Otter Creek

Mike Rowlands
Director, Otter Creek Operations
mrowlands@archcoal.com

November 19, 2014

Mr. Chris Yde
Coal Program Supervisor
Industrial and Energy Minerals Bureau
Montana Department of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901

Permit ID: C2012018
Revision Type: New Permit
Permitting Action: Deficiency
Subject: First Round Acceptability Deficiency; Otter Creek Permit

Dear Chris:

On October 28, 2014, Otter Creek Coal, LLC (OCC) submitted its response to the Montana Department of Environmental Quality's (DEQ) April 12, 2013, correspondence identifying certain deficiencies in the Otter Creek Mine permit application.

OCC is withdrawing its October 28, 2014, response and substituting the present response. OCC's October 28 response, in an effort to facilitate review and simplify the electronic transfer process, was provided to DEQ on an external hard drive. Provision of the response on an external hard drive, however, inadvertently resulted in missing or corrupted files, complicating DEQ's efforts to review the response and publicize the response on DEQ's website. Additionally, after the transfer, DEQ returned the external hard drive to OCC.

To ensure the integrity of the data in OCC's response, to address issues encountered with the previous file download and transfer process, and to ensure DEQ has a full opportunity to review and assess OCC's response for acceptability, OCC is substituting its October 28 response with the present response, dated November 19, 2014. The present response is being furnished on multiple DVD's that DEQ may retain in its possession. This substituted response should facilitate the review process, both by DEQ and by the public, and alleviate the complications arising in the October 28 response.

Sincerely,

OTTER CREEK COAL, LLC

William M. Rowlands

William M. "Mike" Rowlands
Director, Otter Creek Operations
(406) 245-0990

Otter Creek

Mike Rowlands
Director, Otter Creek Operations
mrowlands@archcoal.com

October 28, 2014

Mr. Chris Yde
Coal Program Supervisor
Industrial and Energy Minerals Bureau
Montana Department of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901

Permit ID: C2012018
Revision Type: New Permit
Permitting Action: Deficiency
Subject: First Round Acceptability Deficiency; Otter Creek Permit

Dear Chris:

Otter Creek Coal, LLC (OCC) has reviewed your letter of April 12, 2013, listing technical deficiencies in the Otter Creek Mine permit application package (PAP) submitted on July 26, 2012, and determined to be complete on December 14, 2012. All items not specified as unacceptable are presumed to be acceptable.

This letter and accompanying materials constitute the response of OCC to that letter. Items included with this submittal include:

- Revised (PAP) items in pdf format;
- Permit outline specifying the revised PAP items included;
- Map certification sheets;
- Map drawing files in AutoCAD format for MDEQ convenience and MDEQ use only; and
- Electronic hydrologic monitoring data for the baseline period.

Our responses to individual comments are enumerated below in bold type, with specific references to revised permit materials:

ARM 17.24.Subchapter 3: Due to missing AutoCAD (CAD) data, it is not possible to conduct a thorough review of this Subchapter, nor any Subchapters referenced therein. Please provide a complete set of the CAD associated with the application. See below for the correct formatting required.

Response: Updated and complete CAD data is submitted.

ARM 17.24.302(1) – (and pursuant to Submittal Guidelines):

- Rule states that application information must be submitted in "a format acceptable to the department". The format we are currently using is AutoCAD Map 3D 2010. Most of the recently submitted CAD files are missing their associated external reference (XREF) files. Several of the files contain proxy objects that were apparently AEC generated. Review cannot take place until the CAD files and associated XREF files are submitted and functioning properly.
- The XREF files need to open automatically when each CAD file is opened; therefore, they must include the correct path and corresponding file location. Likewise, proxy objects need to be converted to AutoCAD objects.

Response: Updated and complete CAD data is submitted.

- Layer Names must be intuitive. Layer names such as "O" are unacceptable. Otter Creek must resubmit all CAD drawings using an intuitive (i.e., plain English) naming convention. Alternatively, OCC may submit a data dictionary that describes each layer name used in all CAD drawings (some drawings are accompanied by a data dictionary, but not all).

Response: Updated and complete CAD data is submitted.

- Layer Name Identifiers: each layer in a CAD drawing must indicate the date of last edit (e.g., Permit_Boundary_20120619). Each time a layer is required to be edited (e.g., during a deficiency response cycle) the date must be updated so that various versions of the same layer may be distinguished. Otter Creek must add dates to all CAD layers.

Response: Updated and complete CAD data is submitted.

- File Names: CAD drawing file names and accompanying PDF maps must include the date of last edit in the title in order to distinguish between versions of the same file. Otter Creek must add dates to all CAD and PDF map file names. Additionally, maps are referenced in the narrative using the map number first, and map name second; however, the PDF file names are opposite. Otter Creek must rename the maps using the map number first in the file name (e.g. Map 1 Mine Sequence.pdf). This will also cause the maps to fall in the logical order of map number, rather than alphabetically, which does not relate to any other logical ordering of the permit.

Response: Updated and complete CAD data is submitted.

- Empty Layers must not be included in CAD drawings. For example, the relatively simple Surface Features map contains 134 layers. Superfluous layers distract the reviewer. Otter Creek must remove all empty layers from CAD drawings and resubmit them.

Response: Updated and complete CAD data is submitted.

- Single Layers: distinct features such as the permit boundary must be represented in a single layer. Many drawings contain redundant layers, which causes confusion and slows the review process considerably. Otter Creek must remove all superfluous layers from CAD drawings.

Response: Updated and complete CAD data is submitted.

- Layer Geometry Type: layers must be submitted according to their appropriate geometry type (i.e., polygons should be submitted as such, rather than as hatched features). The use of hatching is fine; however, the outside perimeter of the feature must be a polygon. Otter Creek must revise all maps to utilize the appropriate geometry.

Response: Updated and complete CAD data is submitted.

- The format of the permit is cumbersome to use. Otter Creek must consult with DEQ on ways to improve the submittal. As an example, the second bullet in Volume 1, ARM 14.24.308…pdf, Exhibit 308A…Operation Plan.pdf, Exhibit 308A…Appendix A.pdf, states, "Construct Road Segment 1 generally parallel to the east flank of the valley bottom to its intersection with Segments 3 and 4. The up-gradient road ditch serves as drainage control for Drainage 1, Drainage 2 and a portion of Drainage 3, and is graded such that overflow from Pond 1 flows to Pond 1A." To verify this statement the reviewer must navigate to and open several tabs:

    1. The logical starting place would be to look at a drainage control map. Maps are found in Volume 4; thus Volume 4, ARM 17.24.305…pdf, Drainage Control Map 11...pdf.
    2. Map 11 does not depict roads or designate drainage areas. Road segments are found in Volume 1, ARM 14.24.321…pdf, Exhibit 321A…pdf, Exhibit 321A…Plate 1 Roads.pdf.
    3. The drainage basins are found in Volume 1, ARM 17.24.315…pdf, Exhibit 15A…Ponds and Embankments.pdf, Exhibit 315A …Drainage Control Report.pdf, Exhibit 315A … Appendix A Pre Mine Drainage Figure 1-1.pdf and the Post Mine is in Figure 3-2.pdf.

  In summary, the reviewer must simultaneously access 4 maps that are hidden within 13 open "pdf" tabs. This is not practical. The net result of the above is that Pond 1 flows into Pond 1B not Pond 1A.

Response: OCC suggests that the issues enumerated in this comment likely stem from a problem with the map(s) involved. The Mine Plan (Map 8) and Operations Plan (Exhibit 308A) have been revised and simplified, and a revised Map 11, Operational Drainage Control is submitted.

ARM 17.24.302: Please remove the language submitted in ARM 17.24.302(2) and (3) and replace it with "OCC complies with provisions of this Rule by supplying accurate, current, clear and concise information which is supported by appropriate reference material."

Response: ARM 17.24.302 is revised as requested.

ARM 17.24.302(7): DEQ does concur with your statement that "[b]ecause maps have been prepared digitally, scale may be adjusted electronically as required for review," all features must be clearly legible at the scale depicted. Problems typically arise in these scenarios when maps are

scanned or saved at resolutions that do not capture the details – particularly labels – adequately. One example of this is the contour labeling on Pre Mine Topography Map 7. Otter Creek must resubmit that map, along with any others that do not adequately show necessary detail.

Response: Maps are revised to assure legibility.

ARM 17.24.303(1)(g)-(h): OCC did not submit the Ownership and Control for their Parent Company(s). Please submit the required organization structure of the ownership.

Response: Revised Exhibit 303C-Ownership and Control is submitted.

ARM 17.24.303(1)(t): OCC did not submit the liability insurance. The application states that you will submit the insurance once the permit is issued. DEQ must review the insurance before issuing the permit. Please be advised that the liability insurance must be submitted prior to DEQ issuing a permit.

Response: ARM 17.24.303(1)(t) is revised as noted.

ARM 17.24.303(1)(i): Please be advised that OCC must submit the Mine Safety and Health Administration Number before a permit can be issued.

Response: Comment noted.

ARM 17.24.303(1)(s): The by-rule sequence should be adjusted to coincide with the rules: narrative in the permit application for ARM 17.24.303(1)(r) coincides with ARM 17.24.303(1)(s). In addition, it has been our experience that when mining thick seams, plans do not include any reclamation within the first five or more years. The operator must better evaluate its spoil movement and, if needed, adjust the "anticipated" beginning reclamation date. In addition, the anticipated acres of facilities, coal removal, spoil borrow, and other specific affected areas must be identified. The total number of acres must add up to "4,094 acres".

Response: The narrative addressing ARM 17.24.303 has been revised to coincide with the most recent version of the rules. Subsection ARM 17.24.303(1)(s) is revised to reflect re-examination of overburden stripping and reclamation timing. A more detailed timetable is included in response to ARM 17.24.313. Also, acreage detail is updated and provided on Map 8 – Mine Plan as revised.

ARM 17.24.304(1)(a): Please provide additional narrative to identify the anticipated number of acres, tons mined and acres disturbed in Tracts 1 and 3.

Response: The rule requires "size, sequence and timing of the subareas of the mine plan for which it is anticipated that individual permits for mining will be requested…" These subareas are Tracts 3 and 1 as shown on Map 1 – Mine Sequence; acreages are shown, as are conceptual pit layout and haulage plans. Without detailed mine planning beyond the scope of the current application, it is not possible to project accurately, with confidence, tons mined and acres disturbed. Tract acreages are provided, and the sequence is based on a 20-million ton annual production rate.

ARM 17.24.304(1)(b): Requires a listing, location and description of all archaeological, historical, ethnological and cultural resources and values of the proposed mine plan and adjacent areas. These requirements were met with the submittal of the various baseline cultural reports. However, to efficiently track the sites and the required mitigation, OCC must prepare a table to be included in the application and reviewed on an annual basis.

Please provide a table listing the site name, description, proposed mitigation, and year of planned mitigation for all archaeological, historical, ethnological and cultural resources and values of the proposed mine plan and adjacent areas.

Response: The information is included on Map 6 Cultural Sites.

ARM 17.24.304(1)(c): Steep Slopes. The inventory of premine steep slopes and the discussion of their replacement need to be moved to 17.24.51; it is inappropriate to include in this section. A premine steep slope inventory is included in Baseline Report 304C. This section identifies only two steep slope categories (3:1 to 2:1 and greater than 2:1). This will not be sufficient to address the performance requirements of ARM 17.24.515 and what is operationally feasible. Please add a 2:1 to 1.5:1 and 1.5:1 to 1:1 and 1:1 and steeper category. Steeper slopes, in the bluff category, will likely need to be identified manually due to limitations in the map grid spacing. Please also note that the performance standards in ARM 17.24.515 are applied to all steep slopes, not just those associated with highwall reduction areas and that slope height is another required parameter.

The area of petrified stumps needs to be better inventoried and documented so that the extent and local importance of this area can be determined. Based on the importance and unique value of the stumps, OCC may consider including a mitigation plan to use the petrified wood in reclamation or in a public display. In the conclusion portion of the baseline report narrative, the operator makes the finding that "Petrified wood fragments are common …" DEQ agrees with this statement, but has not observed standing stumps in numbers depicted in the photographs.

Response: The premine slope inventory is included under Section 304 because it depicts an aspect of the baseline environmental setting. Baseline Report 304C – Geologic, Scenic and Topographic Features is revised; additional steep slope categories are added to the map and discussion. Rather than individual slope length and height, which varies greatly both within and between steep slope areas, OCC has revised the Baseline Report 304C to present steep slope categories in terms of acreage rather than length. This measure is more objective since it can be determined and compared with the PMT by digital means. Also, Exhibit 313C – Backfilling and Grading, is revised to reference premine steep slope information in Baseline Report 304C and address steep slope reclamation in more detail consistent with the performance standards of ARM 17.24.515.

The area of petrified stumps would be disturbed in approximately year 10 of the mine plan as currently projected. OCC would consider more detailed documentation and a mitigation plan to salvage the stumps, but we are concerned that they may be too friable to stand up under handling. We suggest that the OCC and the department examine the area jointly to determine a course of action after permit issuance and as mining approaches this site.

ARM 17.24.304 (1)(c): Requires a comprehensive listing, location, and description of significant or unique scenic and/or geological formations. Baseline Report 304C_Geologic Scenic Topo

Appendix A and Plate 2 have two separate formats for the photo identifiers. One uses 10-1 while the other uses 100-1. Please make these consistent formats between the two documents.

Photo point 1408 does not appear to be located in the correct spot on Plate 2 based on the photos in Appendix A. It appears, in looking at photo descriptions and images from Appendix A, that 1405 should be with 1406 and 1407; 1408 should be where 1409 is shown on the map; 1409 and 1410 should be where 1410 and 1411 are shown. The actual location for 1411 is unknown based on the map.

Photos 1412, 1413 and 1414 are being shown in section 15 with 1515 associated to the same point; this is likely not the case. The numbering system denotes the first two digits being the section the photos are taken in.

Photo 1514 is shown in the center of section 14.

According to the descriptions, 1503 is also mapped improperly and should be close to 1504.

Section 23 has two photos listed in Appendix A as 2310 and none listed as 2311. According to the map there is a 2311 location and there is also a 2312 in the appendix. It seems 2311 is missing or improperly labeled as 2310.

Not all GPS points are included on this map. Photo points 1015, 1125, 1213, 1219, 1405 (this photo appears to be in the same location as 1406), 1505, and 2201 are not mapped.

Please provide the exposure direction for the panoramic clinker photos.
Please correct all mapping issues and ensure that the photos are associated with the correct locations.

Response: The notation is not 100-1, but 1001, equivalent to 10-1(Section 10, photo 1, or 01). The photo notations have been changed to be consistent with the map. Comments regarding photo locations and numbering are acknowledged; locations and identification numbers of photo points have been corrected on the revised Plate 2. Exposure directions for the panoramic clinker photos have been added, and the photo numbering error (photo 2311) corrected.

ARM 17.24.304 (1)(e) & (1)(f); Hydrology Baseline:

- Values given in the MCL column of the 304E data tables are not appropriate in many cases. Applicable water quality criteria given in these tables should be based on values given in DEQ-7, and reflect the most stringent water quality standard. For instance, 304E tables list an MCL for barium as 2 (2 what?). DEQ-7 does not report an MCL for barium, and lists barium as a non-priority pollutant (NPP) with a human health standard of 1000 ug/L. Likewise, the applicable water quality criteria for cadmium in surface water samples is not the MCL reported in DEQ-7 – it is the chronic aquatic life standard (0.097 ug/L at a hardness of 25 mg/L). Additional instances occur throughout the data tables included in Baseline Report 304E that must be corrected with the appropriate applicable water quality standard. Please update data tables in Baseline Report 304E to include the applicable water quality standard from DEQ-7.

Response: The data tables in Baseline Report 304E have been updated to address this comment.

- OCC is strongly encouraged to supplement its baseline hydrologic data with readily available data collected by the MBMG, USGS, EPA, and MDEQ. This data would be especially useful for characterizing the surface water quality and quantity along Otter Creek as well as better defining the groundwater system. All data that are used in baseline characterization must be included in the permit.

Response: OCC has done an intensive literature search to identify existing data that would be useful for hydrologic baseline investigations. This information has been cited and utilized where appropriate. Because earlier investigations had different objectives, much of this work is of limited utility for baseline investigations as required under the rules.

- Digital hydrologic baseline data must be submitted, preferably in an Excel format. The digital data should include all individual data points and not the statistical summaries.

Response: Digital hydrologic baseline data are submitted in Excel format as requested.

- All data discussed in the text or in tables must include units. For example, the water quality summaries in Table 2-4 through 2-12 do not contain units.

Response: Reporting units for each parameter, or group of parameters, have been added to each of Tables 2-4, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-11 and 2-12.

- Individual statistical summary tables for surface water and groundwater (Appendices D and E) of the baseline report do not indicate when a concentration represents a non-detect value. Please indicate where the values are non-detect.

Response: Appendices D and E have been revised to indicate non-detect values by including reporting limits.

- BR304E, Appendix D - Please indicate the location and depth of the three Tarter domestic wells sampled and the source from which the sample was drawn, e.g. was it the well head or the tap? Please indicate if chemical modification (e.g. softening) of the well water takes place before the sample collection point.

Response: Water samples were collected before softening at the Tarter domestic well. Well depths and completion intervals are unknown. Tarter well locations are shown on the private well inventory table and map in Baseline Report 304E.

- BR304E, Section 2.4.1.2, page 2-12 – DEQ does not agree that the fine-grained alluvial sediments act as a true confining layer. The interpretation of an alluvial confining layer is used repeatedly in baseline and the PHC as a reason that impacts to the stream from mining will be significantly moderated, however it is likely an overstatement for the following reasons: 1) Numerous logs from Otter Creek wells report encountering wet conditions in

the fine sediments at approximately the same depth as the reported water level; 2) In the stream, the sediments are saturated throughout the alluvial profile; and, 3) The presence of coal in some of the alluvial well logs also suggests that the Knobloch may be contributing to the water level observed in the well.

Response: C.W. Fetter, (Applied Hydrogeology, 1980), defines a confining bed as "a body of material of low hydraulic conductivity that is stratigraphically adjacent to one or more aquifers. It may lie above or below the aquifer". The Dictionary of Geological Terms (Bates and Jackson, editors, 1984) defines confining bed as "a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers".

In the referenced section, the fine-grained, dominantly clay sediments are identified as confined/semi-confined. Well logs identify surficial sediments as silty clay. Sediments of the size present in the upper clays would be expected to exhibit hydraulic conductivities on the order of 10^{-6} cm/sec or about 0.028 feet per day (Fetter, 1980). With the exception of one well (AVF3-1), hydraulic conductivities for the alluvium underlying the fine grained sediments were three orders of magnitude higher. This variability in hydraulic conductivities would inhibit upward flow of water in areas covered by the fine grained surficial sediments resulting in localized confined or semi-confined conditions as noted.

The Knobloch Coal is rarely in direct contact with the fine grain surficial deposits. It is in contact with the underlying coarser grained alluvium. Hydraulic pressures in the Knobloch Coal could therefore potentially have some effect on water levels in the coarser grained alluvium, depending on the variability in hydraulic conductivities between the two units, and flow in the coarser grained alluvium.

