



November 6, 2015

Sent via electronic mail

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P.O. Box 99
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Permit ID: C2011003F
Revision Type: N/A
Permitting Action: Deficiency
Subject: Third Round Acceptability Deficiency

Dear Dicki:

The Department of Environmental Quality (DEQ) has completed its acceptability review regarding Western Energy Company's (WECO) application for SMP C2011003F. The following deficiencies must be adequately addressed before DEQ can determine the application acceptable:

ARM 17.24.302(1): CAD data for figures and exhibits contained in Appendix B, Appendix I, Appendix J, and Appendix O were not submitted with this application. CAD data must be submitted for all figures and exhibits containing spatial information.

ARM 17.24.302(1): Phase I County Road Relocation must be shown correctly on all maps of the permit. All exhibits must match the Phase 1 County Road Relocation specifically in Section 19, Township 2 North, Range 39 East.

ARM 17.24.302(1): The locations of ramp roads F5, 6A, F9, F10 and F11 must be updated on Exhibit O Haul Road Design.

ARM 17.24.302(1): Appendix E contains appendices A through D. This causes confusion and creates a situation where information is no longer presented clearly and concisely. Please adjust this permit structure to no longer have appendices to an appendix.

ARM 17.24.304(1)(e): Baseline hydrologic data has not been submitted in a format suitable for review. WECO stated in the response letter that a copy of the Rosebud Mine water database was included in this submittal, but this database could not be located. Please include all baseline hydrologic data in spreadsheets, a database, and/or as raw data for DEQ review. This should include all surface water flow data (continuous, crest gauge, flow meter, staff gauge, etc.); spring/seep flow data; pond water level data; groundwater level data (manual measurements and continuous recorder data); stream, spring/seep, pond, and groundwater quality data (field measurements and laboratory data including results of field blanks and duplicates).

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ARM 17.24.304(1)(e): Appendix B, Section 5.2.4.1, discusses the results of aquifer testing conducted in Area F and the results are summarized in Table B-19; however, the data from the tests are not included. Please include all data from the aquifer tests performed on Area F wells in an attachment to Appendix B, including copies of field records and the input and output of the AQTESOLV analyses.

ARM 17.24.304(1)(e): Appendix B, Section 5.3, discusses changes to well designations for three wells. These wells are referenced by their old designations in other portions of the permit including: Exhibit H; Appendix I-A, Tables GM-1 and GM-2, and Attachment GM-A;

ARM 17.24.304(1)(e): In Appendix B, Section 5.3.2.2, the second paragraph on page 36 identifies two wells which have exhibited significant changes in TDS (WR-231 and WR-239), but only one (WR-231) is discussed. Please include a similar discussion of the origins/significance of the TDS changes observed in well WR-239.

ARM 17.24.304(1)(e): Appendix B, Section 5.3.1.3, attributes declines in water level at well WR-231 to drawdown resulting from Area C West; however, the groundwater model results presented in Appendix I-A, Figure GM-29 Page 1, indicate no mine related drawdown is expected at the location of WR-231. Please clarify this apparent contradiction.

ARM 17.24.304(1)(e): In Appendix B, Section 5.3.1.4, no explanation is given for the noted declines in water level at well WM-194. Section 5.3.1.5 also does not elaborate on noted water level variations in wells WD-188 and WD-210. Please include additional discussion of the potential origins and significance of the water level fluctuations noted as significant.

ARM 17.24.304(1)(e): Appendix B, Section 5.3.2.2, states the minimum specific conductivity measured in the McKay wells was non-detect. A non-detect value for specific conductivity is highly unlikely to be encountered in natural waters, and likely represents an error in sampling or analysis. Please review this data.

ARM 17.24.304(1)(e): In Appendix B, Section 5.3.2.2, the paragraphs on the McKay wells and sub-McKay wells discuss groundwater classification based on median and maximum values for all nine monitoring wells. Since groundwater classification is location specific, please revise these discussions to describe groundwater classes based on location (similar to the discussion regarding groundwater classification in the Rosebud coal paragraph).

ARM 17.24.304(1)(e): Appendix B, Sections 5.3.1.6, 5.3.2.5, and 5.3.2.6 contain significant discussions of the impacts of mining in Areas A, B, and C on the hydrologic balance which would be better included in the PHC (Appendix O) as they do not represent baseline conditions. Please limit the discussions in Appendix B to baseline conditions unaffected by coal mining disturbances.

