

OTTER CREEK MINE
EXHIBIT 321A - TRANSPORTATION FACILITIES

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1.0 Introduction

This exhibit addresses the application requirements of ARM 17.24.321, Transportation Facilities Plan, and the performance standards of ARM 17.24.601, 602, 603, 605, 607, 608 and 610. A description of each road, conveyor, and railroad loop to be constructed, used, or maintained within the proposed permit area is provided below. The plans and drawings for the haul roads and rail loop described in this Exhibit have been prepared under the direction of and certified by a qualified licensed professional engineer with experience in the design and construction of such facilities.

Standard construction practices and specifications for embankment construction and slope stabilization are specified on the design drawings; therefore, a geotechnical analysis to support alternative specifications is not anticipated unless unforeseen conditions are encountered during construction that warrants such analysis. The transportation facilities design does not include the alteration or relocation of any natural drainage way and allows natural drainage ways to flow under embankments through culverts. No ditch relief culverts are currently proposed; however if utilized, inlets and outlets of ditch relief culverts will be protected using rock riprap or other standard Best Management Practices (BMPs) to maintain design flows and minimize erosion or scour. Mine Ramp roads and ancillary roads are designated on the Plates included in this Exhibit.

Roads will be reclaimed at the conclusion of mining and reclamation operations by removing fills and filling cuts to re-establish approximate original contour, removing surfacing materials, ripping the subgrade, replacing soil and revegetating to support the post-mining land use.

2.0 Road Plan

The overall road system is shown on Map 8 – Mine Plan; while the design layout and design specifications for the proposed Mine Access and Haul Roads is included on Plate 1 – Roads Plan View. Design profiles and sections are shown on Plate 2 – Road Profiles and Sections for each

designed road located outside of the mine area. The following Mine Access and Haul Roads are included:

- Main Access Road from Rail Loop/Silos/Loadout east across Highway 484 and Otter Creek to the mine area and facilities area.
- Main Haul Road from Main Access Road south across the Truck Dump/Conveyor loadout area to the Drainage Control Service Road.
- Drainage Control Service Road from the Main Access Road southeast to the termination of the Main Haul Road.

2.1 Main Access Road

The 2.2 mile long Main Access Road will be constructed as a 60-foot wide crowned road surface to connect the Rail Loop/Silos/Loadout area to the mine and mine facilities. The road layout, associated culverts, cut and fill slopes, and specifications are shown on Plate 1 – Roads Plan View. A typical cross-section of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road width, cross-sectional slopes, drainage ditches on both shoulders, and cut and fill slopes. The 60-foot wide Main Access Road surface is designed with a crown in the center and 2 percent cross sectional slopes towards the shoulders to promote drainage from the crown to drainage ditches located on both shoulders. The drainage ditches are designed as 3-foot deep trapezoidal ditches with a 4-foot wide bottom and 2(H):1(V) side slopes. The design parameters used to appropriately size the ditches for 10-year, 24-hour storm peak flows are included in Exhibit 315A – Drainage Design. The cut and fill slopes along the road are designed as 3(H):1(V). A profile of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road gradient, vertical geometry, existing ground surface, and culvert crossings. Culverts are necessary at two locations along the Main Access Road and are designated as CV-R2 and CV-OC and a culvert table is included on Plate 1 – Roads Plan View. The design parameters used to appropriately size the culverts for peak storm water runoff flows are included in Exhibit 315A – Drainage Design. Horizontal and vertical geometry for the road was designed using 2001 AASHTO design tables for a 50 mph design speed, making the designated (posted) speed limit on the Main Access Road no greater than 45 mph.

2.2 Main Haul Road

The main Haul Road as designed is a temporary road required for haulage of spoil from the initial box cut to the temporary overburden storage area. It will be in use for more than six months but less than one year. Because it is to be constructed in the footprint of the north box cut, it will be removed as the box cut is excavated and re-constructed to its permanent configuration with more gentle grades on backfilled spoil. As-built drawings for the main haul road will be submitted at the time of construction.