It was noted on page 4-5, of Exhibit 314C (PHC) that the Otter Creek alluvium receives some minor recharge from the creek. This is consistent with MDEQ's assertion (point 2) that the sediments are saturated through the entire profile below the creek. Minor flow through the streambed would continue with a lowering of water levels in the underlying coarser grained alluvium. Because of the low hydraulic conductivity, however, flow though the fined grained sediments would remain low. Changes in flow from the stream would be equivalent to any reduction in head at any given point along the creek. OCC has developed a plan, and will take measures to minimize drawdown in the coal along the creek both to aid in mining operations by reducing complications in water management in the mine and to reduce or eliminate effects to the creek. Please refer to Exhibit 314A – Protection of the Hydrologic Balance.

- BR304E, Section 2.4.1.3, page 2-15. The baseline report states "Synoptic runs conducted through the Study Area in the fall and spring have shown that Otter Creek is gaining through the reach from Tenmile Creek to Ashland during the spring but relatively consistent during the fall." Please explain what "relatively consistent during the fall" means. This statement is not the same interpretation offered in the groundwater model which interprets some reaches as gaining and some as losing.

Response: This statement referred to the overall change in flow from the upper to lower gauging site. There were variations in flow between sites suggesting areas that were gaining and others that were losing flow calculated from measurements at the furthest upstream

(SW-22) and downstream (Trusler Culvert Crossing) sites during the fall 2011 synoptic run, were 5.5 and 4.2 cubic feet per (CFS) second respectively. This suggests a slight overall loss in flow. An error of about 20% could be expected given the relatively poor stream gauging conditions. Therefore, the overall flow was considered to be relatively consistent. Note, however, that flow measured at one site (Trusler Crossing) was 10.1 CFS. Flow measured in the May 2012 event showed an overall increase from 5.1 CFS at upstream site SW-22 to 10.2 CFS, a distinct increase. Except for storm or snowmelt runoff events, flow at all stations typically is less than 10 CFS. For these low flows, the margin of error may mask small site to site differences. Also, whether a reach is gaining or losing may vary by season. For example, draining of shallow fine-grained alluvium and colluvium adjacent to the creek recharged by spring rainfall and snowmelt may increase baseflows during spring and early summer, and in drier weather shallow fine-grained alluvium may be recharged from the stream.

- BR304E, Section 1.3, page 1-3. "groundwater investigations in Tracts 1 and 3 and the adjacent area at a level sufficient to enable projection of cumulative hydrologic impacts for purposes of mine permitting and environmental impact statement preparation." The groundwater data is not sufficient to characterize impacts from Tracts 1 or 3. Please remove this statement and all references to hydrologic data characterizing areas outside of Tract 2.

Response: OCC acknowledges that the density of monitoring is highest in the initial Tract 2 mining area. However, monitoring stations have been established in Tracts 1 and 3 to characterize the hydrologic conditions of the entire mine plan area. Also MDEQ has required expansion of the hydrologic model to include all of Tracts 1 and 3 plus surrounding areas.

A large amount of groundwater data has been collected during the baseline period and subsequent to the baseline period. In addition, an excellent understanding of the geological conditions on all three tracts has been utilized in evaluating hydrogeological conditions. Also, there are numerous wells within and in the area of Tracts 1, 2 and 3 listed on Montana's Groundwater Information Center website. These data collectively provide a foundation for preparation of a groundwater flow model that was used to simulate conditions in Tract 2, as well as in Tract 1 and 3. As additional data are obtained, the model will be revised to provide further evaluation of these adjoining tracts prior to proceeding with mining.

Furthermore, coal mining has been conducted in eastern Montana and provides a basis for understanding potential hydrologic impacts associated with mining the Otter Creek Tracts. OCC's understanding of the hydrogeologic conceptual model for all three tracts, experience with other open pit mines, and expert analysis of site conditions does allow interpretation of potential cumulative hydrologic impacts. As MDEQ has conducted multiple CHIA's, their understanding and experience should allow for completion of a CHIA for Tracts 1 and 3 after additional supporting data, mine startup information, and other mine development operations proceed.

- BR304E, Section 2.0. There are multiple references to alluvial recharge through surface water (snowmelt, gaining reaches, etc.), but there are also multiple statements about the alluvial aquifer being confined and relatively isolated from interactions with surface water.

These appear to be contradictory statements. It is unclear where the recharge areas are, as well as the locations of the stream reaches where the alluvial aquifer is assumed to be confined.

Response: Based on data collected during the baseline period, recharge to the alluvial aquifer appears to be dominantly from lateral sources including upstream alluvium, clinker and Knobloch Coal. Recharge to the shallow surficial alluvial and colluvial deposits occurs primarily from precipitation and runoff. Statements that the alluvium is semi-confined do not suggest that the coarser alluvium is completely isolated. The statements regarding alluvial deposits being confined or semi-confined indicate that flow to and from the deeper alluvium is limited by the fine-grained sediments which blanket the Otter Creek floodplain.

- BR304E, Section 3.2.5, page 3-18. SW-19 and SW-20 are within the mine permit boundary, but outside of the anticipated mine cut area. The statement that they are outside of the mine area is misleading as they could be impacted by mining-related activities. Please clarify this statement.

Response: This statement has been clarified.

- BR304E, Appendix A and Table 2-1. There are numerous discrepancies between Table 2-1 and Appendix A. Please review the data presented in these two parts of the application and correct the errors. The following comments highlight some of the errors:

Response: All information reported for each well listed on Table 2-1 was compared with the individual well logs contained in Baseline Report 304E, Appendix A. Appropriate corrections or clarifications were made for each well on Table 2-1 in addition to those listed below.

  - The Township and Range in Table 2-1 should list the N/S for the Township and E/W for the Range.

Response: On Table 2-1 the columns titles were changed to read "Township (S)" and "Range (E)", respectively.

  - The Township, Range, and Section in Table 2-1 do not agree with the well log for A1.

Response: The well log for A1 has been corrected to read Township "4" S, Range 45 E and Section "9".

  - The total depth (TD) in Table 2-1 for well A-1 is 17 ft., although the well log indicates a drilled depth of 20 ft. with three feet of slough at the bottom. AVF3-4 also has sloughing at the bottom of the hole, but the TD is reported in Table 2-1 as the total drilled depth. Please be consistent in the approach to reporting the TD in Table 2-1.

Response: On Table 2-1, for well A1 the total depth was corrected to read "20 (3 ft slough)"; thus reflecting the difference between total depth drilled and the well's constructed

maximum depth of the screen interval. For well AVF-3-4 the total depth is corrected to read "56 (38 ft slough)"; thus, it reflects the difference between the total depth drilled and the well's constructed maximum depth of the screen interval.

- The surface owner for A7 is different in Table 2-1 and on the well log.

Response: Table 2-1, well A7 the surface owner was corrected to reflect "GNP".

- The Section number for well A5 listed in Table 2-1 does not agree with the well log.

Response: The well log for A5 has been corrected to reflect "12" as the section number. Also, the screened interval was correct to read "Open end at TD".

- The Section number in Table 2-1 for well AVF2-6 does not agree with the well log.

Response: The section number on the log for well AVF2-6 was corrected to read "33". Also, the screened interval was correct to read "Open end at 44".

- AVF3-1 does not have a water level monitoring schedule listed in Table 2-1.

Response: Table 2-1, well AVF3-1, the omitted monitoring schedule of "Monthly" was added and also the footnote "(2)" under the sampling frequency column. Also, the total depth was changed to read "103 (45 ft plug'd)": to reflect the difference between the drilled total depth and the well's constructed screen interval from 38-58 ft-bgs.

- The screened interval for AVF6-4 is incorrect in Table 2-1 – according to the well log it is 31 – 71 ft., not 15 – 23 ft. The property owner in Table 2-1 does not match the owner on the well log.

Response: Table 2-1, well AVF6-4, the screened interval was corrected to read "31-71". For all AVF6 wells the logs have been changed to reflect the surface owner as Ark Land, who is the current owner. Table 2-1 has been corrected to reflect the correct landowner also.

- The surface owner for the B2 wells is listed as MT in Table 2-1 and GNP in the well logs.

Response: The surface owner name was corrected to read State of Montana on logs for wells B2-O, B2-K and B2-U as appears on Table 2-1.

- The Section number in Table 2-1 for the B5 wells does not agree with the well logs.

Response: The section numbers on logs for wells B5-O, B5–K and B5-U have been corrected to read '11".

- Table 2-1 reports a screen interval of 185 - 360 ft. for B5-K. According to the well log, this should be 185-260 ft.

Response: Table 2-1, for well B5–K the screened interval was corrected to read "185-260".

- The Section number in Table 2-1 for the B8 wells does not agree with the well logs.

Response: The section numbers on logs for wells B8-KL and B8-U have been corrected to read "20".

- The surface owner for K-3 and K-4 is listed as Denson in Table 2-1 and GNP in the well logs.

Response: The logs for wells K-3 and K-4 have been corrected to reflect Denson as the surface owner. Also, for well K-3 the screened interval was corrected to read "55-75".

- The screened interval for K-5 is listed as 120-186 ft. in Table 2-1 and 126-186 ft. in the well log.

Response: Table 2-1, for well K-5 the screened interval is corrected to read "126-186".

- The screened interval for K-6 is listed as 104-149 ft. in Table 2-1 and 140-149 ft. in the well log.

Response: Table 2-1, for well K-6 the screened interval is corrected to read "140-149".

- Additional issues identified with wells and well logs are listed below:

  - In 2.1, Groundwater Monitoring Report, the statement is made that 77 wells were installed in the study area during the investigation. The monitoring locations map, Map 10, shows and lists 81 monitoring wells. As some of the wells on Map 10 have been plugged and are not monitoring sites according to Table 2-1, please omit them from the monitoring map and table if no data were collected from them.

Response: On Table 2-1, seven wells (i.e., AVF-1-PH1, AVF-1-PH2, AVF-5-4A, AVF-6-PH1, B3-PH1 and B3-PH1) previously reported on the table as plugged and abandoned are removed from the Table 2-1 and are included on separate table. Table 2-1, now Table 2-1A reflects and lists the original 77 wells plus the seven additional wells installed after 2012. Table 2-1B lists the plugged boreholes. Map 10 has been change accordingly.

  - Log B7-O shows that an upper Knobloch coal was screened, not the overburden. This well should not be used in the overburden contouring.

Response: On Table 2-1 the Geologic Unit in which well B7-O is listed as screened is in "Overburden" which is correct. B7-O is completed (i.e., screened) in a thin coal and sandstone both of which overlie the Upper Knobloch coalbed (refer to well B7—KU). Use of the well to contour overburden is correct.

  - Well B-10 was screened in an overburden coal unit. It is unclear if this well can be used to contour the overburden sandstone potentiometric surface. Please provide an explanation in support of using this well for this purpose.

Response: We assume the comment is referencing well B10-O. On Table 2-1, the Geologic Unit in which well B10-O is listed as screened is "Overburden (Coal & Carb. Shale)"; the screen interval (30 – 35 ft.) and filter sand (top at 28 ft.) are both across units that are above the Upper Knobloch (see well B10-KU). The carb shale unit is an aquitard unit separating the Upper Knobloch from the thin coal above. Thus, the units completed at B10-O are both "Overburden" units.

- B1-C is supposed to be screened in the clinker but is screened mostly in clay and claystone; only 2 ft. of the 10 ft. screen is in clinker. Please explain why the completion overshot the targeted unit by 8 ft. and how this well is representative of clinker.

Response: On Table 2-1 the Geologic Unit in which well B1-C is listed as constructed in is "Clinker, Ash, Claystone"; that is, the baked shale interval *is brittle clinker*. The well log shows filter sand and the screen interval from 22 – 29 ft. and are thus *in clinker* and the ash interval (29-34 ft.). Both intervals and materials are representative and resultant from the burning of a coal bed. The well penetrated (over-drilled) only 3 ft. into unburned claystone that would have underlain the coalbed (now an ash layer). The over-drilling was the result of lag time in circulation up-hole and return of drill cuttings to the surface. However, over-drilling also allowed observation of true verification of the bottom of the ash layer. The well construction does provide valid hydrologic and geologic information for *clinker* at this location.

- Well logs for water wells Chromo-2, GNP PSW1, and GNP PSW2 are given but are not mentioned in the baseline report. How were these wells used in baseline studies, if at all?

Response: These wells were used to further define geologic strata and hydrologic properties employed during development of the groundwater model as presented in the PHC.

- A number of concerns were noted in the installation of alluvial wells that call into question what is actually measured and sampled in the wells: Please re-evaluate each well.

Response: On Table 2-1 the Geologic Unit in which each well is constructed has been re-evaluated and revised to add further clarification and detail of the lithology(s) besides general terms such as overburden, underburden, etc. The Geologic Unit is inclusive of the geologic materials opposite the well screen and filter sand intervals in each well. The Table information agrees with the well logs in Baseline Report 304E, Appendix A.

- From the well log, it appears that the well A-5 is completed as an open hole in claystone, not the alluvium.

Response: The well log has been changed to reflect that the open hole is exposed to the unconsolidated alluvial materials, as it was constructed.

- Well AVF1-1 is shown with a TD of 36 ft., but Table 2-1 lists a TD of 35 ft. From the well log, it appears that the well is completed as an open hole in claystone and siltstone, not the alluvium.

Response: On Table 2-1 the Total Depth Drilled is corrected to read "36" ft-bgs for AVF1-1. The open end of the well casing is at 32 feet below ground surface and reported in the Screened Interval column as "Open End at 32". The well is open drill hole from 32 to 35 ft-bgs. The Geologic Unit in which well AVF1-1 is constructed, i.e. "open" to hydrogeologic materials is listed as "Alluvium (Gravel [0.5 ft], Clay, Slst. and Sndst,)" and clarifies the geologic materials exposed to the well bore and open-end well casing. The 0.5 ft. of gravel, *is alluvium,* and is the only water-bearing hydrologic unit exposed in the open well bore.

- AVF3-4 is installed into a sloughed hole that was drilled six feet into coal, which may be contributing to the water level.

Response: On Table 2-1, for well AVF-3-4 the total depth is corrected to read "56 (38 ft slough)". Thus, the table reflects and explains the difference between the total depth drilled and the well's constructed maximum depth of the screen interval of 26-46 ft-bgs. The Geologic Unit column reads "Alluvium, Clinker, Coal" all of which were water-bearing at time of well construction. Sloughing of clinker to the bottom of the drill hole across the coal interval may allow some contribution of groundwater to the well from the coal. However, in its natural state the coal (wet) is contiguous with overlying permeable, water-bearing units (to clinker then to alluvium). The screen interval in AVF3-4 monitors the natural conditions opposite the clinker and lower portion of the alluvium at this location.

- AVF4-1 is getting contributions from coal, as it is completed 2 ft. into coal.

Response: On Table 2-1 the Geologic Unit in which well AVF4-1 is listed as constructed in "Alluvium (Grvls.), coal" and clarifies the geologic materials opposite the well screen and filter sand. The screened interval includes 13 feet of alluvium and one foot of weathered coal, which is in communication with and likely contributing water to the alluvium. At the point of contact coal water and alluvial water are the same.

- AVF6-1 is completed in an open hole that was drilled through 3 ft. of coal.

Response: On Table 2-1 the Total Depth Drilled, or TD, is correct at 50 ft-bgs; the screened interval is revised to read "Open End at 40" to reflect the bottom of the well casing relative to the open hole to TD. The Geologic Unit completed in AVF6-1 is listed as "Alluvium (clinker gravel)" albeit that bedrock of coal ash, remnant coal and claystone are present in the 'open' wellbore interval below the steel casing. Immediately below the well casing, 2 ft. of alluvial clinker gravel), water-bearing, is exposed to the open well bore. Underlying bedrock geologic units (7 ft. thick) exposed to the well bore are not reported as water-bearing. Thus AVF6-1 is monitoring alluvial groundwater. The geologic materials discussed above agree with the AVF6-1 well log in Baseline Report 304E, Appendix A.

- BR304E, Appendix G. Please clearly list all crest gauge readings, flow measurements, and dates of the readings. It is unclear in the appendix which stages are calculated and which stages are measured because there is no explanation of the stage-flow tables. There is also no description of the location of the crest or staff gauges in relation to the channel thalweg, and consequently it is ambiguous how a crest or staff gauge reading corresponds to a calculated stage-flow relationship for some of the sites. Inclusion of the gauges on the

cross-sectional channel diagrams would be very helpful. Please also include a table summarizing the site visits (date, observations, data collected, etc. See the DEQ's Annual Hydrology Report guidelines for an example of a site visit summary table) or the site visit forms. As presented, there is no method of evaluating if the sites were visited on a sufficient frequency to be able to characterize the low and high flow conditions. Additionally, please provide all flow data and measurements in an electronic format.

Response: **Appendices E and F have been revised to address various issues presented in this comment. In Appendix E, Table E-1 summarizes monitoring results (i.e., date, time, personnel, water level and corresponding elevation, discharge and method of determination) at each surface water site equipped with a crest gauge. Table E-2 summarizes monitoring results (i.e., date, time, water level and corresponding elevation) at each surface water pond site fitted with a staff gage. Each table has been updated to reflect all monitoring dates, results and observations at each monitoring site for the period during which surface water monitoring has been conducted (i.e., approximately late-2010 to current). The format and content of each table is similar to the MDEQ's Annual Hydrology Report guidelines.**

Continuous data recorders have been installed at several surface water monitoring sites. The data and information for those sites is summarized on Table 3-2 and included in Appendix E and F.

All channel profile and rating curve figures are in Appendix F. For those surface water monitoring sites equipped with a crest gauge, the channel profile and rating curve figures were modified to show the location and ground elevation of the gauge relative the thalweg of the surveyed channel.

All baseline hydrologic monitoring data, in electronic format, is provided with this submittal.

- BR304E, Appendix G. Some surface water sites do not have a year of data, the minimum amount needed to characterize high and low flow stages. For instance, the recorder at SW-22 only collected data from September 14, 2011 through April 1, 2012. All sites need a year of data. This can consist of a mixture of data sources (i.e. site visits and manual measurements) when frozen conditions preclude the use of continuous recorders. Baseline data should continue to be collected until a mine permit and monitoring plan is approved, and this data should be added to the permit application.

Response: In Appendix E, data tables E-1 and E-2 have been updated to reflect all monitoring results (e.g. dates, times, levels, observation, etc.) for the entire period during which monitoring has been conducted at the respective network site. At surface water sites equipped with either a crest gauge or continuous datalogger, water monitoring has been from April 2011 through June 2014. At pond sites monitoring has been conducted since October-2010 to June 2014.

- BR304E, Appendix E and G. There are many unexplained discrepancies between the two appendices with regards to flow measurements correlated with samples. There are some samples with no measured flow, but there is no explanation why no flow could be measured. There are also samples with a measured flow, but no data is shown from the continuous recorder at the station. These discrepancies must be explained or corrected. All

samples should have a corresponding flow unless site conditions precluded flow measurement.

Response: An explanation of these discrepancies has been included in the revised BR304E appendices.

- BR304E, Table 2-1. Footnotes 3 and 4 are not explained. Please explain these footnotes.

Response: On Table 2-1, footnotes 3 and 4 were an artifact of a previous table and were not relevant; the footnotes have been removed from the table.

- BR304E, Table 2-2. Please list the reporting value (detection value) and analysis method for the analytical parameters in the same format as Table 3-3.

Response: On Table 2-2, the analysis method and reporting detection limits for each parameter have been included in separate columns. The methods and reporting values agree with those shown on Table 3-3.

- Table-2-3, Aquifer Testing Results: The text is so small that it is difficult to read when viewed at 100%. Please expand the size of the table and increase the font size so that it is easily readable.

Response: The page layout size for Table 2-3 has been increased to allow for increasing the font size and legibility.