ARM 17.24.304(1)(e): Baseline water quantity and quality data were not collected for all springs and seeps that were identified in the Spring Inventory in Appendix B, Section 6.1.1, Table B-31, and Figure B-32 that have the potential to be impacted by disturbance within Area F. For example, the spring inventory identified three springs in the McClure Creek drainage in Township 2 N, Range 38 E, Section 13 (WR 42KJ 108394 00, WR 42KJ 108673 00, 42KJ 108396 00) and the wetlands delineation in Attachment B-B noted two spring/seep fed wetlands in this area (Wetland C and F028). These springs/seeps/wetlands lie in the vicinity of the Rosebud coal crop line and will likely be impacted by mining; however, no water quantity or quality data have been collected to characterize these water resources. Please collect water quantity and quality data from all springs

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and seeps identified in the Spring Inventory and wetlands survey that have the potential to be impacted by Area F disturbance, both for the establishment of baseline conditions, and to assess the quality and quantity of water resources that support the premine land uses. Additionally, please begin quarterly sampling of the above mentioned water resources and provide the available data with the next submittal. This data collection will not restrict the continuation of the permitting process.

ARM 17.24.304(1)(e): Appendix B, Section 6.1.3, Table B-33, and Attachment B-L. DEQ understands not all spring/seep flows can be measured. However, quantitative measurements of spring flow down to flow rates of approximately 1/4 gpm are feasible for most springs and some diffuse seeps with minimal additional effort and equipment. Guidance regarding the field measurement of spring and seep flows can be found in the following references:

- Rantz, S.E. and others, 1982. Measurements and computation of streamflow: Volume 1. Measurement of Stage and Discharge. U.S. Geological Survey Water Supply Paper 2175 http://pubs.usgs.gov/wsp/wsp2175/pdf/WSP2175_vol1a.pdf
- Buchanan, T.J. and W.P. Somers, 1969. Techniques of water-resource investigations of the United States Geological Survey, discharge measurements at gauging stations. USGS Book 2, Chapter A8.

Methods from these references have been successfully used at another Montana coal mine. DEQ personnel are willing to assist WECO in the development of appropriate sampling protocols.

ARM 17.24.304(1)(e): No baseline data has been collected for pond 42KJ 8211 00, shown on Figure B-36 (actual location of this pond is approximately ¼ mile downstream of plotted location) and listed in Table B-40. This pond is located in the McClure Creek drainage approximately ½ mile downgradient from the permit boundary and could be impacted by mining. Ponds 42KJ 25022 00 and 42KJ 183501 00, located in the Trail Creek drainage are also downstream from mine disturbance. Please collect quarterly water quality and quantity data from these ponds to establish baseline conditions and provide the available data with the next submittal. This data collection will not restrict the continuation of the permitting process.

ARM 17.24.304(1)(e): In Appendix B, Table B-18, the end of the text is cut off for several entries in the "Source Name" and "User" columns. Please correct this formatting issue so that all text is visible.

ARM 17.24.304(1)(e): In Appendix B, Table B-22, numerous wells are assigned the "Associated Strata" of RCL (Rosebud Clinker), which DEQ believes should be RC (Rosebud Coal) for most of these wells. Additionally, wells WI-100 is assigned to sub-McKay, WD-101 is assigned to interburden, and WR-100 is assigned to overburden, all contrary to their well ID prefix. WR-227 and WS-114-B are not assigned a stratum. Please check the accuracy of the strata designations in Table B-22, and make corrections where necessary.

ARM 17.24.304(1)(e): The fourth line of the notes for Appendix B, Attachment B-E 1, contains incorrect dates. It appears the dates "5/20/15" should be "5/20/14" and "5/26/19" should be "5/26/14." Please review and correct errors as necessary.

ARM 17.24.304(1)(g): The coordinates shown on the log for boring F061308 in Appendix K, and the location this boring is shown on Exhibit Q1 are incorrect. The ground elevation and subsurface

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lithology presented on the log for this boring indicate a location likely nearer to the coal crop than given by the coordinates and map location. Please correct the location of boring F061308.

ARM 17.24.304(1)(i): There are now two wetland delineation reports included in Appendix E, one from 2009 and one from 2013. These have differing conclusions as to the potential jurisdictional nature of some of the wetland features and varied data presented. WECO states that the 2013 delineation supersedes the one conducted in 2009 in their deficiency response. Please include permit language to clarify that the 2013 wetlands delineation supersedes the 2009 report.

The 2013 report is also included in Appendix B – Hydrology. Having duplications of this material is not in keeping with ARM 17.24.302(1). Please locate wetlands delineations in only one location in the permit and ensure that all permit language accurately cites the correct location.

ARM 17.24.304(1)(i)(i): Map 1 is said to include a reference area for Woody Draw community types according to the results section of the Baseline Vegetation Survey. This reference area is not included on the map. Please update Map 1 to include this reference area if it has been established as stated.

This item has been addressed; however, the response does not meet the requirements of the rules. Since there is no documented reference area, there is no defined reclamation standard by which to measure against for phase III bond release. These standards need to be developed, or a reference area must be identified.

Appendix E:

p. 6: Site assessment forms and pictures for all of the sites visited should be included for baseline documentation. Currently only sites deemed to be a wetland by the consultant are included.