The 1.4 mile long Main Haul Road will be constructed as a 100-foot wide crowned road surface to connect the Main Access Road and mine facilities to the mine ramps, Truck Dump/Conveyor Loadout, and Drainage Control Service Road. The road layout, associated culverts, cut and fill slopes, and specifications are shown on Plate 1 – Roads Plan View. A typical cross-section of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road width, cross-sectional slopes, drainage ditches on both shoulders, and cut and fill slopes. The 100-foot wide Main Haul Road surface is designed with a crown in the center and 2 percent cross sectional slopes towards the shoulders to promote drainage from the crown to drainage ditches located on both shoulders. The drainage ditches are designed as 3-foot deep trapezoidal ditches with a 4-foot wide bottom and 2(H):1(V) side slopes. The design parameters used to appropriately size the ditches for 10-year, 24-hour storm peak flows are included in Exhibit 315A – Drainage Design. The cut slopes along the road are designed as 1.5(H):1(V) and the fill slopes along the road are designed as 3(H):1(V). A profile of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road gradient, vertical geometry, existing ground surface, and culvert crossings. Culverts are necessary at three locations along the Main Haul Road and are designated as

CV-1A, CV-2A, and CV-3A and a culvert table is included on Plate 1 – Roads Plan View. The design parameters used to appropriately size the culverts for peak storm water runoff flows are included in Exhibit 315A – Drainage Design. Horizontal and vertical geometry for the road was designed using 2001 AASHTO design tables for a 25 mph design speed, making the designated (posted) speed limit on the Main Haul Road no greater than 20 mph.

2.3 Drainage Control Service Road

The 2.6 mile long Drainage Control Service Road is an ancillary road to be constructed as a 32-foot wide crowned road surface to connect the Main Access Road to the Main Haul Road and convey surface water runoff along the edge of the mine boundary to five outfalls. Although service road design is not required under ARM 17.24.601, the design of this ancillary road has been included as part of the permit due to its close proximity to Otter Creek. The road layout, associated culverts, cut and fill slopes, and specifications are shown on Plate 1 – Roads Plan View. A typical cross-section of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road width, cross-sectional slopes, drainage ditches on both shoulders, and cut and fill slopes. The 32-foot wide Drainage Control Access Road surface is designed with a crown in the center and 2 percent cross sectional slopes towards the shoulders to promote drainage from the crown to drainage ditches located on both shoulders. The drainage ditches are designed as 3-foot deep triangular ditches with 2(H):1(V) side slopes. The design parameters used to appropriately size the ditches for 10-year, 24-hour storm peak flows are included in Exhibit 315A – Drainage Design. The cut and fill slopes along the road are designed as 3(H):1(V). A profile of the road is shown on Plate 2 – Road Profiles and Sections, detailing the road gradient, vertical geometry, existing ground surface, and culvert crossings. Culverts are necessary at five locations along the Drainage Control Service Road and are designated as CV-1B, CV-1, CV-2, CV-3, and CV-4 and a culvert table is included on Plate 1 – Roads Plan View. The design parameters used to appropriately size the culverts for peak storm water runoff flows are included in Exhibit 315A – Drainage Design. Horizontal and vertical geometry for the road was designed using 2001 AASHTO design tables for a 30 mph design speed, making the designated (posted) speed limit on the Drainage Control Service Road no greater than 25 mph.

2.4 Ramp Roads

Ramp roads connecting to the Main Haul Road will be constructed on backfilled spoil as the pit advances, and as-built drawings will be submitted to the Montana Department of Environmental Quality (MDEQ) as final elevations are achieved. Ramps will be designed to access the bottom of the pit at a grade no greater than 8 percent, and will top out on spoils to minimize reclamation delays and facilitate contemporaneous reclamation. In higher overburden areas there will be reclamation delays of one to three years associated with bringing ramps up to grade. Ramps will be constructed to route pit dewatering to excavated ponds constructed in spoils; please refer to

exhibit 315A – Ponds and Embankments for more detailed information regarding routing and management of surface runoff and pit pumpage.

Ramp 1 will access coal at the north end of the pit. This will be a “straight-in” ramp so the coal uncovered by the dragline can be accessed immediately; this design is facilitated by relatively low overburden along the south flank of Threemile Creek. Operationally, Ramp 1 ditches will provide drainage control for Threemile Creek tributaries –Drainages 11, 12, 13 and 14 – by diverting runoff to the pit or EP-10 until drainage is restored during the final reclamation phase.