- BR304E, Table 3-1. Please provide the monitoring site coordinates and ground elevation in the same coordinate format as Table 2-1.

Response: Table 3-1 has been revised to include the same coordinate format as Table 2-1.

- BR304E, Figure 2-1. This figure demonstrates a standard completion method for monitoring well installation and indicates a bottom cap is used. From the well log completion diagrams, it appears that a bottom cap was never used for the installation of the monitoring wells and there was no mention of a bottom cap in the remarks. Please indicate if a bottom cap was used in the screened wells.

Response: Bottom caps were used in all screened wells. Well logs for wells competed with screen have been updated to include a well cap in the completion diagram (Appendix A).

- BR304E, Figure 2-2 through 2-5. There are no contours made for clinker. In Appendix A of 314 C, the statement "Greater spacing between potentiometric contours (see figures in Baseline Report 304E) indicates that the hydraulic gradient across clinker in the area of well C3 is very low" implies that there are contours for the clinker aquifer. However, there are no contours drawn for the clinker. Please update the statement to reflect what is shown on the figure.

Response: The clinker is an unconfined aquifer in communication with the alluvium and they were contoured as a single unit.

ARM 17.24.304(1)(e)(ii): This regulation requires "a narrative and graphic account of surface water hydrology within the mine plan area and adjacent areas." The USGS map background on Map 4 depicts 14 perennial or intermittent lakes or ponds that must be accounted for; at a minimum, are they present or not present and a description of each. Please provide a narrative and graphic account of surface water hydrology within the mine plan area and adjacent areas as required.

Response: **Please refer to Plate 3 Spring and Seep Inventory Location and Appendix G of BR304E, which includes photos and narrative descriptions of pond locations.**

ARM 17.24.304(1)(f)(iii): BR304E, Section 4.2.1, page 4-2. Alluvial sources for alternative (replacement) water: Specifically identify the locations that could supply adequate water quantity and quality to wells located in the most likely affected aquifer(s). The general discussion of alternative water does not compare specific water quality of the replacement sources to the aquifers most likely affected. Please be more specific on the comparison of production potential of current aquifers based on producing wells and compare measured water quality from the aquifers likely affected and the potentially affected aquifers.

Response: The alluvium, of the Tenmile, Threemile, and Home Creek drainages were all specifically identified as replacement water sources. Investigation has shown that each of the drainages hold useable quantities of groundwater that could potentially serve as replacement sources.

The Knobloch Coal is the hydrostratigraphic unit that is most likely to be affected. Plate 1 illustrates general water quality of each of the monitoring wells used for the baseline evaluation. Stiff diagrams for each of the drainages are easily compared to Knobloch water quality. Piper diagrams for the alluvium (Figure 2-8) and Knobloch Coal (Figure 2-11) are also presented in the baseline report, allowing for comparison of water types. Water quality for the alluvium in Tenmile, Threemile, and Home creek is tabulated on Figures 2-5, 2-6, and 2-7. Knobloch Coal water quality is in Table 2-10.

The narrative has been revised to address this comment.

ARM 17.24.304(1)(g); Overburden Baseline: The lab data sheets require an additional adobe flash player which is different from all the other adobe documents. It does make it easier to identify the samples data; however, if acquiring the plug-in is not an option, the raw data is not accessible. Please make this document available in the same adobe format as the remainder of the documents.

Response: The lab data sheets are provided as received from the laboratory in pdf format. OCC has not encountered problems viewing these documents.

ARM 17.24.304 (1)(i); Vegetation Baseline: Requires vegetation surveys be conducted in the proposed permit area. The applicant submitted Baseline Report 304J_Vegetation as well as BR 304J_Otter Creek Mine Vegetation, Facilities to include these vegetation surveys. On page 47,

Section 3.6, BR 304J_Otter Creek Mine_Vegetation Facilities, both Tract 2 and the Facilities area are mentioned. This portion is an example of how the two could be modified to include both reports. Please combine these into one baseline vegetation report.

Response: Vegetation surveys were conducted on Tract 2 in 2011 and the facilities area in 2012. These surveys are combined in revised Baseline Report 304J_Vegetation.

ARM 17.24.304 (1)(i)(ii): Requires a narrative description of community types in the proposed permit area. Section 3.2 COMMUNITY TYPE DESCRIPTIONS of Baseline Report 304J_Vegetation appears to have been written twice with multiple paragraphs discussing where things can be found in the appendices and tables. These paragraphs describe the same tables and appendices as well as a similar statement as to how the following community types are going to be presented. Please review this section to determine if these portions need to be repeated as they have been presented.

Response: Following discussion with Mike Glenn, MDEQ (personal communication with Ken Scow), it was determined that this comment was resolved, and no changes were required in the report narrative.

- The initial paragraph in Baseline Report 304J_Vegetation, Section 3.2.3 Shrub/Grassland - *Artemesia tridentata/Agropyron smithii* states that plots were sampled 66 % on middle and upper slopes while the next sentence states that slopes were mostly gentle with only 3 of the 67 sites on steeper slopes. This appears to be an issue that arises from using the same term, slope, for two separate meanings. Consider changing the wording to resolve this discrepancy. Also, in cross referencing Appendix H Table H-1 only 50% of the sample plots were on the topographical categories of middle and upper slopes instead of the listed 66%. Please review this information on other plots to ensure accurate reporting.

Response: All community type narrative descriptions have been edited to define, for example, middle and upper slope "positions" versus gentler to steeper slope "gradients".

Regarding Appendix H, many sample sites occur on a combination of sites, such as swales or benches located on middle to upper slope positions, and the narrative reflects the author's best effort to represent each community's association with various topographical categories. The reporting of community/site associations is considered by the author to be accurate, and no revisions are proposed.

- Section 3.6 SPECIES LIST/MTNHP-LISTED SPECIES of both of the 304J baseline reports contains a table of the Number of Species in the Otter Creek Study area and the Montco study area. This table does not have the same information in the Montco portion of the table between the two documents. As this information hasn't been updated since 1982, this seems like an error in reporting this information. Please ensure that these values have been accurately presented

Response: A portion of the Montco information (vascular plant species list) was missing during preparation of the 2011 Tract 2 report, but is included and updated for the 2012 Facilities report.

ARM 17.24.304(1) (j); Wildlife Baseline: The initial baseline date report is included. OCC subsequently collected wildlife data as per the approved plan of study during 2012. The report summarizing the data collection effort was recently submitted to DEQ. Please revise this section to incorporate the complete data set (i.e. from the start of data collection until the submittal of the deficiency response).

Response: Wildlife investigations were conducted from the fall of 2010 through mid-2013, and the initial submittal included the first year of data collection. This submittal includes Baseline Report 304K Supplements A and B containing subsequent year wildlife investigations through mid-2012 and 2013, respectively. The latter includes a summary of the three-year data collection program.

- Mayfly *(Caenis youngi)* is identified as a Species of Concern (SOC) in Appendix D; however, it is not included in Table 27, Environmental Baseline Report 304 K. Please evaluate which is correct.

Response: Table 27 is based on Table 3, which is entitled "Vertebrate animal Species of Concern potentially occurring in the Otter Creek Mine fish and wildlife resources study area." Further, page 8, Section 3.4 - TERRESTRIAL INVERTEBRATES, sentence 2 states: "Most of the invertebrate Species of Concern and Potential Species of Concern for Powder River and Rosebud Counties (MTNHP and FWP 2012) are aquatic for part of their lives, and were therefore addressed by Stagliano (2012)." The title for Table 27 (which is Table 11 in the 2012-2013 report) has been revised in "Supplement B to Environmental Baseline Report 304K, Fish and Wildlife Resources Monitoring, 2012-2013, and Three-Year Summary, Otter Creek Mine, Powder River County, Montana."

- Appendix A, Environmental Baseline Report 304K footnotes identify bolded taxa as SOC, but SOC brassy minnow *(Hybognathus hankinsoni)* and plains minnow *(H. placitus)* (identified in Table 27 as SOC) were not bolded – a check of the Natural Heritage database shows that these are potential species of concern. Please adjust accordingly.

Response: Appendix A in the 2012-2013 report, entitled "Supplement B to Environmental Baseline Report 304K, Fish and Wildlife Resources Monitoring, 2012-2013, and Three-Year Summary, Otter Creek Mine, Powder River County, Montana" has been revised to correct any oversights in Baseline Report 304K, and has been updated to reflect the current (2013) lists of Species of Concern and Potential Species of Concern.

- **ARM 17.24.304(1)(j)(iv):** Requires a map of wildlife habitat. Plate 1, within BR 304K_Otter Creek Mine_Fish and Wildlife only shows the wildlife habitat for the Tract 2 study area, and does not include the facilities areas. Please include wildlife habitat information according to ARM 17.24.304(1)(j)(iv) for the facilities area, entire mine area, and associated buffer area in the application.

Response: Plate 1, BR 304K has been revised to include the facilities area, and to depict habitats of unusually high value within the disturbance area. Plate 2 of BR 304K is a habitat map for the entire wildlife study area.

ARM 17.24.304(1)(k); Soils:

- Supplement 1, soil report section 1.0 states the two soil baseline studies will be combined into an executive summary called soil supplement 2. It would be most useful to only have a single consolidated soil baseline report for the entire permit area.

Response: Soil surveys were conducted on Tract 2 in 2011 and the facilities area in 2012. These surveys are combined in revised Baseline Report 304L_Soils.

- The Molybdenum table in the tract 2 report is missing soil series names for some of the rows.

Response: The table has been corrected. All rows now have corresponding soil series.

- The electrical conductivity table in the supplemental report is missing the soil series for the first row noted in the table.

Response: The table has been corrected. All rows now have corresponding soil series.

- There are a few other minor typos and errors in the baseline report. They do not change the substance of the report. If the reports are to be combined these should be changed. Please request the notes on the PDF documents and DEQ will furnish the documents.

Response: MDEQ was consulted regarding the typos and errors. All of the corrections requested by MDEQ have been incorporated into the revised report 304L.

- General Soils Map: Please provide the disturbance boundary for mine pits and facilities on the baseline soils maps.

Response: The updated soils baseline map (included as Plate 1 of Report 304L) contains the current footprint of the disturbance boundaries.

- Page 16 of the Baseline Soils Report 304L contains a discussion of suitability criteria for saturation percentage. There is no discussion of whether any soils were below the minimum threshold value of 25% (by looking at the appendix, there doesn't appear to be, but a clarifying statement is needed.). Please provide a clarifying statement.

Response: A clarifying statement has been added to the report stating that none of the samples contained saturation percentages below 25 percent.

17.24.304(1)(l); Premine Land Use: Baseline report 304M, "Pre-Mining Land Use Otter Creek Mine Powder River County, Montana" only addresses the pit area. A supplement report addresses the entire mine and facilities area, updates numbers, and the language; however, tables from the baseline report are not updated or included in the supplement. Table 1 and Table 2 are referenced under section 4.0 in the supplement. However, these tables are not attached to the supplement and are not updated in the pit area land use document. Please update the tables and combine the documents into a single premine land use report.

Response: A combined land use report is submitted as revised Baseline Report 304M – Land Use.

ARM 17.24.304(1)(l)(ii)(C): The narrative in Baseline Report 304M must include a statement of whether the proposed permit area has been previously mined. Please provide a statement. If it was mined, please address all associated subsections of this rule.

Response: A statement has been added to the narrative stating that the area has not been previously mined.

ARM 17.24.305: Due to missing CAD data, it is not possible to conduct a full review of either the submitted maps or associated documents that reference maps. Please provide all applicable CAD data for this section. Following OCC's response to this deficiency, DEQ will complete a more comprehensive review of the proposed post mine topography (PMT).

Response: Updated CAD data is submitted.

The following deficiencies, however, were noted; please address them as well as providing all remaining CAD data.

- All data on maps must be readable when viewed at 100%. The USGS topo backgrounds contain unreadable data such as contour intervals. Please provide readable maps to allow the review process to continue.

Response: Text on the pre-mining topography map has been enlarged to facilitate readability. Topographic base maps of the permit area are digital; OCC is not sure where the comment regarding "USGS topo backgrounds" arises.

- Map 8. Please include an anticipated life of mine disturbance boundary.

Response: A projected disturbance line has been added to revise Map 8 – Mine Plan.

- Map 7. Premine Topography Map. Elevations are unreadable. Contour lines in areas unaffected by mining do not sufficiently match the lines drawn on the PMT (Map 12) to allow for a comparison of the two maps. The map appears to be a scan of a USGS map, but a map drawn in CAD would produce a cleaner and more legible map. The 2011 USGS topo map for the area would be a more legible basemap. Please note that this map contains drainages that are drawn in a very different manner than those presented in the OCC permit application. The digitized contours are also needed for analysis of the reclamation plan. ARM 17.24.313, 17.24.314, 17.24.315 cannot be fully evaluated until digitized contours and a more legible map are provided.

Response: The digital pre-mine topography map covers all adjacent areas surrounding the projected disturbance area; text has been enlarged to facilitate reading of elevations. OCC is not sure where the comment regarding "a scan of a USGS map" arises. Designation of drainages has been made consistent between pre-and post-mining topo maps.

- Map 14. Postmine drainage plan. While the permit states that the map will be submitted upon approval of the PMT, the map is included under 17.24.313D, Plate 1.

Response: Comment noted. A revised map is submitted as Map 14 – Post-Mining Drainage Plan, and Exhibit 313D – Reclamation of Drainage Basins is revised and updated as well. The ARM 17.24.305 narrative is also corrected.

- Overall, the CAD is difficult to use and interpret due to the way that objects are labeled. For instance, multiple wells share the same point on the environmental monitoring map and contour lines are interrupted by annotation so that they are not contiguous. These wells should be drawn with their geographic coordinates so that the data can be used by DEQ to plot true well locations. Drainage basins on the premine and postmine drainage basin map are ambiguously labeled; it is unclear which drainage basin is associated with each drainage basin name. The CAD should be thoroughly reviewed and redrawn to accurately show all objects with measured coordinates as well as remove ambiguity.

Response: Updated CAD files are provided. Updated drainage basin boundaries are provided on Map 11, Map 14 and in Exhibit 315A.

ARM 17.24.305(1)(a) and (b) and ARM 17.24.303(1)(o): Map 4 does not clearly identify who controls what surface or coal mineral rights. More explanation in the title block or different shading and cross hatching is required. An explanation of how two separate entities can occupy the same area on the map requires explanation or to be depicted separately.

Response: Map 4 depicts coal and surface mining rights, not surface and mineral ownership. Please refer to Map 2 – Surface Ownership and Map 3 – Mineral Ownership.

ARM 17.24.305(1)(d): Pursuant to 314(1)(a) and 17.24.643(1), DEQ requests reconsideration of the inclusion of the Mobile Equipment Cuts A-J into the mine plan. The close proximity and connection of the clinker and Knobloch coal to Otter Creek and associated alluvium are of particular concern.

Response: Mobile equipment cuts A-J were incorporated into the mine plan to maximize recovery of low ratio coal in an area of irregular burn and subcrop while maintaining a minimum 500-foot "buffer"of in-place coal to moderate pit inflow from the Otter Creek alluvium. As requested, this plan has been re-examined and the mine plan revised to eliminate these mobile equipment cuts. The tonnage thus bypassed is addressed in revised Exhibit 322A – coal Conservation Plan.

ARM 17.24.305(1)(e): The application seems to suggest that all of the listed features (e.g., oil and gas wells) exist within the area; however, not all features are shown on the corresponding Surface Features Map. Please clarify by clearly stating that each of those features does not exist, or by showing them on the map.

Furthermore, the occupied dwellings should be labeled with the owners' names.

Response: The narrative at ARM 17.24.305(1)(e) has been revised for clarification and owners' names have been added to Map 5 – Surface Features.

ARM 17.24.305(1)(g): The application seems to suggest that Surface Water Intakes exist within the area; however, no such features are shown on the corresponding Surface Features Map. Please clarify this either by clearly stating that no Surface Water Intakes exist, or by showing them on the map.

Response: The narrative at ARM 17.24.305(1)(g) has been clarified; there are no known surface water intake structures.

ARM 17.24.305 (1) (u): The date/revision date for each individual maps must be added before final approval.

Response: Maps include the most recent revision dates.

ARM 17.24.305 (2) (a): The revision date for the individual maps must be added to the affidavit before final approval.

Response: Revision dates for the individual maps are added to the revised and updated affidavit.

Map 11, Drainage Control Plan:

- In general this map must be much more detailed and comprehensive. The map should provide sufficient information to determine the course and fate of any surface runoff. The map should indicate flow direction in all haul road borrow ditches, symbols should be used to indicate the location of sediment control measures such as silt fence, minor traps, rock checks and berms. The map should serve as a plan for placement of all sediment control measures.

Response: Based on comments received and internal review, OCC recognizes that Map 11 – Operational Drainage Control, requires refinement; it has been revised and updated accordingly.

- The pond designations must be changed to something that clearly identifies the label as referring to a pond, such as Pond-1, PO-1 or Pond EP-1. Also, please make the individual pond labels more visible on Map 11. Also noted:

  No flow path and culvert shown between Ponds EP5 and EP4. (per text in EX 315A 2.0)
  No contiguous flow path shown between Ponds EP6 and EP4. (per text in EX 315A 2.0)
  No contiguous flow path shown into Ponds EP6. (per text in EX 315A 2.0)

Response: These issues have been corrected on revised and updated Map 11 – Operational Drainage Control. Pond identifiers have been made consistent and legible.

ARM 17.24.305(2)(c): "All detail on maps must be clearly legible." This includes:

1. Topographic annotation. The contour elevation is not legible on maps addressing engineering concerns associated with ARM 17.24.308, 313, 314, 315, 321, and 322. Additional technical comments may arise once the maps are changed.
2. Pond identification should be darker and consistent with terminology in the narrative: EP1 verses Pond 1.
3. Road profile station identification and a defined start and end point must be depicted on the plan view map.

Response: These issues have been corrected on revised and updated maps. Exhibit 321A Plate 1 – Roads has been revised to show engineering stations in the plan view.

ARM 17.24.306, Prime Farmland:

- The prime farmlands investigation is not complete. According to the report the investigation covers Tract 2. Based on the soil survey map the facilities area does not fall within the Tract 2 boundary. Conceivably the majority of candidate prime farmland soils that would meet prime farmland criteria fall within the facilities area. There is no map included in the prime farmlands report to represent the area of study. A map is not required by rule; however, a map would clarify the intended area of investigation as well as make it possible to highlight the soils identified in the discussion.

  Please expand the prime farmland investigation to include the facilities area and represent this area and soil polygons discussed.

Response: The Prime Farmland assessment area has been expanded to include the combined study area. The updated Prime Farmland assessment map and the prime farmland designation letter from the NRCS have been included in updated Baseline Report 306A.

- Section 2.3 of the prime farmlands investigation mentions concurrence with NRCS through a site visit following supplemental data gathering. There is conflicting contact information as to which office of the NRCS was contacted for the determination. The supplemental soil report lists the Miles City office, but the Tract 2 soil survey and prime farmlands documents list the Broadus office.

Response: Baseline Reports 304L and 306A have been revised to clarify that the NRCS office in Miles City, MT provided the Prime Farmland designation.

- Complete the NRCS prime farmland concurrence portion of the determination. If two NRCS offices were used this is fine; however, if only one was used correct the language.

Response: The Prime Farmland determination has been completed with concurrence from the Miles City NRCS office.

ARM 17.24.308, Operations Plan:

- Exhibit 308(A), section 2.8 describes soil substitution; however, under 313(1)(g) it states soil substitution will not be used. Please make these two sections consistent.