WECO's response indicates that since this was submitted as part of an annual report for an adjacent mine, and no issues were then noted, that they do not need to provide this information. This material should not have been submitted as part of that annual report and were therefore not evaluated at that time. Subsequently, a prior submittal does not preclude information from being submitted as part of the baseline evaluation. Please submit the site assessment forms and pictures for all sites evaluated as potential wetlands, not just those deemed to be wetlands by the consultant.

ARM 17.24.304(1)(j): DEQ acknowledges WECO's response to the round two deficiency comment: "Aquatic and vegetative assemblages in the spring-fed wetlands must be cataloged so that potential impacts to wildlife uses can be tracked with changes in postmine water quantity and quality. Appendix F notes that no aquatic species surveys were conducted, but the presence or absence of aquatic communities needs to be established. Please refer to DEQ's Water Quality Protection Bureau SOP WQPBWQM-009 (<http://www.deq.mt.gov/wqinfo/qaprogram/sops.mcp>) for acceptable procedures for conducting an aquatic life survey." DEQ retains this comment until submittal of the aquatic life survey results. Please include the results of the aquatic life survey in Appendix F when available. Discussion of the implications of these results should be included in Appendix B and Appendix O as appropriate.

ARM 17.24.305(2)(c), 308, 310(g), 313(1)(d)(iv), 319, 622: The following deficiencies were discovered once Exhibit A was made legible.

Phase II of the county road relocation does not appear to be feasible for the following two reasons. First, the mine sequence depicts mining both the Phase 2 road and the current county road location

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during the same years. The mine schedule must allow for complete mining and reclamation of the Phase 2 side of the road before disturbing the current county road. Secondly, the proposed Phase 2 route is inconsistent with the PMT plan currently under review: Exhibit P2 is not based on the proposed PMT and, when comparing the current PMT with the Phase 2 route, there are portions of the county road that would be steeper than 13%. These issues must be rectified.

The location of the relocated county road in Township 2 N, Range 39 E, Section 19 and 27 shown on Exhibit A (and Exhibits B, B1, D, I, and J) is different than that shown on Exhibit P1. Please ensure the location proposed for the relocated county road is consistent throughout the permit application.

The 230kv power line is a structure that needs to be protected from blasting damage and must be mentioned in 310(1)(g). While changing 310(1)(g), WECO may want to change the second paragraph of 310(1)(a) as this paragraph may be interpreted as limiting vibrations at the 230kv power line to 1 inch per second. Finally, this power transmission line is a structure in which the owner must be advised, in writing, how to request a pre-blast survey.

ARM 17.24.308(1)(a) and 313(1)(d)(i): The last paragraph on page 4 of Appendix J commits to casting boxcut spoil inward if clinker zones are encountered when using the dragline. This handling of spoil is also an ARM 17.24.313 spoil placement issue. This commitment to spoil inward must be added to the narrative on page 308-2 of the application.

ARM 17.24.312(1)(d): DEQ must have more specific commitments for reclamation of wetlands that may be directly or indirectly adversely affected by mining. Regardless of the US Army Corps of Engineers determination on jurisdiction, all wetlands impacted by mining must be mitigated and replaced. Please include a specific plan for wetlands replacement or mitigation in the reclamation plan.

ARM 17.24.313(1)(b): WECO's response to this deficiency was adequate; however, at least one reference to the "Approximate Reclamation Map", Exhibit J must be added to the narrative in Sub-Chapter 3. As Exhibit J defines the timing aspect of reclamation it would be most appropriate to add a reference to Exhibit J, (1)(b) of the Reclamation Plan. This reference must include an explanation of what is included in the approximate "Reclamation" time periods depicted on the exhibit (for example, time period represent areas graded, soiled and seeded) and the tie between Exhibits J and A.

ARM 17.24.313(1)(c): A bond calculation must be submitted. The applicant proposed submittal after the PMT is acceptable. Please provide the bond calculation once the PMT is acceptable.

ARM 17.24.313(1)(d)(iv) and 501(4): Exhibit B and B1 appear to present a postmine topography that meets the performance standards. As further proof of this, WECO must update Exhibit T (histogram from 2011) and add a slope aspect wire diagram or slope aspect histogram. It would be best to add the slope aspect information to Exhibit T or make an Exhibit T1. DEQ prefers the slope aspect "wire" diagram to a slope histogram.

ARM 17.24.313(1)(f): The drainage channel reclamation plan does not describe how the measurements of premine channels contained in Appendix J will be used in postmine drainage channel designs. The expected floodplain widths in Table 313-8 should contain a range of values based on the DEQ guideline values but adapted to site-specific conditions using the channel surveys provided in Appendix J. Use of a single floodplain width value in the permit has a tendency to result

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in excessively uniform stream channels in reclamation which do not reflect the inherent variability in natural systems.

ARM 17.24.313(1)(g)(ii) and (iii): The soil balance will be close and must be tightly managed. Some soil types are projected to have salvageable material beyond the typical 24 inch soil salvage. The soil survey Table 1 (Appendix G) designates a lift three material for these specific soil types. The Operator should salvage the lift three materials for use in reclamation. By retaining these additional suitable materials the subsoil volume could increase by around two million cubic yards.

