for a 600 foot hole. The Casper Well Mud Engineer line indicates that one sack (50 pounds) of Plug Gel is required for 100 gallons of hole. Using the numbers provided the correct number of sacks per hole would be 17.6 sacks per hole $((117.81 * 7.48) / 50)$. Please correct the Plug Gel (or equivalent product) calculations to show the correct amount of this material to plug the hole or well (to achieve 20% solids requires one 50#sack per 24 gallons of water). **(SI)**
- 64 Through the 2008-2009 Annual Report review the LQD requested CR submit a formal proposal for the reclamation of the Highland Central Processing Facilities (CPP) by June 1, 2010. CR responded to the reviewer with a commitment to address the proposal in the 2010 Annual Report. The 2010 Report only states the plan for the future use of the plant (i.e., resin stripping, elution and precipitation facility). The LQD would appreciate more detailed information on the schedule for refurbishment of the CPP and start-up date for the operations. Please provide more details in the 2011 Annual Report. **(PCR)**
- 65 The delay in the review of the Annual Report is a result of the numerous compliance issues and permitting actions that are ongoing at SRHUP. The reviewer is aware that some of the comments are also being addressed through other reviews. However, the review is essential to establish a clear record of the operations for the report period and to set the surety amount. It is requested that CR respond to all comments and make all necessary changes to the document **within 60 days** so that the surety can be adjusted. **(PCR)**