Response: Exhibit 308A – Operations Plan and the narrative at 313(1)(g) have been revised for consistency. Soil substitution is not proposed.

- Mine Plan, Map 8 designates spoil storage; however, in Exhibit 308 A, Appendix A, bullet #7 the spoil storage is referred to as temporary overburden storage (TOS). Reconcile to use consistent language.

Response: The Temporary Overburden Storage (TOS) has been made consistent.

- Bullet 20, Appendix A says, "If the dragline is not yet operational, strip dragline passes 2 through 5 using mobile equipment until the dragline is deployed." This statement leaves the several cuts, in their entirety from north to south open to soil stripping. Soils may not be the focus of this stripping statement; however, soil would have to be stripped ahead of any other material movement. If stripping is to occur for the sake of keeping equipment busy while the dragline is completed, this is not acceptable. Rule 17.24.638(2)(a) states: "disturbing the smallest practicable area at any one time during the mining operation …" Thus soils stripped ahead of mining must be kept to a minimum, normally one operational pit, plus one to two additional cuts for operations associated with mining. Please clarify the intended stripping area.

Response: The term "stripping" in this context refers to overburden stripping by mobile equipment, not soil salvage. OCC understands the soil salvage area limitations.

- Exhibit 308(D) "waste handling", under 308 general, refers to 308C for an on-site waste disposal location which in turn mentions a location at the north end of the boxcut. The waste disposal site is referenced to be represented on surface features Map 5; however, there is not a location marked on this map. Map 5 does not appear to have any locations for any mining facilities. The only elements pertaining to the permit are the planned boundary, tract locations, and what exists prior to mining. Please adjust this language to ensure the proper map is referenced.

Response: The reference to Map 5 is incorrect and has been revised to refer to Map 9 – Mine Facilities.

- Section 3.8 sump waste does not indicate how a material will be determined to require land farming. Please indicate a determination method or reference a testing plan.

Response: Section 3.8 of Exhibit 308D – Waste Management has been revised to address a testing plan for sump waste to determine if land farming is indicated.

ARM 17.24.308(1)(b)(iii):

- No coal stockpile areas are depicted on any maps. The narrative must include a provision for open coal stockpiles at the truck dump area and/or depict coal stockpile areas on appropriate maps.

Response: Coal stockpiles are not planned or proposed. If these are required at a later date they will be proposed as a minor revision for placement on the backfilled box cut near the truck dump.

- Access/Haul Road Segment 1 appears to have no use as a transportation facility. This segment of road must be justified, removed or put into a category of ancillary roads.

Response: The designation for "Access/Haul Road Segment 1" is changed to "Drainage Control Service Road"- an ancillary road required for drainage control and access to sediment ponds for construction, maintenance and monitoring. The department is correct; this is neither an access nor haul road.

ARM 17.24.308 (1)(f):

- Requires a plan to address noxious weeds. Section 3.0, Exhibit 308E_Otter Creek Mine_Noxious Weeds, refers to baseline vegetation inventories. This section only has the baseline information from Tract 2 and does not include the facilities area. Attachment B within this exhibit shows the weed distribution by community type. This only includes the Tract 2 Baseline information and not the facilities areas. The noxious weed plan locations need to address the entire mine; currently the facilities area has been left out.

Response: Exhibit 308E – Noxious Weed Management Plan is updated to include the entire permit area.

- Please be advised that a noxious weed plan approved by Powder River County will need to be submitted to DEQ and submitted into the permit prior to approval of the mine permit application.

Response: Comment noted; the noxious weed plan has been submitted to and approved by the Powder River County Weed Supervisor and is included in Exhibit 308E.

ARM 17.24.312, Fish and Wildlife Plan:

- Requires a Fish and Wildlife Plan. Please include a wildlife conservation plan to address species of concern and threatened and endangered species as part of the Fish and Wildlife plan.

Response: Exhibit 312A – Fish and Wildlife Plan has been revised to include a Fish and Wildlife Resources Conservation Plan as Appendix A to address species of concern and threatened and endangered species.

ARM 17.24.312(1)(d): Requires annual wildlife monitoring methods to be discussed. The application states that monitoring will be conducted, but does not provide a description of the methods to be used. Please include a complete wildlife monitoring plan.

Response: Exhibit 312A – Fish and Wildlife Plan has been revised to include as Appendix B a detailed Fish and Wildlife Resources Monitoring plan in which monitoring methods are described.

ARM 17.24.312(1)(d)(iii): Requires an explanation of how habitat of unusually high value will be protected or enhanced. There is a brief description of this included in Appendix, Exhibit 313G, but there is no explanation of where or how these will be implemented. Please include a map containing locations of existing habitats of high value as well as a description of how these will be protected and/or enhanced through the mining and reclamation process. Please provide a replacement commitment of these habitats of 1:1 or better.

Response: Plate 1, BR 304K has been revised to highlight habitats of unusually high value within the disturbance area. Exhibit 312A Fish and Wildlife Plan has been revised to describe how impacts to these habitats will be avoided, minimized and/or mitigated, and to include a replacement commitment of these habitats of 1:1 or better. Exhibit 313G has been revised to provide more detailed reclamation specifications for these habitats.

ARM 17.24.313, Reclamation Plan:

- Overall, 17.24.313 cannot be reviewed until additional information on the reclamation plan and impacts to the surface water hydrologic balance (see comments under 17.24.314) are provided. CAD data that accurately shows the premine and postmine topography, drainage basins, and drainages is needed. The PMT must also show changes to the topography due to mine operations outside of the mine cut area (i.e. high wall reduction, spoil stockpile recontouring, etc). Comments in 17.24.313, 17.24.314, and 17.24.315 detail some of the deficiencies that must be addressed before a thorough review of the PMT and reclamation plan can be made.

Response: All of the information cited, including an updated Map 12 – Post-Mining Topography is included with this submittal.

- The PMT does not adequately approximate the premine topography or premine drainage basin distribution. Drainage designs are not geomorphically similar to premine; premine drainages were dendritic and some postmine drainages (drainage in EP4) are proposed to be orthogonal with 90 degree junctions of tributaries. Steep 'badlands' areas are replaced with broad valleys without any indication of how/if the steep slopes would be replaced in another area of the permit.

Response: A revised Map 12 – Post-Mining Topography is submitted addressing these issues.

- Many drainages in the PMT show sinuosity at a level of detail greater than the contour lines. It is unclear from the permit how this drainage sinuosity will be reclaimed; will pilot channels be constructed in the topography? It is also unclear how the amount of sinuosity was determined. Postmine drainage characteristics such as sinuosity should be estimated using appropriate geomorphic reclamation techniques. These techniques include finding analogous premine drainages that resemble the proposed postmine drainage basin attributes, measuring the drainage characteristics, and using these to establish appropriate geomorphic attributes. Other techniques that relate drainage basin properties through empirically derived equations (for instance, relating slope and basin size to sinuosity) can be used to create appropriate drainages. These relationships should be based on data collected from local or regional drainages.

Response: These issues are addressed in revised Exhibit 313D – Reclamation of Drainage Basins.

- The PMT has shallower slopes in the upland areas, and the SEDCAD models included in ARM 17.24.315 show a large reduction in sediment after the establishment of vegetation in reclamation (only 53% of the premine sediment yield for the 10-yr, 24-hr storm by year 3 of vegetative reclamation). Postmine sediment yields must more closely match premine conditions.

Response: The PMT (Map 12), Exhibit 313C – Backfilling and Grading, Exhibit 313D – Reclamation of Drainage Basins, and Exhibit 315A – Ponds and Embankments have all been revised and sediment transport estimates have been recalculated.

- Two large spoil stockpile areas are proposed outside of the mine cut area on top of clinker. The two areas are shown to not change on the PMT (they are outside the match line perimeter) which is highly unlikely. It is unclear in the mine plan if any of the spoil pile is proposed to remain on the storage area, although the narrative under ARM 17.24.520 states that all spoil will be utilized to construct the PMT. Please adjust the PMT to show any changes to contours from the final grading of the out-of-pit spoils or from the alteration of the topography due to reclamation of the spoils storage piles.

Response: All of the material stored in the temporary overburden storage area will be utilized to achieve the PMT. Site preparation will include salvage of soil, smoothing of the surface and drainage controls to prevent sediment transport. When all stored material has been removed, the original topography will remain essentially intact with some smoothing. The revised PMT includes the TOS area.

Exhibit 313D, Plate 1: Does not include premining drainage information or comparisons of drainage profiles as stated. Please provide the premining drainage information or comparisons of drainage profiles information as stated in Exhibit 313D.

Response: Drainage profiles are included in revised Exhibit 313D – Reclamation of Drainage Basins.

Exhibit 313D, Page 1: The statement "There are no channels that contain critical hydrologic, ecologic or land use functions such as alluvial valley floors, wetlands, steep erosive upland drainages, drainages named on USGS topographic maps, or intermittent or perennial streams" needs to be removed or modified, as that determination has not yet taken place.

Response: This statement expresses OCC's assessment under this rule. The statement has been modified in revised Exhibit 313D – Reclamation of Drainage Basins.

Exhibit 313D, Page 2: More detailed and variable drainage channel designs are needed. These could be based on determinant factors such as slope, floodplain, drainage area, sinuosity, etc. and should address the required approximation of premine drainages (and/or similar drainages occurring throughout the Otter Creek area). Without this backup justification the proposed 15 feet minimum floodplain width for first order drainages is too wide and unnaturally uniform.

Response: These issues are addressed in revised Exhibit 313D – Reclamation of Drainage Basins.

ARM 17.24.313(1): OCC must commit to plans and actions, not state what is required. Please change the statement to "Each reclamation plan contains a description of the reclamation operations proposed, including the following information:"

Response: This statement under ARM 17.24.313(1) has been changed as requested.

ARM 17.24.313(1)(b): A timetable estimating major steps in the reclamation plan is required. Coal mining and reclamation are concurrent in nature, but estimations of major steps in reclamation can still be made. The following is an acceptable example: *A generalization of what is found within the Reclamation Plan is soil salvage – overburden removal (including blasting), uncovering of coal reserve – coal removal – backfilling – contouring – soil laydown – seeding – reclamation management – bond release. A generalized time schedule for each of these items should also be included (e.g. year one, year 3, etc.). A detailed description and estimated completion of each major step in the mining and reclamation sequence is as follows:*

- *Soil Salvage – Please refer to ARM 17.24.313…*
- *Overburden Removal – Please refer to ARM 17.24…*
- *Mining – Please refer to ARM 17.24…*
- *Backfilling and Grading – Please refer to ARM 17.24.313(1)(d)*
- *Redistribution of Soil – Please refer to ARM 17.24.313(1)(g)*
- *Revegetation/Seeding – Please refer to ARM 17.24.313(1)(h)*
- *Bond Release – Please refer to ARM 17.24.313…*

Special cases, such as haul roads, ramp roads, mine plant facilities, water treatment facilities, or temporary diversion structures are addressed separately as follows:

Haul roads – include how and when haul roads will be removed
Ramp roads –
Etc. -

Response: The narrative at ARM 17.24.313(1)(b) is revised as suggested.

- The pond designs should be based on the worse-case inflow scenario which requires a reclamation schedule map to indicate the expected state of vegetation reestablishment.

Response: Revised Exhibit 315A – Ponds and Embankments provides calculations based on worst case inflow scenarios.

ARM 17.24.313(1)(c): Exhibit 313B States: "Bond Calculation will be submitted upon permit issuance." The bond calculation must be approved prior to permit issuance; therefore, OCC is reminded that a bond calculation must be submitted and approved, with bonding in place prior to DEQ issuing a permit. It is, however, not appropriate to calculate the reclamation bond until such time that the mine plan, reclamation plan (including PMT and revegetation plan), facilities, and other major factors effecting the bond calculation are at least preliminarily approvable.

Response: Comment noted; a bond calculation will be submitted prior to permit issuance.

ARM 17.24.313(1)(d), Postmine Topography:

- At least three representative cross sections depicting the removal and "final location of all overburden and parting material in the fill" must be submitted. These cross sections must differentiate between dragline and truck shovel material. Separate pre- and postmine, by cut, overburden removal and spoil placement cross sections may be needed to adequately describe the operation.

Response: Four representative cross-sections depicting removal and final location of all overburden and parting material in the fill is included on new Plate 1, Exhibit 313C – Backfilling and grading.

- The operator must submit digital data of pre- and postmine surfaces and a pit shell surface so DEQ can independently verify the overall spoil balance.

Response: The requested digital data is submitted.

- To demonstrate the possibility of creating the proposed PMT, the operator must submit a yearly estimation of cubic yards of boxcut spoil, prestrip, and borrow spoil for the five year permit term and then the same information in five-year increments through the life- of-mine. Along with this information, a map must be submitted that sequentially depicts areas where the boxcut, prestrip, and borrow spoil material will be deposited.

Response: Appendix A, Exhibit 313C – Backfilling and Grading as revised, presents projected volumes by year for the first five years and in five-year increments thereafter.

- Exhibit 313C, Appendix A, CDG report, Page Appendix A-13 says Map 12 contains a pre- and post-slope and aspect comparison. No Map 12 was found. Slope histograms and an aspect wire diagram depicting pre- and postmine surfaces must be submitted.

Response: Slope histograms and an aspect diagram are included on the revised Map 12 – Post-Mining Topography.

- Section 3.0(2) of Exhibit 313C (Backfilling and Grading) states that overburden materials not conducive to revegetation techniques, "have not been identified in the Otter Creek Mine area." This appears to be at odds with the overburden analysis Baseline Report 304H, which identifies materials that require special handling or mitigation due to elevated levels of nitrate, saturation percentage, and SAR. Please correct this statement and submit a diagram illustrating the final location for these materials.

Response: The statement in Section 3.0(2) of Exhibit 313C - Backfilling and Grading has been clarified. Special handling of overburden materials is not proposed because mixing is expected to mitigate problem materials, to be verified by spoil testing.

ARM 17.24.313(1)(d)(iv): Without pre- and postmine drainage profiles, legible annotated premine topography, and prestrip spoil placement, DEQ has only cursory PMT comments at this

time; upon receipt of a revised submittal, DEQ will conduct a complete review of the PMT and associated topics (e.g. drainage profiles, spoil placement, etc.). The applicant must address the following:

Response: A new revised PMT - Map 12 – has been prepared. Specific responses follow:

- The PMT map must extend into the rail loop.

Response: The revised PMT covers the rail loop and other affected areas outside of the mining area.

- Move the south edge of the hill blocking EP5 and allow the large drainage to flow through as it did in the premine landscape. This spoil material could be used to create a divide between EP5 and EP4.

Response: The drainage pattern in the revised PMT resembles the pre-mining drainage pattern, eliminating this issue.

- The office area cut is proposed to be backfilled and used as part of a prestrip spoil dump. This does not appear to be possible while maintaining contemporaneous reclamation.

Response: In the revised reclamation plan, there is no "prestrip spoil dump" in the vicinity of the office area.

- There is no apparent reason for the hill immediately northwest of the center of Section 23. Prestrip spoil used to create this hill should be used to raise EP6 drainage and create more flat topography that is dissected with smaller (less wide) incised features like the premine topography.

Response: The revised PMT eliminates this issue.

- Pass 26 is the last continuous pit. The middle ~4,500 feet of Pass 26 is final pit and ready for reclamation approximately six years before the north and south passes are finished. The spoil balance for the mined area, as a whole, includes 7,690,000 cubic yards of borrow materials. The applicant must reduce the amount of borrow in the Pass 26 highwall reduction area: i.e. leave the native finger ridge/bluff features in-place. Replacement backfill for this area could be found by implementing the following changes to the PMT plan:

    - Use more prestrip from the north half of the pit to backfill Pass 26. The PMT plan includes a hill in the SE ¼ of Section 11 (headwaters of drainages EP1 and EP12). As an unlikely scenario, this hill also crosses Ramp1. The PMT would replicate premine topography if the ramp was not backfilled into a hill and an incised drainage was created instead of the hill.

    - Reclamation of the spoil dump near the center of Section 14 could be delayed as an additional source of backfill.

- The native valley on the highwall side of the pit east of Ramp 2 could be excavated back to the steeper headwaters of the drainage. This would eliminate borrow in the ridges and add diversity to the highwall reduction zone.

Response: All of these issues are addressed by the revised PMT. The configuration at the final highwall and end walls has been adjusted to allow blending as steep slope bluff extensions with minimal borrow volume and consequent minimal disturbance beyond the highwall. The revised PMT contemplates use of pre-strip material to fill the middle final pit section, as suggested.

ARM 17.24.313(1)(e), Postmine Drainage Basins:

- The first paragraph in Exhibit 313D states, "Plate 1 shows a comparison of pre- and post-mining drainage …" and the fifth paragraph states, "Plate 1 shows comparisons of drainage profiles for both pre-mining and post mining topographies." Plate 1 depicts no pre-mining information. A premine plate and appropriate information must be included.

Response: Pre-mining drainage profiles are included in Exhibit 313D – Reclamation of Drainage Basins as revised.

- An objective and consistent method for determining the length and grade of premine and postmine drainages must be established. The method must be fully demonstrated to allow for DEQ verification of the results.

Response: Revised Exhibit 313D – Reclamation of Drainage Basins describes the method for measuring and comparing pre- and post-mining drainages length and slope.

- Due to missing CAD data, it is not possible to conduct a full review of the surface drainage plan; however, the proposed drainages do not appear to be consistent with the approximate original contour. Also, the overall drainage pattern does not exhibit dendritic characteristics that would be expected of a drainage network through unconsolidated material.

Response: The revised PMT addresses this issue. Please refer also to revised Exhibit 313D, Plate 1.

ARM 17.24.313(1)(e)(ii)(a): The application does not discuss how the plan for protection of the hydrologic balance meets the performance standards of ARM 17.24.634. While Exhibit 313D lists these requirements, there is no discussion. For example, ARM 17.24.634 requires the reclamation of an approximate geomorphic habit or pattern. There is no discussion of such patterns in either pre- or post-mine drainages. Also, Exhibit 313D describes that overall drainage relief will be lowered post-mining, with no discussion of how that affects blending with drainage systems above and below the mine per ARM 17.24.634. Please provide a discussion relating to ARM 17.24.634.

Response: These issues are addressed in Exhibit 313D – Reclamation of Drainage Basins as revised.

ARM 17.24.313(1)(e); Exhibit 313D:

- Please reference where the premine drainage map can be found. Basins referred to Exhibit 313D Table 1 are not shown on any maps associated with Exhibit 313D and Table 1 cannot be verified. 17.24.313(1)(e) cannot be reviewed until all relevant data is included and correctly referenced in the permit.

Response: Pre-mining drainage basins are shown on Map 11 – Operational Drainage Control. Pre-mining drainage divides are also shown on Plate 1, Exhibit 313D. Please refer also to Exhibit 315A – Ponds and Embankments.

- Exhibit 313D, Section 1.0, page 1. Plate 1 is incorrectly reported to show a comparison of pre- and postmining drainage divides.

Response: Exhibit 313D – Reclamation of Drainage Basins is revised to include the referenced information on Plate 1.

- Exhibit 313D, Section 1.0, page 2. "Where bankfull channels are present … may provide similar designs based on the 2-year, 24-hr storm event". The 2-yr, 24-hr storm event is not equivalent to the bank full flow (approx. equal to the 2-yr recurrence interval flow). This statement should be rewritten to commit to the 2-yr flow recurrence interval flow instead, and this will likely require detailed channel surveying prior to disturbance to establish the channel characteristics.