Please incorporate the use of the lift three soils to help prevent a soil deficit in final reclamation. These lift three soils are part of the subsoil strata and can be stockpiled and managed with the subsoils lifts.

Appendix G

The Selenium discussion was updated with the response to round two comments. This new language is acceptable as an approach to investigate the validity of the initial selenium results. The new language explains some on the ground experience with plants and animals in current mine reclamation efforts. There is a discussion of possible data error in the lab results, and a useful explanation of how Wyoming's regulatory standard of 0.3 ppm was derived and why it could be applicable.

There is a plan to resample a portion of the soils from the original survey to verify that the former selenium data is valid or skewed in some way. Prior to permitting this validation will need to be conducted.

Appendix G; 3.3 Soil Laboratory Results

ARM 17.24.313(1): Please submit CAD data for Exhibit J-1 of Appendix J. Also, please submit raw field survey data for all surveyed cross-sections in Exhibit J-1 in MS Excel format.

ARM 17.24.314(1): The narrative in the 4th paragraph on page 6 of Appendix J describes traps on each side of ephemeral drainages to "collect runoff from road embankment". Pursuant to this regulation, the narrative must be "supported by appropriate maps". Please show all trap locations on the appropriate exhibits.

ARM 17.24.314(2)(a)and 639(28)(a): Water entering Pond 9 may be concentrated into a smaller area and at a greater velocity due to culvert HR-5. The application must indicate how the side slope of the pond will be protected against erosion.

ARM 17.24.314(2)(d): The monitoring plan presented in Appendix P (MQAP) is not adequate to meet the objectives present in Section 2.1. The monitoring plan must include monitoring stations to evaluate the impact of mining activity. These monitoring stations would be in addition to established baseline stations and informed by the mine plan, the hydrologic control plan, and the spatial distribution of potential pollutant sources and their pathways. For instance, monitoring the quantity and quality of water withheld in unlined sediment ponds and the alluvial conditions below sediment ponds, particularly when used to store or manage pit-pumped water, will inform evaluations of impacts from mining activity.

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A greater number of monitoring locations and higher frequency of monitoring in some locations is needed to demonstrate protection of the hydrologic balance and prevention of material damage. Please consider the following comments when revising the Monitoring and Quality Assurance Plan.

Section 2.2.1 Stream Monitoring Design: The current downstream monitoring sites are generally not located downstream of all mining impacts and there are no monitoring sites on McClure Creek or Trail Creek. In particular, the locations of SW-90 and CG-100 are upstream from the haul road. These sites should be relocated downstream and a monitoring site should be established on McClure Creek and Trail Creek near the permit boundary. There is currently only an upstream monitoring site on Donley Creek. Upstream monitoring sites should be established on Black Hank Creek and Robbie Creek. All downstream monitoring sites should have continuous monitoring for flow, monthly manual flow/field parameter measurements, and quarterly (event based) monitoring for quality. The new upstream sites should have crest gauges and be monitored monthly for flow/field parameters and quarterly (event based) for water quality.

Section 2.2.2 Spring Monitoring Design: The spring monitoring design should be more focused on springs with the potential for impacts. Springs located up gradient of the mine (Springs 1, 4, 5, and 6) can have a reduced monitoring frequency of quarterly flow/level/field parameters and annual water quality. As discussed in comments on ARM 17.24.304(1)(e) additional effort should be taken to provide more quantitative monitoring of spring flow. As also noted in ARM 17.24.304(1)(e) comments, additional springs with the potential for impacts were identified in the spring inventory and during the wetlands survey. These springs should be added to the monitoring plan. Water quality monitoring should be conducted for Spring 2 at the same frequency as the other down gradient springs. The commitment to increase the frequency of water quality monitoring when mining approaches a spring needs to be made more specific. For example, relate the increase in monitoring at Spring 2 to the start of the box cut for cut FC-1.

Section 2.2.3 Pond Monitoring Design: The ponds in the McClure and Trail creek drainages discussed in comments on ARM 17.24.304(1)(e) should be added to the monitoring plan. Ponds 1 and 6 are listed as inactive in Table 3, but Section 2.2.3 states these ponds are monitored for background. Please reconcile this inconsistency, and move Ponds 1 and 6 to Table A-1 if they are inactive.

Section 2.2.4 Groundwater Monitoring Design: Additional monitoring well locations will be necessary to provide an adequate impact assessment of groundwater quantity and quality. Approximately half of the current monitoring wells will be destroyed by mining and must be replaced by wells outside the disturbance footprint at least one year prior to their destruction. These wells include WD-191, WD-192, WD-193, WD-194, WM-196, WM-197, WM-198, and WM-199. A full battery of wells should be installed north of the mine in Township 2 N, Range 38 E, Section 12 to monitor impacts in this area. This battery of wells must be installed at least one year prior to initiation of mining in Section 12. Monitoring well WD-190 is unusable due to a pump stuck in the well. This well should be immediately repaired and included in the monitoring plan or abandoned and replaced. Additional alluvial monitoring wells should be installed in the Black Hank, Donley, and Robbie creek drainages to monitor for potential impacts from mine drawdown, sediment pond leakage, and MPDES discharges to these creeks. At least one additional well in Robbie and Black Hank creek drainages and two additional wells in the Donley Creek drainage likely are necessary for this purpose. These wells must be installed at least one year prior to disturbance in their respective drainages. Installation of all these additional wells sooner rather than later would improve the available baseline data for these wells prior to any potential impacts from mining. The frequency of monitoring at many wells must also be increased. All alluvial wells

should be monitored monthly for water levels and semi-annually for water quality. Bedrock wells located downgradient from the mine should be monitored for water quality annually.

Table 6 and Table 7: Reporting limits (RLs) given in the Department of Environmental Quality Circular DEQ-7 for several parameters have changed with a recent update of the circular. Please review RLs given in DEQ-7 and incorporate them into Tables 7 and 8. (i.e Oil and Grease, aluminum, cadmium, total phosphorus). Also, please change Electrical Conductivity to *Specific Conductivity* in both tables.

ARM 17.24.314(2)(d): In Appendix P (MQAP), Section 3.0, the monitoring methods are not described in sufficient detail.

Section 3.1 Surface Water Field Data and Water Quality Sample Collection comments:

- The make and model of any field instrumentation or water quality meters must be provided. The MQAP may simply cite manufacturer's methods for calibration and operation of field meters.
- Thermo Scientific Nalgene Storm Water Samplers are not approved by the DEQ for use in collection of water quality data. These methods must be replaced with acceptable ones.
- For those samples already collected using this method, the MQAP and permit data submittal must acknowledge that these Nalgene samplers were modified from the manufacturers recommended operation and sample collection protocol. I.e. sampler housing caps were filled with silicon caulk, 5-gallon buckets were placed over the sampler housing, and bottles and apparatus were reused after contents were transferred to separate bottles for lab analysis.
- Per MQAP guidance from the DEQ, Sample IDs must be unique identifiers. Using the Site Id with no additional identifiers does not generate a unique Sample ID. Section 3.1.3 must be modified to acknowledge unique Sample IDs.

Section 3.2 Surface Water Flow Measurement and Flow Calculation comments:

- Rating curves for each surface water station must be provided in Appendix C of the MQAP.
- Cite appropriate reference that describes protocol for manually measuring stream flow using a flow velocity meter.
- Appropriate methods to quantify spring flow must be used. See previous comment regarding the adequacy of spring flow quantification. See the following references to assist in developing and/or adopting a methodology to measure spring and seep flow:
 - Rantz, S.E. and others, 1982. Measurements and computation of streamflow: Volume 1. Measurement of Stage and Discharge. U.S. Geological Survey Water Supply Paper 2175. http://pubs.usgs.gov/wsp/wsp2175/pdf/WSP2175_vol1a.pdf
 - Buchanan, T.J. and W.P. Somers, 1969. Techniques of water-resource investigations of the United States Geological Survey, discharge measurements at gauging stations. USGS Book 2, Chapter A8.

Section 3.3 Groundwater Monitoring comments:

- Neither Section 3.3 nor the referenced 'Field Services Sampling Procedure' in Appendix D contains specific procedures for the collections of water level or quality data from monitoring wells. These procedures should be sufficiently detailed that a qualified third party could reasonably replicate the monitoring methods based on the MQAP alone. Procedures for water level measurements should describe what type of water level measurement devices are used, how water level measurements are taken, including what measuring point is used. Water quality sampling procedures should describe the types of equipment used for well purging, sample

collection, and field parameter measurements. The well purging procedures should include the requirements for purge rate, purge volumes, and field parameter stability as appropriate. The sample collection procedures should include descriptions of the equipment used for sample collection, how filtering of dissolved fraction samples is handled, and how sample bottles are filled.

- For both surface water and groundwater field monitoring methods and protocols, it is recommended that approved and documented methods (USGS, EPA, ASTM or other...) be used and incorporated by reference. Where deviations from these methods are proposed, it is recommended that WECO document any deviations from approved methods in the MQAP.

ARM 17.24.314(2)(d): Appendix P, Figure P-2 does not show the locations of monitoring wells WD-191 and WD-192. Please include these wells on Figure P-2.

ARM 17.24.314(3): The discussions of probable hydrologic consequences for surface water and groundwater users in Appendix O, Sections 3.1.3 and 3.2.3, remains too general. The PHC should analyze specific impacts to each water user identified in the inventories in Appendix B. This analysis should consider both water quantity and quality, and be quantitative whenever possible.