<u>Response:</u> Based on consultation with the Department, it is OCC's understanding that the approach to reclaimed channel design based on the 2-year recurrence interval flow has been abandoned in favor of using meander belt width to promote natural channel development. This is the approach taken in revised Exhibit 313D – Reclamation of Drainage Basins.

- Exhibit 313D, Section 1.0, page 2. "first order drainages will …[have] a minimum floodplain width of 15 ft". A floodplain width of 15 ft is far too large for 1st order drainages. DEQ guidelines on stream reclamation suggest only mapping and reclaiming 2nd order or higher drainages in eastern Montana due to the difficulty in delineating 1st order drainages. More detail is required on stream reclamation plans and procedures.

Response: Exhibit 313D – Reclamation of Drainage Basins is revised to address meander belt ("floodplain") widths; the drainage basin reclamation plan is based on mapping and reclaiming second and higher order drainages.

- Exhibit 313D, Table 1. It appears that the drainages on the premine map used to calculate the drainage density came directly from the USGS topo map. To be consistent when comparing drainage characteristics, the same algorithm used to calculate and draw the postmine drainage density should be used to draw the premine drainage density. For example, if drainage lines are drawn for any contributing area greater than 10 acres in the postmine topography, then the same 10 acre criteria should be used with the premine topography regardless of what was drawn on the USGS topo map.

Response: Pre- and post-mining drainage densities have been revisited to assure consistency in map bases and algorithms. Drainage density calculations are based on down-valley straight line distance between contours starting with second order drainages.

- Please submit longitudinal drainage profiles for the major tributaries to Otter Creek in the mine permit area per ARM 17.24.313(1)(e)(i).

Response: Pre-mining drainage profiles are included as Plate 2 in Exhibit 313D – Reclamation of Drainage Basins as revised.

ARM 17.24.313(1)(f): This rule was not adequately addressed and a more detailed reclamation plan is required. Among the many considerations, the plan should include considerations for floodplain sizing, drainage density, and the geomorphic habit. OCC is encouraged to contact DEQ when designing the drainage reclamation plan.

Response: As suggested, OCC has consulted with MDEQ on this issue, and Exhibit 313D – Reclamation of Drainage Basins is revised accordingly.

ARM 17.24.313(1)(f): Please provide detailed drainage designs which includes pre- and postmine profiles.

Response: Detailed drainage designs are addressed in Exhibit 313D – Reclamation of Drainage Basins as revised.

ARM 17.24.313(1)(f)(i): Segments of channels of both Otter Creek and Threemile Creek, named USGS drainages, are within the permit area. While these creeks are currently not within the mine area, they could be indirectly disturbed by mine-related activities. Long-term monitoring of their hydrologic functions and geomorphic characteristics would be appropriate to determine if impacts to the creek segments are occurring due to changes in sediment loads and runoff volumes. If the disturbance boundary increases to include a named drainage, or indirect impacts are anticipated, OCC will need to develop a reclamation design and plan for these creeks.

Response: Comment noted.

ARM 17.24.313(1)(f)(ii): No typical designs or general fluvial and geomorphic habit and pattern were presented besides a statement about 4h:1v trapezoidal channels that will be properly sized. There is no indication how drainages will be reclaimed, how appropriately sized channels will be determined, how channels will be reclaimed, and how belt widths will be used during grading. A more detailed description and methodology for channel reclamation is needed. This may include a detailed baseline geomorphic study to determine premine channel features that have formed naturally in the area, channel cross-sections, and a justification of reclamation methodologies used to create channels in the postmine landscape.

Response: As suggested, OCC has consulted with MDEQ on issues surrounding reclamation of drainages, and Exhibit 313D – Reclamation of Drainage Basins is revised accordingly.

ARM 17.24.313(1)(g), Soil Handling:

- Exhibit 313E soil handling plan does not include the facilities area. Even though there will not be mining in the facilities area, disturbance associated with facility development requires soil removal. Expand Exhibit 313E to include all surface disturbance areas.

Response: Exhibit 313E - Soil Handling has been revised to include all disturbance areas.

- Exhibit 313E uses a swell factor in the soil volume calculation. Due to soil pore space, plant root voids, animal burrowing and environmental factors soil is more likely to shrink than swell during re-application. Since soil balance is a projection of what area salvaged soil might cover, the soil balance figures will be calculated without a swell factor. Please recalculate without using a swell factor.

Response: Soil volumes have been recalculated without a swell factor as requested.

- Exhibit 313 E, the third paragraph on page 1 discusses spoil quality through soil testing. On line 3 it mentions spoil unsuitability will be identified through soil testing. It would seem that one would need to test the spoil for spoil suitability not the soil. Please clarify or revise the language to refer to the intended test matrix.

Response: The text has been clarified to distinguish soil from spoil.

- Exhibit 313F, Section 2.0 Nitrate Testing, may be removed from the spoil sample analysis.

Response: As suggested, nitrate testing has been removed from the spoil sample analysis.

- Exhibit 313F, Section 3.0, discusses sampling of replaced soils with suitability parameters. This could be done prior to soil salvage and is a current practice at Decker and Spring Creek coal mines. By sampling ahead of stripping, post soil laydown the only sampling required is depth. Consider revising the sequence to sample quality ahead of stripping. In this same section, replace Nitrate analysis with SAR in the list of parameters.

Response: Exhibit 313F has been revised to sample soils quality ahead of soil salvage as suggested, and nitrate has been replaced by SAR on the list of parameters

- Exhibit 313F, Section 3.0, in the first sentence the narrative states, "Direct placed soil will not require sampling." By the rest of the paragraph it appears this statement could be speaking of soil depth and suitability or only suitability. Clarify what type of sampling suitability or depth will be withheld upon direct placement of soil.

Response: As noted above, Exhibit 313F has been revised to sample soils quality ahead of soil salvage as suggested.

- Exhibit 313F, Section 3.0, the practice of soil depth staking adds precision to regrade work. Depth staking is ok to use for a general depth target; however, soil depths should be variable around a general target. Amend the language to reflect variable soil depths.

Response: The language is revised as requested. Soil depth staking will be used as a guide to general depth targets.

- Soil depth replacement requires a target depth. Based on ARM 17.24.313(1)(g)(iii)(B) there will be an anticipated soil replacement depth. If the plan is not designated in Exhibit 313E or F an appropriate reference will need to be cited.

Response: A target depth of 20-40 inches depending on reclamation objectives is specified in Section 4.0 of Exhibit 313F as revised.

- Please contact the DEQ soil scientist to discuss the soil handling plan. Some efficiency could be achieved while simplifying implementation in the field.

Response: Comment noted; OCC has consulted with the MDEQ soil scientist on the soil handling plan.

ARM 17.24.313(1)(h), Revegetation:

- In Exhibit 313 G, Appendix 313G is referred to as Appendix 313G-1. The Appendix is titled as 313G in its text and simply as Appendix in the bookmark table of contents. Make all labels and references consistent.

Response: References in Exhibit 313 G – Revegetation Plan have been made consistent. The text in Exhibit 313G has been revised to reference the following three appendices:

> **Appendix 313G-1 POST-MINING LAND USE/REVEGETATION SPECIFICATIONS**
> **Appendix 313G-2 REVEGETATION MONITORING PLAN, OTTER CREEK MINE**
> **Appendix 313G-3 PROPOSED TECHNICAL STANDARDS FOR THE OTTER CREEK MINE**

- Exhibit 313G_Otter Creek Mine_Table 2 Correlation includes a listing of each pre-mine community type with proposed revegetation mixtures. This table does not include the community types that were only present in the Facilities areas from the baseline information. Please update this table to denote which revegetation mixtures will be best suited to all premine community types.

Response: Table 2, Exhibit 313 G – Revegetation Plan has been updated to include the facilities area plant communities.

- Appendix of 313G refers to Plate 1 of 313G. This plate has not been included in the application. Please include this plate to show post-mine land use locations as described.

Response: Reference to Plate 1 of Exhibit 313G is changed to Map 13 – Revegetation Plan.

ARM 17.24.313(1)(h)(i): Requires acreage of each reclamation type. Appendix, Exhibit 313G, includes reclamation types to be used, but does not include the estimated acreage of each of the reclamation types. Table 2, Exhibit 313 G, includes premine community types and the reclamation

seed mixes correlated to each. Please include a table that includes each of the premine communities, reclamation types, and their associated acreages.

Response: Table 2 has been revised to include Post-Mining Acreages of revegetation mixtures shown on Map 13.

ARM 17.24.313(1)(h)(iii): Species and amounts per acre of seeds to be used are required. The seed mixes included in Exhibit 313G for Grazing Land do not contain any shrub components. In order to establish a diverse vegetative cover, shrubs will need to make up some component of these seed mixes (Cool Season Grassland and Warm Season Grassland). Please update these seed mixes to include a shrub component.

Response: Following consultation with MDEQ, big sagebrush and silver sagebrush have been added to the Grazing Land Cool Season Grassland and Warm Season Grassland Revegetation Mixtures presented in Appendix 313G-1. The Revegetation specifications have been revised accordingly.

ARM 17.24.313(1)(h)(iv): A discussion of introduced species to be used and a discussion of the desirability and necessity of using the introduced species to achieve the approved post mining land use is required.

- Introduced species have been included in the Pastureland/Cropland (Hay) seed mix but there is no discussion related to their use. Please include a discussion and explanation for the need and desire to use introduced species to meet postmining land uses.

Response: Pastureland/Crop (Hay) comprise around 17 percent of the Otter Creek Mine area, hence the use of introduced species is appropriate to achieve one of the approved postmining land uses. As stated in the Revegetation Specifications (Appendix 313G-1), Pastureland/Crop (Hay) is categorized as Tame Pasture and includes go-back crested wheatgrass fields that are grazed similarly to native rangeland, hay meadows, and fields seeded for grazing. Species composition varies between fields, the common denominator being a prevalence of introduced species. Dominants included crested wheatgrass, smooth brome, alfalfa, and yellow sweetclover, with intermediate wheatgrass, tall wheatgrass, and Russian wildrye dominating some fields.

- The Pastureland/Cropland (Hay) seed mix is predominantly comprised of introduced species. According to a regional source, Broadus NRCS, smooth brome and crested wheatgrass are not common species being used in the region for hay production. Smooth brome has been found to be less productive than intermediate wheatgrass and has limited nutritional value. Crested is utilized occasionally when spring grazing is the target. Tall wheatgrass is often used as it is easy to establish and produces high biomass. Basin wildrye and western wheatgrass are two native species occasionally used in hay production. Please amend this seed mix to utilize wheatgrasses and alfalfa and remove smooth brome and reduce the use of crested wheat.

Response: The Pastureland/Crop (Hay) Revegetation Mixture has been revised to add western wheatgrass and basin wildrye, and delete smooth brome. Crested wheatgrass and smooth brome are the dominant introduced grasses in pastureland plant communities.

ARM 17.24.313 (1)(h)(ix): Requires a narrative of the method of revegetation including vegetation monitoring to be implemented during the period of liability. The vegetation monitoring plan in Exhibit 313G_Otter Creek Mine_Reveg Plan is inadequate and does not meet the standards of ARM 17.24.723. Please include a comprehensive vegetation monitoring plan.

Response: Exhibit 313 G – Revegetation Plan is revised to include methods of monitoring revegetation success. A Revegetation Monitoring Plan is presented in Appendix 313G-2.

ARM 17.24.313(1)(h)(x): Requires measures to determine revegetation success. The application states in Section 8.0, Exhibit 313G, Revegetation Plan, that technical standards for reclamation will be determined. Please provide these technical standards as part of the application. As additional monitoring data is collected, these will be reviewed and updated as necessary.

Response: Exhibit 313 G – Revegetation Plan is revised to include proposed technical standards for reclamation. Please refer to Appendix 313G-3.

ARM 17.24.313(1)(i); Exhibit 313H: Not all aspects of rules ARM 17.24.1005 through 17.24.1018 were addressed in Exhibit 313H. Please review these rules and change the abandonment procedures to match. Additionally, prospecting outside the permit boundary is not allowed under the surface mine permit and will require a separate prospecting permit. Please remove this language from the application.

Response: ARM 17.24.313(1)(i) requires that within the permit area, prospecting holes, other bore holes, wells, and other openings be plugged, cased or managed in accordance with ARM 17.24.1005. The other sections of Subchapter 10 have to do with prospecting and are not applicable within the permit area. The language has been changed to specify that prospecting outside the permit boundary will be done under the terms of an approved prospecting permit.

ARM 17.24.313(1)(j): Under 313 general, 313(1)(j) refers to Exhibit 308C as the section to explain reclamation of facilities. Exhibit 308C addresses facilities; however, there is not a discussion of reclamation techniques. Correct the reference to direct the reader to the location of the facility reclamation plan, add the proper discussion to Exhibit 308C, or include the facility reclamation plan in 17.24.313(1)(j).

Response: Exhibit 308C – Mine Facilities is revised to include discussion of reclamation techniques.

ARM 17.24.314; Exhibit 314A:

- Section 3.1 will need to be revised if decisions made in respect to the MPDES permit result in changes to surface water drainage and control.

Response: Comment noted. Exhibit 314A – Plan for Protection of the Hydrologic Balance is revised to reflect changes in surface and groundwater management plans necessitated by issues raised in the technical adequacy review.

- It is unclear which ponds are being described in this Exhibit as the Drainage Control Map, Map 11, uses a different naming convention for the ponds (e.g. Pond 1 vs EP1 vs MPDS 1). Until the pond names are rectified, the drainage control plan cannot be fully reviewed.

Response: The convention for naming ponds has been made consistent.

- Section 3.1 Surface Water Drainage Control, page 2. "ponds will be sized to contain a 10-yr, 24-hr event … in the pre-mining configuration." Per ARM 17.24.633 and 639, ponds must be sized to contain the 10-yr, 24-hr event at all times they are in use (worst-case scenario). Additionally, this statement conflicts with the statement made in response to ARM 17.24.639 where OCC states that ponds will be sized using the postmining configuration.

Response: The language has been clarified.

- Section 3.1 Surface Water Drainage Control, page 2. "ponds 1B and 7 are two potential discharge points along Otter Creek". Map 11 shows EP4 / MPDS 3 as a third discharge point to Otter Creek and should be included in the list of potential discharge points to Otter Creek.

Response: The discussion has been made consistent with Map 11 – Operational Drainage Control.

- Section 3.1 Surface Water Drainage Control, page 2. "depressions in the spoils sized to contain 10-yr, 24-hr runoff from the post-mining drainage configuration". Per ARM 17.24.633 and 639, ponds must be sized to contain the 10-yr, 24-hr event at all times they are in use.

Response: Initial general pond designs were generalized; designs have been refined based on revised PMT, drainage design and reclamation timing considerations. Please refer to Exhibit 315A – Ponds and Embankments.

- In Section 4.0, ARM 17.24.631, General Hydrology Requirements, (3)(a) the application states that "Where feasible, clean water diversions of drainages will be used in preference to the use of water treatment facilities." In this case OCC has added the qualifier, 'where feasible' to the applicable rule. ARM 17.24.631 (3)(a) states that "Diversions of drainages must be used in preference to the use of water treatment facilities." OCC has

again added the qualifier, 'where feasible' to the permit language in the following paragraph (17.24.631(3)(b). OCC's version of ARM 17.24.631 is not acceptable and must be modified: there is no 'where feasible' provision in the rule.

Response: The rule states that diversions of drainages will be used in preference to the use of water treatment facilities. The statement in question is not a re-statement of the rule; it is a statement of compliance. Clean water diversions are preferable to treatment, but more often than not they are infeasible due to topographic limitations. In the Otter Creek Mine area, opportunities for clean water diversions have not been identified. The statement does not constitute a reduced level of compliance, and acknowledges that diversions will be used in the event an opportunity arises during the course of mine operations. The language has been revised for clarification.

- Section 5.0, ARM 17.24.633. Water Quality Performance Standards, OCC again has selectively omitted or altered the language in rule (ARM 17.24.633). In Section 5.0 (1) OCC recites ARM 17.24.633(1), but changes the word 'required' to 'implemented' (see page 4). In Section 5.0 (1) OCC recites ARM 17.24.633(2), but omits the qualifying phrases, "until the disturbed area has been restored", and "evidence is provided that demonstrates…". It appears that in some instances, OCC recites the applicable rule verbatim, and in other instances, modifies or omits rule language. In order to maintain consistency and ensure that commitments are not eliminated or modified from the rule's intent, OCC must cite and address the applicable rule in its entirety.

Response: ARM 17.24.633(1) says that "additional BTCA practices may be required," and the compliance statement says "additional BTCA practices may be implemented". There is no change in meaning or reduced level of compliance. Similarly, omission of the cited phrases in the compliance statement does not reduce the commitment to maintain BTCA practices until the drainage basin has been stabilized. This is a statement of compliance, not a restatement of the rule. Notwithstanding the foregoing, the narrative at ARM 17.24.633(1) is revised to comply with the department's directive. However, the meaning remains unchanged.

- Section 6.0, ARM 17.24.638, Sediment Control Measures, OCC again has selectively omitted or altered the language in rule (ARM 17.24.638). In Section 6.0 (2) OCC states that "Sediment control methods to be utilized may include but are not limited to:" The rule (17.24.638(2)) does not include the qualifier, 'may'. This qualifier acts to potentially lessen the commitment required in the rule and must be removed.

Response: The word "may" in this context is not a qualifier that would "potentially lessen the commitment required by this rule…". It is recognition that sediment control measures to be applied depend on the circumstances in the field. The wording has been revised as noted; however, the meaning remains unchanged.

- Section 9.0, ARM 17.24.644 Protection of Ground Water Recharge, OCC has altered the language in rule (ARM 17.24.644). In Section 9.0 (2) OCC states that "OCC will collect data and conduct studies *in consultation* with MDEQ to determine whether the recharge capacity of the mined lands can be restored to the approximate premining recharge capacity." As written in the Administrative Rules of Montana, ARM 17.24.644 states

that "The permittee shall collect data and conduct studies *as requested* by the department to determine whether the recharge capacity of the mined lands can be restored to the approximate premining recharge capacity." Please revise the narrative to accurately reflect the rule.

Response: Use of the words "in consultation with" rather than "as requested by" does not alter or reduce the commitment under this rule; further, OCC has not "altered the language" of the rule as alleged. This is a compliance statement, not a repetition of the rule. However, the language has been changed as requested.

- Section 11.0, ARM 17.24.651 Stream Channel Disturbances and Buffer Zones, OCC has altered the language in rule (ARM 17.24.651). OCC implies that Otter Creek will only be disturbed where transportation corridors cross, and that stream function will be restored only where stream crossings occur. Rules regarding channel disturbances and buffer zones as addressed in 17.24.651 are not limited to impacts resultant from transportation facilities. Stream function may be disturbed by alterations to the hydrologic condition, through interruption of flow, sediment loading, or other impacts caused by alteration to local hydrologic systems, and may not be limited to areas of transportation infrastructure or facilities. The narrative must be revised to demonstrate how OCC will comply with rule 17.24.651 as written, and not limit compliance with the rule solely to stream crossings.

Response: OCC has complied with this rule. The buffer zone rule uses the word "disturbed" literally, meaning physical disturbance within 100 feet of a perennial or intermittent stream, or within the stream itself, and this rule applies only to such physical disturbance, and the findings the department must make to approve such disturbance. Other potential impacts to stream function are addressed by rules generally protecting the hydrologic balance, specifically ARM 17.24.631 - 650.