ARM 17.24.314(3): Appendix O, Section 4.1, only discusses probable hydrologic consequences to monitored springs. Numerous other springs were identified in the spring inventory in Appendix B, some of which could be affected by mining related impacts. Please include an analysis of the probable hydrologic consequences for all springs identified in the spring inventory in Appendix B. This analysis should include both water quantity and quality, and be quantitative whenever possible.

ARM 17.24.314(3): Appendix O, Figure O-3, is out of date. Please update this figure to show the current status of mining. Please also exclude proposed mining which has not been permitted from this figure.

ARM 17.24.314(3): Appendix O, Figure O-4, has many years of mining colored in nearly indistinguishable shades of green. These similar colors cause confusion as to the timing of mining, particularly from 2031 through 2034, where similar colors are assigned to adjacent years. Please use a color scheme with more unique colors (such as in Appendix I-B, Figure I-3) to clarify this figure.

ARM 17.24.314(3): Appendix O, Section 5.0, is pending a decision on alluvial valley floors. This section must be completed before final review of the PHC can be completed.

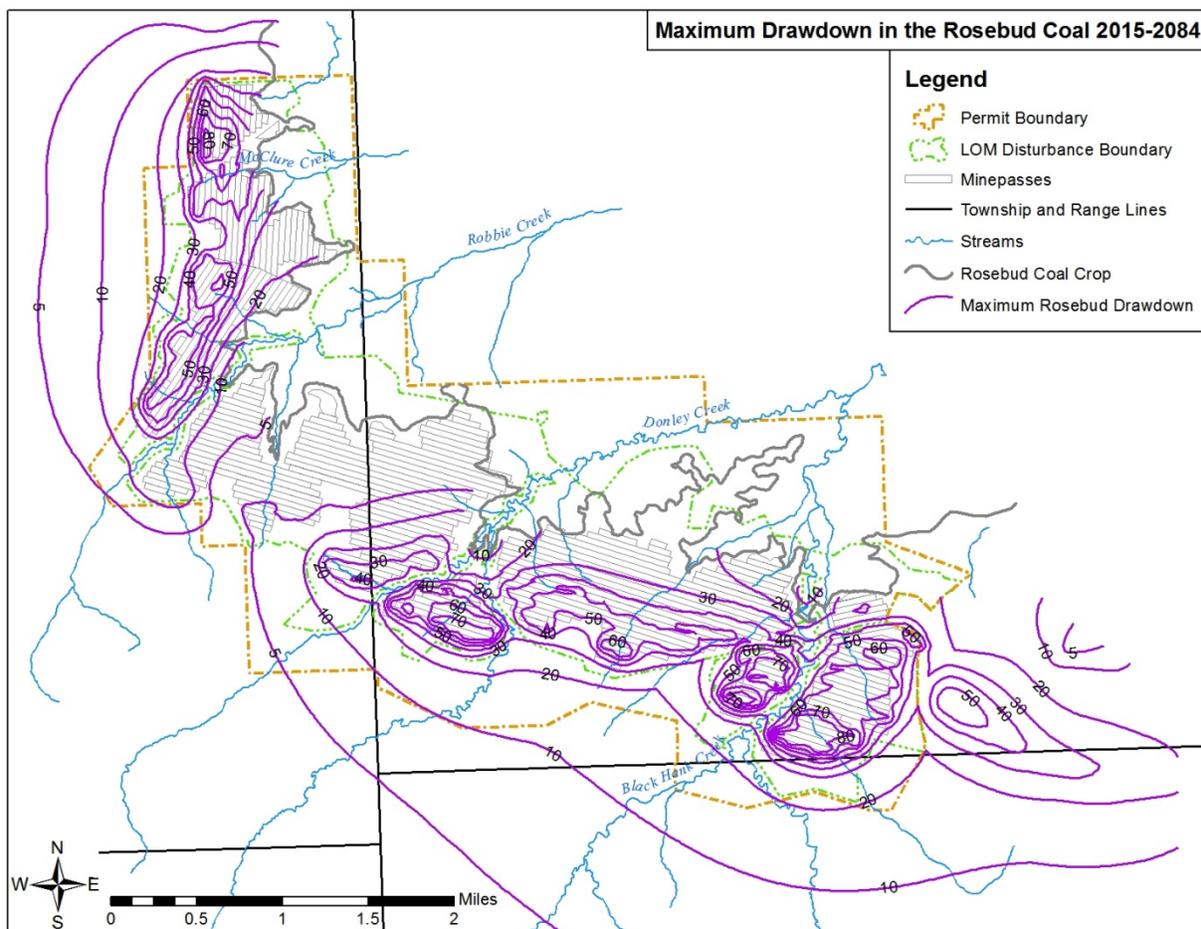
ARM 17.24.314(3): Appendix I-A and I-B: Please include copies of all MODFLOW input and output files for the calibrated steady state model and the transient mine dewatering and recovery models for DEQ review.

ARM 17.24.314(3): In Appendix I-A, Attachment GM-A, all targets derived from Big Sky Mine monitoring wells had their values estimated from hydrographs. The values for these targets would be more accurate using actual measured water levels. DEQ possesses the full record of water levels measured at the Big Sky Mine, and can provide this data upon request.

ARM 17.24.314(3): Appendix I-B, Section 2.3, states the maximum extent of the five foot drawdown in the Rosebud coal during mining contour occurs in 2034, as displayed in Figure I-5.

Section 2.4 describes expansion of the five foot drawdown contour postmining as displayed in Figure I-11. Neither of these figures captures the maximum extent and magnitude of drawdown due to mining. This same comment also applies to the McKay coal drawdown shown in Figures I-8 and I-12. Please consider including figures showing the maximum drawdown at any time. The maximum drawdown contours would also be useful to display in the PHC in Appendix O, Figure O-6A.

ARM 17.24.314(3): In reviewing the digital drawdown data (see map below) provided for the Area F model (Appendix I-B), DEQ noted that the model predicts no drawdown from the majority of mining conducted between Robbie and Donley Creeks. Additionally, the simulated mine discharges in Appendix I-B, Table I-2 and Table I-3, show little to no water being removed by the drains simulating the mine cuts during the period this area is being mined (2022-2026). It appears that the model is simulating a lack of water in the Rosebud coal in this area in the premine condition, but this cannot be verified without evaluating the model datasets. Water level monitoring at wells WR-236 and WR-237 show saturated thicknesses of approximately one to seven feet, but these wells are located near the coal crop and saturated thickness would be expected to increase away from the coal line. Please provide a detailed explanation for the lack of drawdown in this area.



ARM 17.24.314(3): Appendix I-B, Table I-4, shows much less predicted change in drain flux for Robbie Creek than for the other creeks. The lower value for Robbie Creek appears to be at least partially an artifact of the reach length measured, and the use of a percent change, and may not be indicative of lesser mine impacts. The Robbie Creek drain reach extends over four miles down

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gradient from the mine, while the Black Hank Creek and Donley Creek drain reaches extend less than two miles below the mine. Please use a drain reach for Robbie Creek which is similar in extent to the other two creeks. Please also include the actual drain flux numbers in addition to the percent change values in Table I-4.

ARM 17.24.315: Exhibit D and Table J-10 depict drainage areas greater than 10 acres of disturbance with only traps being used as final sediment control (Traps 4, 5, 12, 15, 18, 20) and Attachment J-A includes an explanation of standard trap designs. Appendix J, page 14 limits the use of traps, for final sediment control, to 10 acres of disturbance. The discrepancy on Page 14 of Appendix J must be addressed.

ARM 17.24.315(1): The application is missing a number of pond designs. Please submit designs for Ponds F-1, F-2, F-8, F-16, F-19, F-20, F-21, F-22 and F-23.

ARM 17.24.315(1)(a)(v): Western must populate Table J-9 in Appendix J with information on proposed ponds and other water impoundments. Pond design information has already been submitted in the "22 Pond Design" section of the application.

ARM 17.24.321(1)(a) and 605(2): The hydrologic control plan remains under review until the deficiencies in the PMT plan are resolved.

ARM 17.24.321(1)(c): As depicted on Exhibit O, the placement of culverts F-HR-2, F-HR-4, F-HR-8, and F-HR-14 indicate an alteration or relocation of the natural drainage way is needed. Any alteration or relocation of the natural drainage way must be approved prior to construction through the submittal of detailed plans. Detailed plans must, at a minimum, include a plan view of alterations, cross sections, complete hydraulic calculations for the altered channel, and erosion control if needed.

ARM 17.24.322(2)(a): The lithologic and geophysical logs for many boreholes, including several used to prepare the geologic cross-sections in Exhibits Q2 and Q3, were not included in Appendix K. Borings shown on Exhibit Q1 but not included in Appendix K are: F062405, F062406, F062407, F062408, F062410, F062411, F062413, F062414, F062502, F062503, F062801, F062802, F062901, F062902, F062903, F063001, F063002, F063003, F063004, F063006, F063101, F063201, F063202, F063203, F063301, F063302, F063303, F063304, F063305, F063306, F063307, F063308, F063309, F063310, and F063311. Please ensure the logs for all borings are included in Appendix K.

ARM 17.24.322(2)(b): Exhibit M shows coal in the east of the Rosebud coal crop in Township 2 N, Range 38 E, Section 12 in the category "coal not mined due to high stripping ratio." This area should be categorized as "coal not mined due to poor quality" similar to other areas beyond the coal crop.