ARM 17.24.314: Exhibit 314B: Table 4-1. It is unclear what basins were used in the calculations; postmine drainage basin maps do not show 16 sub-basins while Table 4-1 provides calculations for 16 sub-basins. Please provide or refer to a map with the premine and postmine basins shown and labeled. The adequacy of the drainage characteristics to address 17.24.313, 17.24.314, and 17.24.315 cannot be evaluated until the additional information is provided.

Response: OCC assumes the comment is directed at Table 4-1 of Exhibit 314C, which has been revised to be consistent with Exhibit 315A- Ponds and Embankments as revised.

ARM 17.24.314: Exhibit 314C:

- The PHC is too general in prediction of impacts. Many of the predictions are qualitative where more empirical information is needed. For example, as stated on pages 5-3 and 5-4 of the PHC, water routed to the proposed infiltration ponds is anticipated to enter clinker and flow downgradient toward Otter Creek alluvium; some of the water will be removed by evapotranspiration and a "small fraction" will enter Otter Creek as surface water. What is a "small fraction" and how was it determined? As another example, on page 4-7, the statement "It appears the interchange of water between the creek and clinker is limited…" needs further explanation using quantitative information.

The PHC will need to be modified to reflect results from the revised groundwater model. As changes to the quantified estimates of changes to water levels and water quality from mining may be changed, water quality projections will be reviewed for comment after modification of the model.

Using empirical data, estimates of impacts to the Tongue River must be included in the PHC.

The PHC analysis would greatly benefit from incorporating research from other scientists on the hydrogeology of the Otter Creek area. For instance, a 2012 paper by Meredith and Kuzara in *Groundwater* indicates that the Knobloch coal provides baseflow to Otter Creek near the permit area. MBMG annual reports on coalbed methane also include Otter Creek alluvial data.

DEQ agrees that leaving a coal buffer to slow infiltration to and from the coal into adjacent lithologies and surface water will benefit the hydrologic balance. Text on page 5-3 in the PHC refers to the 500 foot buffer of unmined coal that "will provide a constant hydraulic conductivity to limit flow into and out of the Otter Creek Mine" in order "to maintain current hydrologic conditions between the active mining and spoil…and weathered coal…near Otter Creek". This discussion is somewhat misleading in that it ignores the fact that hydraulic head differential will contribute to the movement (flow) of water between the groundwater units (and surface water) and suggests that "current hydrologic conditions" will be maintained despite the substantial changes to the hydrologic balance during mining.

Although Figure 5-11 in Appendix A suggests there will be impacts to stream flow during initial development of the boxcuts, the impacts to Otter Creek from reduced stream flow are not discussed in the PHC. Please discuss the impacts and change in gradient between alluvium, Knobloch coal and resulting changes in surface flow. Also address the impact of any reduction in alluvial water levels on the ability of the Otter Creek alluvium to support sub-irrigation.

Response: The PHC has been revised to address these comments.

- Section 3.0, page 3-1. The Climatological Report is incorrectly referenced in Exhibit 314I. It is in 304I.

Response: The reference has been corrected to read "304I".

- Section 3.3, page 3-1. Please provide justification for why the evaporation measurement at the Yellowtail Dam should be similar to evaporation at the proposed Otter Creek mine area.

Response: Of the publicly available evaporation data, Yellowtail Dam is the closest and most similar in latitude to the mine site; therefore it would most closely approximate evaporation at Otter Creek Mine. In addition pan evaporation rates for the Absaloka Mine from 1975 to 1989 averaged 37.9 inches (Hydrometrics, Inc. 1992).

- Section 4.1.1, page 4-2. Please list all surface water users and rights holders from the DNRC database and discuss impacts to the users in the area. The list should include stream, pond, and spring water sources.

Response: A listing of potentially impacted stream, pond and spring water sources and water rights holders is included as Table 5-1, Exhibit 314C as revised.

- Section 4.4.1, page 4-8. The statement "Groundwater flow patterns do not indicate discharge to Tenmile Creek or Threemile Creek alluvium" is misleading. The potentiometric surface reflects insufficient monitoring points for determination of flow into alluvium in these tributaries. Cross-section F shows the connectedness of coal via clinker into Threemile Creek alluvium. In cross-section H, coal is shown underlying alluvium in Tenmile Creek. Please re-evaluate the above statement.

Response: This issue has been re-examined and the PHC revised as appropriate.

- Section 4.4, page 4-5. "Otter Creek alluvium exhibits evidence of recharge from the creek, although the magnitude is relatively small and response times longer than would be observed if there were direct contact with the creek." This seems contradictory to statements made in the groundwater model that Otter Creek is gaining from alluvium within the study area. Please re-evaluate the above statement.

Response: The following text was added to the discussion to address this issue: *"Alluvial recharge appears seasonally in response to elevated stream water levels resulting from occasional ice-jams and runoff due to snowmelt and larger precipitation events occurring primarily in early spring and fall. During the remainder of the year Otter Creek is a gaining stream from alluvial discharge."*

- Section 4.5, page 4-9. Please specify the database used to identify springs.

Response: The database used to identify springs has been added to the text.

- Section 5.0, page 5-1. This section does not adequately address the impacts to surface water quantity during mining and postmine. Please provide a surface water model showing the following conditions: premine, during mining with retention ponds in place, and postmine after pond removal. The model should be used to show the expected changes to the surface water system from mining. Include the hydrograph, sediment graph, and a table showing the peak flow, time of concentration, volume of flow, and volume of sediment for each given storm event for all of the modeled basins. At minimum, use the basins defined on the premine and postmine drainage basin maps. Model at least the 2-yr, 24-hr, 10-yr, 24-hr, and 100-yr, 6-hr storm events. Provide all model inputs and output reports and graphs. Justify and explain all model inputs. The model used in ARM 17.24.315 may meet most of this request. Discuss the results in relation to the hydrologic balance in the PHC.

Response: Exhibit 315A – Ponds and Embankments includes runoff and sediment modeling, premine, during mining and post-reclamation for sub-water sheds affected by mining.

Exhibit 314C, Appendix A, included the requested analysis based on 2-yr, 24-hr; 10-yr, 24-hr; and 100-yr, 6-hr storm events.

- Section 5.0. The PHC should address impacts to aquatic life and aquatic life habitat as part of the surface water hydrology assessment; aquatic habitat is a beneficial use of the river. Particular attention should be given to the effect on the brassy minnow and plains minnow as they are potential species of concern and the mayfly, *caenis youngi*, as it is a species of concern.

Response: Any potential changes in water quality or quantity in Otter Creek due to mining will be imperceptible and within the natural variability of sediment load and flow observed in Otter Creek. Therefore no impacts to aquatic life, including the brassy minnow, plains minnow and mayfly (*caenis youngi)* are expected. Mining and post mine water quality in Otter Creek is addressed in Section 5.2 of Exhibit 314C.

- Section 5.2.1, page 5-2. This section implies that there are no downstream consequences to lower TSS discharge water and postmine runoff entering native channels. This assumption may not be correct as low-sediment water may create impacts from increased downstream erosion due to 'hungry water'. The implications of low sediment water should be investigated and discussed.

Response: The term "hungry water" defines water that is virtually void of sediment. Post mining sediment control has been designed to allow sediment to flush through the system. Although the overall sediment load, determined through modeling will be lower in the post mining condition, TSS loads from storm derived runoff will still exist. As shown in Exhibit 315A – Ponds and Embankments, TSS concentrations are reduced slightly due to changes in topography, vegetation, and mixing of soils due to mining; however, the reduction of TSS is not material.

- Section 5.2.1, page 5-2. This section does not attempt to quantify the consequences to surface water from mining. For example, how much lower of a stream velocity is expected in the postmine channels? What is the expected difference in sediment load for various sized events due to ponds and the postmine landscape? Please use the results of a surface water model to justify and roughly quantify the impacts.

Response: As shown on the channel profiles included in Exhibit 313D – Reclamation of Drainage Basins, post mining channels are designed with a shallower gradient than those that currently exist. Since these channels are to be constructed with similar cross sections and will drain close to the same drainage area, the stream velocity in the post mine drainage channels would be similar or slightly less than they were prior to mining. Sediment loads, for various storm events, are predicted to be similar or slightly lower during post mining runoff in all of the watersheds that do not contain permanent ponds. In watersheds 1, 5, 7, 12, and 15, permanent ponds significantly reduce the sediment yield during post mining since they act as a sediment trap for the drainage area above the pond. Please refer to Exhibit 314C, Appendix A.

- Section 5.2.1, page 5-2. Using baseline data and the anticipated changes in soil composition please discuss the potential for changes to major ion or trace metal concentrations due to runoff after reclamation.

Response: Prior to mining, topsoil will be salvaged for redistribution on regraded spoils. Hence, composition of soils after mining will be similar to premining and concentrations of metals or major ions in runoff would be similar to premining conditions.

- Section 5.2.2, page 5-4. The proposed ponds built on clinker adjacent to the stream will result in infiltration into Otter Creek. Assuming the flow budget from the groundwater model is correct, the estimated contribution to baseflow would be significant (with 0.2 cfs baseflow and 0.11 cfs groundwater this is a 55% increase in flow). Baseflow characterizes the flow for much of the year. Please identify the surface and groundwater quantity and quality impacts from the proposed ponds including during low flow and high flow conditions. Please also consider if infiltration will result in a rise in the water level of sub-irrigated land adjacent to the stream and the implications for a rise in stored salts. Due to the downgradient position of these ponds in relationship to areas affected by mining and their position below monitoring, they will need to be monitored for water quality. Please propose a plan for monitoring these ponds.

Response: The water management plan has been redesigned to eliminate dewater and reinjection wells and the use of ponds on clinker for infiltration. Four sediment ponds (EP-1, EP-1B, EP-2, and EP-3) on clinker will occasionally contain runoff from rainfall and snowmelt events, and will infiltrate into the clinker adjacent to the Otter Creek alluvium. Due to the infrequent nature of such events, and the fact that rainfall and snowmelt runoff water is low in dissolved materials due to limited soil contact, impacts on Otter Creek alluvial groundwater quality and quantity will be imperceptible.

- Section 5.3, page 5-5. ARM 17.24.648 should be cited to commit to the replacement of ponds P1 and P2 if needed. If pond P4 is designated to be replaced with a sediment control pond, this pond will need to meet the requirements for permanent impoundments.

Response: Permanent ponds are addressed in Exhibit 315A- Ponds and Embankments, as revised.

- Section 6.0. The water source for the wells to be developed for domestic or industrial use at the mine must be included in the groundwater impact analysis.

Response: The wells to be used for domestic and industrial use are discussed in Exhibit 314C.

- Section 6.1, page 6-2. “No changes in groundwater levels at the permit boundary are expected.” This statement is incorrect. The groundwater model predicts drawdown outside of the Tract 2 permit boundary in alluvial wells A-3 and A-7. Please re-evaluate this statement and make it consistent with the ground water model.

Response: The statement has been re-evaluated and deleted.

- Section 6.1, page 6-2. The PHC states that underburden aquifers are hydrologically isolated from the coal unit by confining shale layers, but little evidence besides lithology from well logs is presented. Please expand on the justification for assuming the underburden is hydrologically isolated. If there is a possibility that underburden aquifers could be impacted, even if the impact is small, the potential effects should be explored via a groundwater model and discussed. "Similar observations and assumptions regarding the significance of underburden in the Otter Creek Flow model are quoted as follows (Cannon, 1985): …" Cannon was referring to the lack of influence of the deeper units on the stream-alluvial aquifer system, and the quotation was not a comment on the deep aquifer's significance with respect to the removal of the coal or in relation to a spoils aquifer. This statement and reference should be removed or revised.

Response: The revised and expanded groundwater model addresses potential changes to underburden aquifers; impacts are expected to be non-significant. Please refer to revised Exhibit 314C – Probable Hydrologic Consequences.

- Section 6.2. Overburden samples submitted for chemical analysis of saturated paste extracts were used to provide an estimate of initial spoils groundwater quality after the methodology of Van Voast et al (1978). Given the disparity of EC and SAR between the top 30 to 50 feet of the overburden and the lower overburden sections from the boreholes, this approach may not be representative of water quality. The more mineralized top of the overburden is cast into the bottom of the pit and will likely create greater ionic concentrations in the recovering groundwater than would be expected from the average for the entire borehole length. When available, please include the results of the column leach tests in the discussion of the postmine groundwater quality. Additionally, please indicate the location/number of the four exploration boreholes chosen for the column tests.

Response: Over most of the mine area, the pre-strip spoil will be placed over the dragline spoil; therefore these materials will not be cast into the bottom of the pit. A discussion of spoils water quality including column leach testing results has been included as Appendix C of revised Exhibit 314C. The locations of the four boreholes where overburden was used for testing are shown on Map 15.

- Section 6.2. The discussion of water quality in the PHC needs to include the results of the modeled water quality estimates (Appendix A, Table 5-2).

Response: The PHC has been revised to address this comment.

- Section 6.4.1, page 6-8. Springs are incorrectly referenced as shown on Plate 2.

Response: Text was changed to correctly refer to "… Plate 3, Baseline Report 304E …" where Springs are shown.

- Section 6.4.1. Not all of the springs within the permit boundary were addressed in this section (SSI-11-18, SSI-10-002, etc.). Please address all springs within the permit boundary or outside the permit that could be affected by mining operations and regional drawdown.

Response: The inventory of seeps and springs was reviewed to ensure all those within the permit boundary are identified. The seeps and springs within the permit boundary are listed on a new Table 5-1. Potential consequences to each seep and spring are also described on Table 5-1.

- Section 6.5. A number of wells in Table 6-1 list "no lithologic information" for the potential impact. Please indicate whether or not wells without lithologic information were eliminated from consideration of impacts. The applicant must use other methods to gain information (e.g. depth) about wells that were not identified from publically available sources.

Response: The table has been revised to indicate when wells that have insufficient data (i.e., total depth, etc.) to evaluate impacts.

- Section 6.5. Modeled drawdown extends beyond the private well inventory. Well inventory must be expanded to show all wells within the affected area and analyzed for the potential degree of impact.

Response: The well inventory has been expanded to include all wells listed in GWIC within the five foot drawdown contour as shown on Figure 6-1 in Exhibit 314C. Table 6-1 has been updated to include those wells.

- Section 6.5, page 6-10. "Wells in the overburden near the mine area are not likely to experience significant impacts due to mining since recharge to these wells occurs locally." If this is the case please do not draw an overburden potentiometric map that would suggest that the overburden was hydrologically connected.

Response: Comment noted.

- Section 9.0. This section is unnecessary in the PHC. The Cumulative Hydrologic Impact Assessment is written by DEQ.

Response: This section is revised in Exhibit 314C. The discussion of cumulative hydrologic impacts is limited to the mine plan area, which includes Tracts 1 and 3. OCC recognizes that the Cumulative Hydrologic Impact Assessment is written by MDEQ; information is provided to support that effort and comply with the requirements of ARM 17.24.314.

- Appendix A. A number of concerns were identified during review of the groundwater model and DEQ determined that the groundwater model is insufficient to model impacts from the proposed Tract 2 mining operations. DEQ identified some of the same concerns as the third party contractor that reviewed the model and concurs with the comments, concerns and questions presented in that review. The model review is attached at the end of the comments in this letter. Please address the comments within the attachment letter titled Preliminary Comments on Otter Creek Mine Groundwater Flow Model presented in Appendix A of Exhibit 314C, Probably Hydrologic Consequences, SMP C2012018 provided by Mr. Terry Grotto of New Fields, dated February 20, 2013. These comments

were provided to DEQ by our contractor in charge of preparing the EIS for the Otter Creek Project. The comments were generated during the review of the baseline data in advance of preparing portions of the EIS. DEQ has reviewed and is in agreement with the comments.

Response: OCC has consulted at length with MDEQ regarding the nature and scope of the groundwater model, and based on these consultations a new model has been prepared. The new Groundwater Model Report is incorporated into Exhibit 314C.

- Despite the depth to the underburden below the coal and the low conductivity of the intervening strata, the underburden is expected to show some response to mining. On Table 6-1, approximately 17 private wells were identified to be potentially completed in the productive sandstone unit of the underburden, and this list does not include all of the wells within the area impacted by drawdown. In similar coal mine settings throughout southeastern Montana, the underburden has been observed to show a physical response to mining. As the productive sandstone approximately 100 feet below the coal is used by local residents, it must be included in the drawdown model. Monitoring wells that are completed in this unit include B10-U, B8-U, B7-U, B5-U, and B2-U. The application states that "reported declines (in this unit) could be a function of water management practices, which allow unrestricted flow from the wells, thus depressurizing the system." It is important to predict (and monitor) the impacts from mining to differentiate between depressurization from local use practices verses mining. This is also important if a well for domestic use at the mine is to be completed in the sandstone underburden unit.

Response: The new groundwater model is three dimensional and addresses impacts to the underburden, which are predicted to be minimal.

- "Similar observations and assumptions regarding the significance of underburden in the Otter Creek Flow model are quoted as follows (Cannon, 1985): …" Cannon was referring to the lack of influence of the deeper units on the stream-alluvial aquifer system, and the quotation was not a comment on the deep aquifer's significance with respect to the removal of the coal or in relation to a spoils aquifer. This statement and reference should be removed or revised.

Response: This statement has been removed from the text.

- A fundamental assumption used in the modeling process is the use of dewatering wells and injection wells. The injection wells are modeled in a line across a large region of clinker. In the mine plan, this area is designated as a spoils stockpile. It is unlikely that the wells will be placed on top of the spoils pile. The location and number of injection wells, dewatering wells, and other major hydrologic controls needs to be ascertained and correctly modeled. The impacts to the alluvium and other downgradient aquifers may change with major changes to the hydrologic control plan.

Response: The use of injection wells has been removed from the mine operations plan.

- Due to current restrictions on discharge into Otter Creek, the plan for dewatering and injection into the clinker may not be an acceptable option for dewatering or managing pit

inflow. Please propose other options for management of the water. In revising the model, please include an analysis that does not include the injection wells.

Response: The groundwater management plan has been revised to manage and contain pit water within the mine workings.

- When available, please incorporate the results of the column leach tests into the water quality model for spoil water quality (Appendix A, Table 5-2).

Response: Results of column leach testing have been incorporated into Exhibit 314C.

- The groundwater flow model shows recovery at 10 and 100 years. At 100 years, recovery is shown as being complete. Please show recovery at time intervals between 10 and 100 years, based on time to modeled total recovery.

Response: Additional recovery intervals have been included in the new groundwater model report.

- It would be very helpful on the potentiometric surfaces and drawdown maps of figures 5-3 through 5-10 if the area of mined cuts were shaded in or otherwise indicated. Scale bars and north arrows are also needed.

Response: Updated drawdown maps are included in the new groundwater model report.

- The maps of simulated potentiometric surfaces and drawdown are difficult to read on the USGS background. Please use the base maps submitted with the application.

Response: Updated drawdown maps are included in the new groundwater model report.

- The method for predicting water quality shown in tables 5-1 and 5-2 has caused confusion for some reviewers. In Table 5-1, Step 1, why is "Q- clinker out" not used as the input for flow from clinker to Threemile Creek alluvium? Subsequently, why is the resulting flow from Threemile alluvium, not added to the input from Threemile Creek alluvium to Otter Creek alluvium and from this alluvium to Otter Creek? Please explain under 5.4.1 why cumulative flows and associated concentrations are not used to predict the water quality.

Response: Based on the new groundwater model, groundwater quality predictions have been revised.

ARM 17.24.314: Pursuant to ARM 17.24.638(2)(a), the operator must minimize disturbance at any one time. The temporary spoil storage area is extensive and scheduled to remain until final backfill of the pits. The applicant needs to consider using the top of this stockpile area for other stockpiles like scoria or soil.

Response: It may be necessary to utilize temporary stockpiled overburden material prior to final pit backfill; therefore the top of the stockpile must be kept accessible. OCC will minimize disturbance at any one time.

ARM 17.24.315 Plan for Ponds and Embankments:

- Map 11 located within ARM17.24.305. There is no sediment / runoff control plan for the side of the road closest to Otter Creek. There is also no control for soil piles on the west and north sides of the main haul road. Sediment is not routed to an MPDES site or other control structure. Please provide additional information pertaining to these comments.

Response: A sediment / runoff control plan for roads not within watershed areas controlled by sediment ponds has been added to Exhibit 321A – Transportation Facilities. Runoff and sedimentation from soil piles will be controlled by ditching and routing of runoff to sediment traps sized to meet the requirements of Western Alkaline Standards. A section has been added to Exhibit 315A – Ponds and Embankments to address this issue.

- There is no specific plan for the dewatering and injection wells. The proposed location, quantity, and anticipated pumping rate must be included in the permit. The dewatering plan cannot be evaluated until this information is submitted.

Response: Dewatering wells have been deleted from the plan.

- Exhibit 315A, Appendix A, Attachment A. The SEDCAD results cannot be analyzed without knowing where the SEDCAD basins are and the sequence they are networked together. Please provide networking diagrams and a map showing the location and size of the SEDCAD basins.

Response: Exhibit 315A – Ponds and Embankments has been clarified with respect to SEDCAD drainage basins.

- Appendix A, Figure 3-2, Figure 1-1. The drainages in the premine and postmine maps are not drawn using the same basin criteria; the premine basins are drawn to show the catchment area for proposed mine ponds and the postmine basins are drawn to encompass the entire sub-drainage. It is unclear which basins are being referred to in the runoff models and drainage geomorphic comparison tables located in 17.24.304. Please show the entire sub-drainage on the premine map for Figure 1-1 or include an additional map in the permit that shows the sub-drainages. The permit cannot be reviewed for its adherence to 17.24.313, 17.24.314, and 17.24.315 until the drainage basins are clearly delineated.

Response: SEDCAD drainage basins have been clarified in revised Exhibit 315A.

- Appendix A, Figure 1-1. Drainage basins EP2A, EP3A, and EP4A are not labeled on the map. Please label these basins appropriately.

Response: SEDCAD drainage basins have been clarified in revised Exhibit 315A.

Exhibit 315A, Section 2.0,

- Page 1. The language in the first paragraph implies that Pond 5 will be used to collect surface runoff only. In the third paragraph it is stated that Pond 4 will receive pit water from dewatering operations. Please clarify which ponds will receive surface water runoff only and which ponds will receive a combination of surface water and groundwater. In addition, please note if the additional water volume required in ponds that receive pit water was calculated into the pond volumes.

Response: Ponds receiving surface runoff only, and ponds also receiving pit dewatering are clarified in revised Exhibit 314A – Protection of the Hydrologic Balance and Exhibit 315A – Ponds and Embankments.

- Exhibit 315A, Section 2.0, page 1. "Preliminary pond sizing is summarized in Table 1." Table 1 could not be found. Please provide Table 1 or directions to find Table 1.

Response: Exhibit 315A – Ponds and Embankments has been revised and upgraded to provide complete information on pond sizing.

- Exhibit 315 A- Appendix A Ponds and Embankments Hydrology and Sedimentology Report:

- The Administrative Rules make a distinction between Sedimentation Ponds and Sediment Traps (see ARM 17.24.301 (110) and ARM 17.24.638). The impoundments being described in this report meet the definition of Sediment Ponds; please correct the terminology throughout the report.

Response: The terminology distinguishing sediment ponds and sediment traps is corrected where appropriate.

- Section 2.0 Paragraph 4 reads: "These 10-year, 24-hour sediment traps will be based on post-mining drainage acreage and configuration, SEDCAD modeling of runoff volume in a 30% bare and 70% vegetated soil condition, and three times the average annual sediment volume based on SEDCAD modeling of this condition unless otherwise noted." Please delete this sentence.

Response: This assumption was used for preliminary sizing recognizing that final configuration will depend on a final PMT. The sentence is deleted in Exhibit 315A – Ponds and Embankments as revised, and SEDCAD modeling assumptions are addressed in individual pond designs.

- For the purpose of sizing Sediment Ponds, an assumption of 30% bare and 70% vegetated is too general to provide a reliable estimate for some basins (i.e. Basin 15). The vegetative cover parameter should be based on the Reclamation Schedule Map which will indicate the maturity of vegetation.

Response: Status of revegetation with respect to modeling of runoff and sediment yield is considered in Exhibit 315A – Ponds and Embankments as revised.

- The Report, Tables, and Figures 1 and 2 must be changed so the basins and acreages are consistent or more explanatory text must be added. The basin labels, acreages, areas and subareas are difficult to follow, i.e. Table 3-1: the table references Basins EP 1A, EP1 B but these are not labeled on the pre mine drainage basin map, the pre mine acreages in Table 3-1 should sum to that of the pre mine Basin EP1 if they are just sub areas. Table 7-1 acreages do not appear consistent with either Table 3-1 or the figures.

Response: The report, tables and figures of revised Exhibit 315A – Ponds and Embankments, have been revised to assure consistency and explain more clearly the components of the surface water control plan.

- Pond Designs: An individual design sheet must be provided for each pond. The pond design requirements are set forth in 17.24.639 (28) (a) and parts 1, 2, 4, 6, 18, 22(a), 24, and 27. Once the pond is constructed, the design sheet can then be updated and certified as an As-Built to meet the requirements of ARM 17.24.640(28)(b) and 17.24.639(1)(d).

  The design sheet should include: a plan view, several cross sections, a table of elevation versus storage, sediment storage requirement calculations, a map of the specific drainage basin with the maturity of vegetation delineated, a table providing the acreage weighted average CN number calculation, a table of the Seduced parameters used along with output results and any other information of importance in the design and construction of the pond. The output results will include the peak pond inflow rate and the volume for the 10-year, 24-hour and 25-year, 24-hour event. The elevation versus storage table should indicate the maximum storage pool elevation at which the storage volume for the 10-year, 24-hour storage volume plus 40 percent of sediment storage volume still remains. This is the water elevation above which the pond must be pumped and/or sediment cleaned out. Storage available below the elevation required to provide runoff and 100 percent of sediment containment can be labeled and used as supplemental water/sediment storage. Also, any ditch that is needed to meet the 10-yr, 24-hour event storage requirement must have design calculation i.e. the ditch between Pond EP-1 and Pond EP.

Response: Final pond design sheets containing the specified information are provided in revised Exhibit 315A – Ponds and Embankments.

ARM 17.24.318 (1): Requires for any public parks, historic places, or other significant cultural resources identified in ARM 17.24.304(1)(b) that may be adversely affected by the proposed operations, each plan must describe the measures to be used to minimize or prevent these impacts, the timing and tracking of these measures relative to the disturbance schedule, and how the applicant will obtain approval of the department and other agencies as required in ARM 17.24.1131.

Exhibit 318 A states the "Cultural Resources Mitigation Plan will be submitted at a later date." Please provide the required information to comply with ARM 17.24.318 (1).

Response: The compliance narrative at ARM 17.24.318 (1) has been updated in response to this comment. Evaluation of cultural sites identified during Class III surveys continued during the 2013 and 2014 field seasons to assess NRHP eligibility. Eligibility recommendations and a mitigation schedule are presented on Map 6 – Cultural Sites.

Mitigation plans for individual eligible sites will be submitted to the department for approval, and implemented prior to disturbance.

ARM 17.24.321, Transportation Facilities Plan:

- All roads are required to have a design. Unless the access road is to be 100' wide, Exhibit 321A, Plate 1 must include a cross section for the access roads.

Response: Plate 1, Exhibit 321A – Transportation Facilities is revised to include cross-sections for all road widths to be utilized.

- Design information for ancillary roads, roads other than the access and haul roads, must be addressed. A discussion for these roads must include appropriate map information and a discussion about soil handling, maintenance, width, and use and be depicted on a plan view map. Ancillary roads would include dragline walkways through native ground or those which would delay reclamation and roads used to access the dragline erection site, stockpiles, and monitoring sites.

Response: Exhibit 321A – Transportation Facilities is revised to address ancillary roads.

- According to ARM 17.24.321, appropriate road designs must meet the requirements of ARM 17.24.605. Pursuant to ARM 17.24.605, road water control structures must handle the 10-yr, 24-hr storm event. The permit must include appropriately sized culverts and ditches. The location of culverts must also be depicted on Exhibit 321A, Plate1, Plate 2, and Map 8. Additional culverts may need to be installed: the applicant must address crossing Otter Creek and the drainage between the shop building and waste disposal area.

Response: Culvert locations and sizing data are submitted; please refer to Plate 1 of Exhibit 321A – Transportation Facilities.

- A commitment for submittal of design information, prior to construction, on haul road segments 4, 5, and 6 should be added to the permit if no design information is included at this point in time.

Response: The haul road design has been simplified to eliminate reference to specific segments. With the exception of the temporary spoil haul road (Exhibit 321A), the main haul road will be constructed on spoil and design information will be submitted prior to construction.

- Pursuant to ARM 17.24.602(2), DEQ cannot approve the at grade native crossings at Ponds 1B, 2, 3, and 4 on Access/Haul Road Segments 1 and 2. Culverts must be designed and fill compacted across these drainages.

Response: A primary purpose of the Drainage Control Service Road (formerly Access / Haul Road segments 1 and 2) is drainage control. Culverts are provided at MPDES discharge points.

- OCC must justify a need to construct Segment 1. It is not a haul road and does not meet the definition of an access road.

Response: The Drainage Control Service Road (formerly Access/Haul Road Segment 1) is required initially for access for excavation of sediment ponds and construction of the truck dump and primary crusher. Operationally, it is required for drainage control and access to sediment ponds for maintenance and monitoring.

- Due to missing CAD data, it is not possible to conduct a full review of the Transportation Facilities Plan. A thorough review will be completed upon submittal of the necessary CAD data.

Response: CAD files for transportation facilities maps are included with this submittal.

ARM 17.24.321 Transportation Plan

ARM 17.24.321 (1) Exhibit 321 A

Plate 1:

- All bridges and culverts must be shown on road profiles and on the plan.
- There are a number of inconsistencies between this and Map 8 Mine Plan that need to be corrected.
- Road Segment 6 is not shown on the plan and no profile is provided.
- Haul roads must be shown on Exhibit 321 per ARM 17.24.321 (4).
- No culvert is shown under Rail loop access road at station 10+00. Is this an oversight?

Response: Road plans included in Exhibit 321A, Map 8 – Mine Plan and Map 11 – Operational Drainage Control have been updated and made consistent.

ARM 17.24.605 (4), Rail Loops and Roads:

- A Culvert Table is needed to demonstrate adequate conveyance. The table columns should indicate the Culvert ID, culvert type, number of pipes and sizes (i.e. 1- 36", 2 - 24"), minimum roadway elevation, length, culvert inlet and outlet invert elevation, design discharge, headwater elevation at the design discharge.

Response: A culvert table is added to Plate 1, Exhibit 321A – Transportation Facilities, which includes the information enumerated in this comment.

- Hydraulic calculations must be provided that show that the culvert/bridge used in the Otter Creek crossing can safely pass the 10-yr, 24-hr event and will meet the requirements of ARM 17.24.605.

Response: Hydraulic calculations for the Otter Creek road crossing are provided with culvert data; please see the previous response.

ARM 17.24.322: Due to missing CAD data, it is not possible to conduct a full review of the Geologic Information and Coal Conservation Plan. Please provide the appropriate CAD data for the geologic information and Coal Conservation Plan.

Response: The requested CAD files are included with this submittal.

ARM 17.24.325, Alluvial Valley Floors:

- An AVF determination by the DEQ cannot be undertaken until first round hydrology comments are addressed and all information regarding water levels, wells, flow budgets, water quality data and vegetative production is updated and complete.

Response: Comment noted. Baseline Report 325A has been expanded as a comprehensive report addressing all of the requirements of ARM 17.24.325, Alluvial Valley Floors. The information on hay production contained in BR 325B has been incorporated into BR 325A.

- Piezometers must be installed at appropriate rooting depths for agricultural crops grown in the lowlands adjacent to Otter Creek in order to monitor water level and water quality prior to and during mining. Please propose locations and depths for the piezometers. Placing piezometers adjacent to the existing AVF alluvial wells would seem to be appropriate, but locations up gradient and down gradient of the current AVF sections should also be considered.

Response: In consultation with MDEQ, shallow piezometers were installed in 2013. Monitoring data are included in revised Baseline Report 325A – Alluvial Valley Floors.

- BR325, Plate 9. The color infrared aerial cannot be interpreted over the Tract 1, 2, and 3 areas due to excessive shading of the photo. Please revise the map so that the infrared imagery can be seen and submit the photo used for the map. Per ARM 17.24.325 (2)(vi), a series of photographs showing the late summer and fall differences in vegetative growth must be submitted.

Response: Plate 9, Baseline Report 325A – Alluvial Valley Floor Determination, was a composite IR photograph combining the September 2011 photo completed by OCC with a public domain photograph. Five IR photos are included in revised BR 325A as Plates 13 A-E.

- Impacts to sub-irrigation from mining due to changes in water quantity and quality may occur downstream, off the permit area. The AVF study area outlined on Plate 1 extends to Ashland. Please expand the entire AVF data set including crop production data, geologic map, depth to groundwater and sub-irrigated farmland to Ashland, MT. Agricultural production information must be collected specific to each individual farm/ranch operation – this is needed to determine the significance of any identified AVF.

Response: The AVF study area is expanded to include the reach from the Tenmile Creek road crossing to the mouth of Otter Creek at Ashland. Agricultural information is provided for each individual farm/ranch operation in revised Baseline Report 325A.

- The map unit numbers on Vegetation Plate 6 are illegible. Please correct this map.

Response: Plate 10 (formerly Plate 6) – Vegetation has been revised to correct legibility problems.

ARM 17.24.325(2)(a)(ii), AVF Vegetative Productivity:

- Mapping of all lands included in the area and accompanied by vegetative productivity and type is required. BR325A_Otter Creek Mine Appendix A Vegetative Cover Data contains vegetative cover information from Tract 2 for sites within the AVF study area. This Appendix does not include vegetation sample sites within the facilities area that also including those that fall within the AVF study area. Please ensure all vegetation sample sites within the AVF study area are included in this Appendix.

Response: Appendix G (formerly Appendix A) – Vegetation Cover Data is revised to include all sample sites in the AVF study area within the permit area.

- Baseline Report 325B_Otter Creek Minima Production, Section 4.1 Thane Thomas Ranch, includes hay production summaries from the attached tables. The range for hay production of individual fields for 2010 is listed as 0.69 to 2.16 t/ac when the actual range is 0.69 to 2.72 t/ac according to the attached tables. Please correct this information and ensure other values are corrected and consistent as well.

Response: Baseline Report 325B has been incorporated into revised Baseline Report 325A. The data for the Thomas and Denson Ranches have been reviewed and clarified or corrections made for consistency where necessary.

- Section 4.2, Ross and Dennis Denson Ranch includes hay production summaries from the attached tables. The range for hay production of individual fields for 2006 is listed as 0.62 to 1.52 t/ac when the actual range is 0.16 to 1.52 t/ac according to the attached tables. The range for hay production of individual fields for 2010 is listed as 0.75 to 2.62 t/ac when the actual range is 0.75 to 2.70 t/ac according to the attached tables. Please correct this information and ensure other values are corrected and consistent as well.

Response: See previous response.

- Mapping of croplands and undeveloped rangelands accompanied by measurements of vegetative productivity and type is required. Baseline Report 325B_Otter Creek Minima Production contains information related to hay production on portions of the AVF study area. To make a determination of significance on vegetation, the department will need to compare production values within the AVF study area to production on lands not within the study area based on individual landowner operations. This production data will need to be broken out into vegetation types including floodplain, bench, and upland. All fields affected by flood irrigation need to be separated out or specially denoted. Please include this information in the application.

Response: Complete bale counts were completed in 2014, and the information specified is included in revised BR 325A. **Production data are broken out for hay cropland in and out of the flood plain. Also fields affected by flood irrigation are specifically denoted**.

ARM 17.24.325(2)(a)(iv), AVF Soils:

- Measurements of rooting depth are required. BR325A_Otter Creek Mine_Table 3, Tract2, Soil Data, contains soils data from the Tract 2 study area within the AVF study area. The table has AVF Vegetation Classes listed for each sample site. There are two vegetation class values, 5 and 6, that are not included in the key. Please include all of the vegetation classes in the key to explain which sample is in which AVF vegetation class.

Response: Measurements of rooting depth were included in baseline soil sampling data; 11 sites are in crop fields within the AVF study area. Please refer to Table 2-6 of revised Baseline Report 325A. Piezometer studies initiated in 2013 also included soils and rooting depth data at piezometer sites; please refer to Appendix J of revised Baseline Report 325A.

- Table 3 and Table 1 both reference vegetation classes, but are not consistent between the two. Please use consistent vegetation classes within the application.

Response: Revised Baseline Report 325A is revised to focus on hay cropland; vegetation class inconsistencies between tables are resolved.

- Table 3 only includes soil samples from the Tract 2 study area. There were numerous soil samples in the facilities area of Tract 2 that fall within the AVF study area. Please include these soil samples in this table. Also, as this table is referenced in Baseline Report 325A, these additional soil sites need to be taken into consideration in this report.

Response: Table 2-7 of revised Exhibit 325A as revised includes crop land soil samples only in the AVF study area, both on Tract 2 and in the facilities area. The narrative of revised Baseline Report 325A is updated accordingly.

ARM 17.24.325(2)(b)(ii)(B): Addresses whether or not there is sufficient water to support agricultural production based on stream-flow. BR325A_Otter Creek Mine_Table 4 Ashland Discharge has the "annual" and monthly means for Otter Creek discharge at Ashland. There are discrepancies in the "annual" discharge in comparison to the monthly discharges for a number of years. It appears as if the information has been transposed to differing years when the two separate tables were combined by the applicant. Please correct this table to ensure accurate information is being presented. While updating this table, please include the most up to-date information available.

"Annual" is being miss-represented in this table. The actual data being presented is the average for the water year ending in that year based on daily values. The way the information is presented directs the reader to believe that the "annual" data is the average for that calendar year. Please make this table more clear or break the data into two tables to avoid confusion.

Response: New tables with updated discharge data for the Ashland gauging station as downloaded from the USGS web site are included in revised Baseline Report 325A as Tables 2-1A and 2-1B. This should eliminate discrepancies. No misrepresentations were intended.

ARM 17.24.501(4): All final grading must be to the approximate original contour. Due to missing CAD data, DEQ is not able to conduct a full review; however, the currently submitted documents do not appear to be in compliance with this rule.

Response: Map 12 – Post-Mining Topography has been revised and is in compliance with AOC requirements.

ARM 17.24.501(4)(c): Postmining graded slopes must approximate the premining natural slopes in the area. Remove "to the extent practicable consistent with material availability and minimization of erosion".