ARM 17.24.325: Appendix Q, Alluvial Valley Floors, must not include interpretation of what constitutes an alluvial valley floor. An alluvial valley floor determination will be conducted by DEQ in accordance with ARM 17.24.325

ARM 17.24.325(2)(a): Alluvial Valley Floors: The materials submitted with Appendix Q are not adequate to make an AVF determination. ARM 17.24.325(2)(i-vi) specifies the type of information that must be submitted to the DEQ for AVF determination. Given the hydrogeologic setting of Area

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F, information required under ARM 17.24.325 may not require new data collection, but may be obtained through existing information sources (aerial photographs, NRCS, DNRC, etc).

ARM 17.24.325(2)(a)(i): While a general map of alluvial streamlaid deposits is presented in Appendix Q (Figure Q-1), the map is not of sufficient detail. Recent aerial photographs show that alluvial deposits are more extensive than those shown in Figure Q-1. Please provide a more detailed map showing the location of all alluvial streamlaid deposits, floodplains and terraces. Mapping of these features using existing aerial photographs would provide sufficiently detailed information to meet the intent of this rule.

ARM 17.24.325(2)(a)(ii): Aerial photos and land use maps indicate the presence of agriculture activities, however, no map of these activities is provided. Please provide a map of all lands in the area subject to agricultural activities, showing which different types of agricultural lands, such as flood irrigation lands, croplands, and undeveloped rangelands exist. Mapping of these features using existing aerial photographs and land-use maps would provide sufficiently detailed information to meet the intent of this rule. In addition to mapping of agricultural activity, the applicant must provide a description of the vegetation type and productivity associated with mapped agricultural lands and undeveloped rangelands.

ARM 17.24.325(2)(a)(iii): Please provide mapping of all lands that are currently or were historically flood irrigated, showing the location of each diversion structure, ditch, dam and related reservoir, irrigated land, and topography of those lands. If no flood irrigation is present, provide documentation that existing structures are not used for flood irrigation.

ARM 17.24.325(2)(a)(iv): Please provide documentation that areas are, or are not, subirrigated, based on alluvial monitoring data from an appropriate growing season period (May-September), and referring to specific alluvial wells and locations (Appendix Q only presents alluvial well levels from December 2012). Where appropriate, please provide representative water quality, soil and vegetation data.

ARM 17.24.325(2)(a)(v): Please provide documentation that areas identified are, or are not, flood irrigable based on representative sampling of streamflow water quality, water yield, soils measurements, and topographic characteristics.

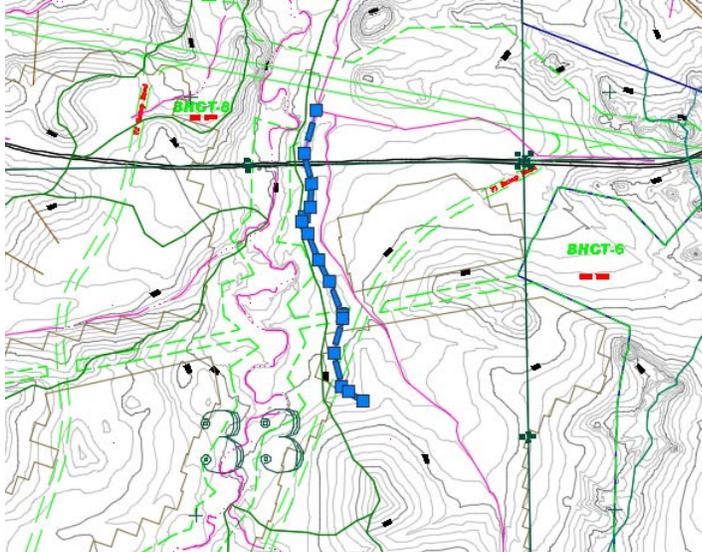
ARM 17.24.325(2)(a)(vi): Please provide analysis of a series of aerial photographs, including color infrared imagery from a time of year to show any late summer and fall differences between upland and valley floor vegetative growth.

ARM 17.24.602: Relocation of the county road in Township 2 N, Range 39 E, Section 19 creates additional disturbance immediately upgradient of Wetland E, Wetland F081, and Spring 2, and may cause unnecessary disturbance to the hydrologic balance. It appears the county road could be maintained in its current location with minimal changes to the mine plan. Please consider revising the mine plan to maintain the original county road alignment in Section 19.

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ARM 17.24.634(1)(i) The postmine stream channel that is highlighted below, located in Sections 28 and 33, should be deleted from Exhibit B, Post Mine Topography Map. This stream channel does not exhibit characteristics that will blend with the undisturbed drainage system below the area to be reclaimed.



Upon receipt of satisfactory responses to these deficiencies, DEQ will determine the application to be acceptable.

Please feel free to contact Robert D. Smith at 406-444-7444 with questions regarding this letter.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Chris Yde'.

Chris Yde, Supervisor
Coal and Uranium Program
Industrial and Energy Minerals Bureau
Phone: 406-444-4967
Fax: 406-444-4988
Email: CYde@mt.gov

C: Jeff Fleischman, Office of Surface Mining
Lauren Mitchell, Office of Surface Mining

FC: 620.170