Response: The cited language has been removed, with recognition that limitations might be imposed by other performance standards. Notwithstanding the requirement of this rule, the definition of "approximate original contour" does not require that graded slopes "approximate the premining natural slopes" and specifies that level areas may be increased.

ARM 17.24.501(6): OCC must consider the following findings.

- Exhibit 313C proposes a scenario where more than 4 spoil ridges may be required near the end of mining and more than 2 years may be required before grading is complete if coal sales are less than 20 Million Tons/year. Adequate written justification and documentation provided by the operator has not been submitted in regard to deviating from the performance standards located in ARM 17.24.501(6)(a)

Response: Exhibit 313C – Backfilling and Grading has been revised to address this rule more thoroughly.

- In addition to the above two situations, page 2 of Exhibit 308A, Appendix A, describes a mine sequence where the dragline must strip through Pass 15 before there is sufficient area to receive spoil from northern boxcut. Pass 15 is not scheduled for mining until Year 6 (see Map 1) and backfilling to the postmine topographic grade will just begin at this point in time. Once backfilled, additional time will then be required to grade the truck dump to the final postmine contours.

  It is DEQ's opinion that after eight years of mining at 20 million tons per year, OCC will have a large area of disturbance and little or no reclamation. The disturbed area will include: roads, shop, out-of-pit soil and spoil stockpiles, ponds, boxcut spoil and other mined spoil areas that are being held ready to received pre-strip, active pit, pre-strip areas that may include multiple benches due to height, and soil removal in advance of mining.

  The application is deficient in addressing the above issues. Pursuant to ARM 17.24.313(1)(b) and (d), the volume of yearly boxcut and prestrip cubic yards must be estimated and a reclamation sequence map and table estimating yearly disturbance and reclamation acres for the first five years and then five-year increments there after must be submitted.

Response: The specified information is provided in Exhibit 313C – Backfilling and Grading as revised.

ARM 17.24.501(6)(b): OCC must commit to completing backfilling and grading within 2 years after coal removal from each pit.

Response: Exhibit 313C – Backfilling and Grading is revised to address this rule in more detail.

ARM 17.24.507: Due to the possibility that infiltration and runoff may reach surface or shallow groundwater on or adjacent to the mine, on-site solid waste disposal must be in a lined facility, away from clinker, or the waste must be hauled off-site for disposal. Tires, wood waste, concrete, fencing, culvert, pipes and other non-reactive waste without oil or grease residue may be deposited in the pit securely above the postmine water table and at least eight feet below the postmine surface.

Response: Based on the type of waste specified, OCC does not believe that this facility needs to be lined given the nature of the soil materials.

In the Waste Disposal Plan 308D, the following sections must be addressed:

- Section 3.6, Impacted Earthen Materials, describes the intended methods for handling and treatment of petroleum contaminated materials. Unless the affected material is taken off site, DEQ requires development and operation of a landform according to DEQ guidelines that are not addressed in Section 3.6. Please consult with DEQ for further guidance.

Response: The discussion in Section 3.6 is expanded to address MDEQ landform requirements.

- Section 3.7, Containers and Maintenance Waste, must clearly state that all petroleum contaminated waste such as oil filters, oil-soaked rags, solvent rags and used sorbent material will be contained for disposal offsite and not placed in an on-site waste disposal area.

Response: The discussion in Section 3.7 is expanded to address this requirement.

- Please describe the type and location of the containment facility that will be used to store hazardous and other containerized waste stored for shipment off-site.

Response: Exhibit 308D – Waste Handling and Management is revised to describe the containment facility that will be used to store hazardous and other containerized waste stored for shipment off-site.

- Section 3.8, Sump Waste: Sump waste may not be placed in the backfill prior to sampling and treatment in the landform/land treatment unit until remediation goals are met.

Response: Section 3.8 is revised to clarify that sump waste will not be placed in the backfill prior to sampling and treatment in the landform/land treatment unit until remediation goals are met.

ARM 17.24.515: Please show the highwall reduction area on a map and include the area in an anticipated life-of-mine disturbance area. Additionally, include a map showing steep slopes, bluffs, etc. that will be committed to in the PMT reclamation plan.

Response: Revised Map 12 – Post Mining Topography includes the 'life of mine disturbance area' or match line. The plan has been revised to minimize highwall reduction and maximize use of bluff extensions tying to steeper slopes. Highwall reduction areas and steep slopes, bluffs etc. are incorporated into the PMT.

ARM 17.24.515: A map and table depicting premine steep slope features is included in Volume 2, Baseline Report 304C. Exhibit 313C, page 7, refers to leaving steep slope features in the post mine landscape: this exhibit should include a specific reference to the map and tables in Volume 2.

Response: Exhibit 313C – Backfilling and Grading is revised to include a reference to Baseline Report 304C.

ARM 17.24.601(9): Magnesium Chloride is proposed for haul road dust control. The applicant is strongly encouraged to propose an alternative dust suppression material.

Response: Exhibit 321A – Transportation Facilities is revised to address use of dust control applications in more detail, specifically the use of lignin suffocate as an alternate dust suppression material.

ARM 17.24.609: Exhibit 308C, 2.2 Support Facilities, references the shop area wash bay. Please ensure that the wash facility meets BTCA and recycles rather than releases wash water. Wash water must not be released into the mine drainage system. Please submit designs for the wash bay and fueling stations.

Response: The wash bay will meet BTCA and will recycle rather than release wash water. Designs for the wash bay and fueling station will be submitted prior to construction.

ARM 17.24.609(3): Several facilities common to surface mining are not depicted on the map. The operator should designate a bone yard, scoria pit, and fueling station on a map. Additional detail or at least a commitment to submit additional information on the conveyor system must be submitted prior to construction. In addition, all Montana Department of Transportation requirements must be addressed prior to construction of the conveyor crossing and construction of any access to the highway.

Response: A bone yard, scoria pit and fueling station are added to Map 9 – Mine Facilities and Map 8 – Mine Plan. Additional information on the conveyor system will be submitted prior to construction; OCC is aware of MDOT requirements regarding the conveyor crossing and highway access.

ARM 17.24.624(6): This rule requires periodic air blast monitoring. Exhibit 310A, Mine Blasting Plan, Section 6.0, third paragraph must be changed to commit OCC to compliance with this rule and monitoring at least one time a year for all types of blasting (pre-strip, overburden, coal).

Response: Exhibit 310A – Blasting Plan is revised to address ARM 17.24.624(6) as noted.

ARM 17.24.626(1): Additional commitments must be added to Exhibit 310A, Mine Blasting Plan, Section 8.0. Please add a commitment to complete and accurate records at the time of inspection and a record with all pertinent information contained in this rule.

Response: Exhibit 310A – Blasting Plan is revised to address ARM 17.24.626(1) as noted.

ARM 17.24.633, Water Quality:

- Section 5.0, Exhibit 314A, will need to be revised if decisions made in respect to the MPDES permit result in changes to surface water drainage and control.

Response: Comment Noted.

- Drainage Control Map 11 does not include any sediment control on the west side of the access road parallel to Otter Creek. Also, large soil stockpiles located between the access road and Otter Creek require some type of drainage control. The application must demonstrate that stockpile runoff will be kept from entering Otter Creek.

Response: A sediment / runoff control plan for roads not within watershed areas controlled by sediment ponds has been added to Exhibit 321A – Transportation Facilities. Runoff and sedimentation from soil piles will be controlled by ditching and routing of runoff to sediment traps sized to meet the requirements of Western Alkaline Standards. A section has been added to Exhibit 315A – Ponds and Embankments to address this issue.

- Exhibit 314A describes the mine as having "zero discharge" to surface water. There is no discussion of how water routed to infiltration Pond 1B may impact nearby Otter Creek. As the pond is constructed on scoria, there is a probable hydrologic connection to the creek. If so, water infiltration through Pond 1B must be considered a discharge to surface water and DEQ will require additional information on the quantity and quality of this effluent and impacts to receiving water quality.

Response: Management of surface water has been revised such that EP-1B is no longer planned as an infiltration pond. Four sediment ponds (EP-1, EP-1B, EP-2, and EP-3) on clinker will occasionally contain runoff from rainfall and snowmelt events, and will infiltrate into the clinker adjacent to the Otter Creek alluvium. Due to the infrequent nature of such events, and the fact that rainfall and snowmelt runoff water is low in dissolved materials due to limited soil contact, impacts on Otter Creek alluvial groundwater quality and quantity will be imperceptible.

- Exhibit 314A refers to ponds as Pond 1, Pond 6, etc. while the Drainage Control Map refers to ponds as EP1, EP6, etc. Please keep naming conventions the same or provide clarification to avoid confusion.

Response: The pond naming convention has been made consistent.

- Exhibit 314A refers to Ponds 1B (MPDS 1) and 7 (MPDS 4) as potential discharges to Otter Creek. However, Drainage Control Map 11 shows additional discharge points at Pond 2 (MPDS 2) and Pond 7 (MPDS 4). If these are also potential discharge points to Otter Creek, please include them in the discussion. Please provide clarification whether these outfalls discharge directly to Otter Creek, or to an ephemeral tributary.

Response: Exhibit 314A – Protection of the Hydrologic Balance and related exhibits have been made consistent.

- Injection wells described in Exhibit 314A are not shown on Drainage Control Map 11. Please include the injection well on Map 11.

Response: Dewatering and injection wells are no longer proposed.

ARM 17.24.634: Due to missing CAD data, it is not possible to conduct a full review of the Reclamation of Drainage Basins, however, the proposed drainages do not appear to be consistent with the approximate original contour.

Response: Drainage basins have been revised based on revisions to the Map 12 – Post-Mining Topography. Please refer also to Exhibit 314D – Reclamation of Drainage Basins.

ARM 17.24.639: Exhibit 315A, Appendix A, page 2-2. "10-year, 24-hour sediment traps will be based on post-mining drainage acreage and configuration, SEDCAD modeling of runoff volume in a 30% bare and 70% vegetated soil condition, and three times the average annual sediment volume based on SEDCAD modeling of this condition unless otherwise noted." Per 17.24.639, the ponds must be designed for the worst-case scenario of drainage basin size and sediment runoff.

Response: Pond volumes submitted were preliminary based on general assumptions, pending approval of the PMT. Pond designs are contained in revised Exhibit 315A – Ponds and Embankments.

ARM 17.24.643(2): Due to the sensitivity of the setting in relation to Otter Creek, DEQ is seeking methods to minimize adverse effects on groundwater and surface water. One method to reduce the mineralization of spoil groundwater would be implementation of a plan for special handling of overburden identified as high in electrical conductivity (EC) to keep it out of the postmine zone of saturation. Pursuant to this rule as well as 17.24.313(1)(d)(i), 17.24.314(1)(a), 17.24.501(3)(a) and 17.24.631(3)(a), please propose handling methods for overburden high in electrical conductivity to keep the affected spoil above the postmine groundwater saturation zone.

Response: Overburden high in electrical conductivity is near the surface, probably as a result of leaching from the surface over time. These high EC strata are contained primarily in the pre-strip overburden, which will be placed over dragline spoils.

ARM 17.24.644: The highly trans missive and widespread clinker areas represent recharge areas. Please indicate the percentage of clinker that will be covered by soil, spoil, or ponds during mining and the postmining potential for permanent loss or diminution of recharge on a longer or permanent basis due to compaction of fine grained material over the more trans missive clinker.

Response: It is unclear what is meant by "percentage of the clinker;" that is, is it that within the permit area, within Tracts 1-3, or within the overall contiguous clinker deposit. OCC acknowledges that the clinker is porous and promotes recharge, but recharge is likely non-uniform with most recharge in low areas where runoff is concentrated. Because temporary overburden storage and soil storage are in upland areas, effects on overall recharge are likely to be imperceptible.

ARM 17.24.645: The application indicates that two batteries of wells (in the overburden, Knobloch Coal and underburden) will be installed on the Custer National Forest, east of the permit boundary. Please make sure that the underburden wells reach the productive sandstone layer used for local water supply and at least one of the underburden wells is located in or near the area where the greatest amount of drawdown in the Knobloch is anticipated.

Response: Comment noted.

Pursuant to 17.24.314(1)(a) and 17.24.645(1), OCC must commit to installation of monitoring wells in boxcut spoil at locations sufficient to monitor water quality across the length of the cut as soon as backfill is completed.

Response: Spoils monitoring wells to monitor the backfilled box cut are addressed in Exhibit 314B – Hydrologic Monitoring as revised.

ARM 17.24.645 & 646, Water Monitoring:

- In order to confirm surface and groundwater quality changes that may result in material damage, OCC must establish a paired ground water and surface water monitoring site at the same location along Otter Creek downstream of the confluence with Three Mile Creek.

Response: A surface water monitoring site (SW-25) has been installed inside the permit area downstream of Threemile Creek; an alluvial monitoring well (A8) was added at this site in 2014.

- **Exhibit 314B, Section 3.3.3, Surface Water Quality Sampling:** For surface water samples, all trace metals should be run for dissolved and total recoverable, as stated in the footnotes of Table 3-2.

Response: Comment noted.

- **Exhibit 314B, Table 3-2.** The following parameters must be added to the surface water monitoring plan as listed in the DEQ MQAP guidelines: hardness, total anions, total captions, action / anion balance, oil and grease, total per sulfate nitrogen, total

phosphorus, and total ammonia. Reporting values for the following analyses must be adjusted to meet DEQ-7 RRVs unless OCC specifically requests a deviation for their monitoring plan. DEQ acknowledges that some RRVs may not be able to be met by all laboratories. The reporting limits used by OCC appear to be from an earlier version of DEQ-7 and have not been updated to the 2012 DEQ-7.

Analyze	OCC RRV (mg/L)	DEQ-7 RRV (mg/L)
Aluminum	0.1	0.009
Arsenic	0.003	0.001
Barium	0.005	0.003
Beryllium	0.001	0.0008
Cadmium	0.00008	0.00003
Iron	0.05	0.02
Lead	0.0005	0.0003
Mercury	0.00005	0.000005
Nickel	0.01	0.002
Vanadium	0.1	0.01 *
Zinc	0.01	0.008

*Not in DEQ-7. Value from MQAP guidelines.

Response: The parameters have been added to Exhibit 314B revised, (Table 2-4).

- Exhibit 314B, Table 3-1. Please specify the frequency that sites will be visited for flow measurements and/or checks of the gauges. Sites should be visited at least monthly. Additionally, specify the frequency that passive samplers are checked. These should also be checked monthly and after a precipitation event. A sampling frequency of semi-annual is assumed to apply to grab sample collection. In the monitoring plan, the time of year scheduled for sampling should be stated. At intermittent and perennial sites, samples should be collected during a high flow and low flow condition. At ephemeral sites, samples should be collected during a spring snowmelt and summer storm condition. Finally, coordinates and channel bottom elevations should be listed in the table. See the templates in the MQAP guidelines for more details on the information that should be submitted.

Response: Exhibit 314B has been revised to per the comment and MDEQ's MQAP guidelines.

- Exhibit 314B, Table 3-2. "If insufficient water collected, the following analyses hierarchy should be adhered to: 1) Metals and physical parameters; 2) Non-Metals; 3) TDS, TSS, SC; 4) Nutrients and Turbidity." Note that while this statement may be followed as a sample analysis protocol, reporting of an incomplete analysis suite for a sampling may be interpreted by DEQ as a failure to follow the hydrologic monitoring plan. Notification of DEQ of a deviation from the monitoring plan, such as an incomplete sample, must be made as soon as a deviation is known. This language should be removed from the permit.

Response: This language refers to sample collection from passive surface water samplers, where OCC cannot control the volume of sample collected. This language is intended to direct field and laboratory staff as to which bottles to fill and analysis to run when there has not been sufficient sample collected in the sampler to run the whole suite of analyses. This language is important and must remain in place in Exhibit 314B. However, it has been modified to provide clarification that it is intended only for sample collection at passive samplers.

- Please submit the monitoring plan, SOP, and monitoring schedule in the format outlined in the MQAP guidelines. Once all of the information requested in the MQAP guidelines is presented, the MQAP and ARM 17.25.645 / 17.24.646 will be more thoroughly reviewed for technical adequacy.

Response: The monitoring plan has been revised to be consistent with the format in the MQAP guidelines.

- **Exhibit 314B, Table 4-2**: Please list the reporting limit and analytical method for each parameter. Use the reporting limits in the DEQ-7 and MQAP guidelines. The following parameters must be added to the groundwater monitoring plan as listed in the DEQ MQAP guidelines: field EC, field pH, field temperature, hardness, total anions, total captions, action/anion balance, SAR, and total ammonia.

Response: Exhibit 314B has been updated with reporting limits and analytical methods (Table 2-6).

ARM 17.24.726(1): Specific field and lab methods to be used for vegetation measurements are required. Section 8.0, Exhibit 313G, Revegetation Plan, states that standard field and lab methods will be used. Please include the plan of study contained in the SOP of the NOI in the application to address these methods.

Response: Specific methods for revegetation monitoring are included in Exhibit 313E – Revegetation Plan.

ARM 17.24.1005:

- Exhibit 313H, and 3.0 Abandonment of Exploration Wells: As exploration drill holes are not wells, please change the title of this section to "Abandonment of Exploration Holes."

Response: The title of Section 3.0 has been changed to "Abandonment of Exploration Holes."

- The proposed drill hole abandonment procedures (p. 3) do not conform with 17.24.1005(1)(c). The rule does not provide for abandonment based on the location of the drill hole in relation to advancing mining operations. As indicated in the application, Exhibit 308A, General Operations Plan, mining operations and plans are "affected by market fluctuations, shifts in mining areas necessary to maintain specific coal quality requirements, pit turns, and necessary operating changes identified by short range and long range planning." Therefore, abandonment of drill holes promptly after prospecting is completed according the requirements of the rule is required unless otherwise approved by the DEQ.

Response: Exhibit 313H has been revised to specify that any departure from the standard abandonment procedures will be proposed to MDEQ for approval as part of the drilling plan.

ARM 17.24.1131: Section ARM 17.24.318 references ARM 17.24.1131; however, there is no explanation of how OCC will comply with this rule. Please address the rule.

Response: Section ARM 17.24.318 has been revised to address ARM 17.24.1131.

General Comments:

- Although there is a cross reference table, please address all rules individually.

Response: All rules have been addressed individually in the permit compliance narratives. The cross-reference table is provided for convenience.

- The permit acreage breakdown is incorrect. The total acreage for the mineral is 7,639 and the total for the surface is 7,638. Please adjust the acreage to match.

Response: The permit acreage is 7,639 acres as noted on Map 8 – Mine Plan Map.

- DEQ has noted that OCC has changed the language of the rules throughout the application to lessen the commitment required by the rules. As a reminder, OCC will be held to the standards set forth in the ARM 17.24.XXXX first and foremost, before the commitments in the permit application.

Response: In some compliance statements, rule language is not repeated verbatim, but in no case is the effect a lessened commitment to comply with the rules, and most importantly, there has been no effort to lessen that commitment. If the department feels the language in response to any rule is not adequate, OCC would appreciate a comment noting the deficiency, as has been done in several instances in MDEQ's letter. OCC will then respond by changing the language to meet the department's requirements, or defending its position. An applicant for a permit cannot "change the language of the rules." OCC acknowledges and is fully aware that the standards set forth in the rules determine compliance or non-compliance.

We look forward to prompt review of this submittal; please contact me if there are any items requiring clarification or discussion.

Sincerely,

OTTER CREEK COAL, LLC

William M. Rowlands

William M. "Mike" Rowlands
Director, Otter Creek Operations
(406) 245-0990