Ramp 2 will be constructed in Drainage 5 and will form the drainage in the reclaimed topography. Ramp 2 will be constructed as a “spoil side” ramp such that the ramp will be constructed “straight in” to approximately the dragline bench elevation 150 feet above the coal, and then parallel to the pit along the side of dragline spoil. For Ramp 2, the spoil-side ramp will be on the north side to provide access to coal at approximately mid-pit. A second side ramp to the south may be employed if necessary to facilitate access to coal for blending or scheduling purposes.

Ramp 3 will be constructed in Drainage 7 in a manner similar to Ramp 2 with the spoil side ramp extending southward to access coal at or near the south pit end, with the option of an additional north side ramp.

3.0 Rail Loop

The rail loop is shown on Map 8 – Mine Plan. The Rail Loop will be constructed as a flat surface at elevation 3134 feet to load train cars with material delivered by the conveyor. A plan view showing the layout, associated culverts, cut and fill slopes, width, and cross-sections is included on Plate 3 – Rail Loop. The cut and fill slopes along the rail loop are designed as 2(H):1(V). Culverts are necessary at six locations along the Rail Loop and are designated as CV-R1, CV-R2, CV-R3, CV-R4, CV-R5, and CV-R6 and a culvert table is included on Plate 1 – Roads Plan View. The design parameters used to appropriately size the culverts for peak storm water runoff flows are included in Exhibit 315A – Drainage Design.

4.0 Conveyors

Conveyors are shown on Map 8 – Mine Plan, and Map 9 – Mine Facilities. There will be two overland conveyor runs from the Truck Dump along the Mine Haul Road to a transfer station and from the transfer station to the Secondary Crusher inside the rail loop. Overland conveyors will include a service road for construction and maintenance. Maps 8 and 9 show the general arrangement only; final designs will be submitted pending review and approval of the general facilities arrangement.

5.0 ARM 17.24.601 General Requirements for Road and Railroad Loop Construction

(1) Roads through permitted areas will not delay or prevent recontouring and revegetation on immediately adjacent spoils, unless otherwise approved by the department for documented and justified reasons related to the needs of the mining operation or improved reclamation.

(2) Access and haul roads will be graded, constructed, and maintained according to sound engineering and construction practices to incorporate appropriate limits for grade, width, surface material, surface-drainage control, culvert placement, and any other design criteria established by MDEQ.

(3) Cut slopes will not be more than 1v:1.5h in unconsolidated materials or 1v:0.25h in rock. The Road Construction Notes on Plate 1 – Road Plan View include this statement.

(4) Temporary erosion-control measures will be utilized as necessary during construction to control sedimentation and minimize erosion until permanent control measures can be established.

The Erosion Control Notes on Plate 1 – Road Plan View include the following statements:

1. Temporary and permanent erosion and sediment control best management practices (BMPs) shall be constructed in accordance with the "State of Montana Department of Transportation Erosion and Sediment Control Best Management Practices; Reference Manual, May 2004" (MDT, 2004).

2. Temporary erosion control measures shall be utilized as necessary during construction to control sedimentation and minimize erosion until permanent control measures can be established. Please refer to Table 3.1-1 for a list of temporary soil stabilization BMPs

and Table 3.2-1 for a list of temporary sediment control BMPs, located in the MDT Reference Manual (MDT, 2004).

The MDT Reference Manual (MDT, 2004) can be found online at the following address:
<http://www.mdt.mt.gov/research/projects/env/erosion.shtml>

(5) All cut and fill slopes will be resoiled and revegetated, or otherwise stabilized, at the first seasonal opportunity. The Erosion Control Notes on Plate 1 – Road Plan View include this statement.

(6) To the extent possible using the best technology currently available (BTCA) designated as BMPs, roads and railroad loops will not cause damage to fish, wildlife, and related environmental values and will not cause additional contributions of suspended solids to streamflow or to runoff outside the permit area or otherwise degrade the quantity or quality of surface or ground water.

(7) Roads and railroad loops will not be built with or surfaced with waste coal, or acid, acid-producing, toxic, or toxic-producing materials. The Road Construction Notes on Plate 1 – Road Plan View include this statement. The Mine Plan will use scoria for road surfacing of the Main Haul Road and Service Roads which is suitable for the anticipated volume, weight, and speed of traffic when proper maintenance is conducted. The Main Access Road will be surfaced with a select or top surfacing aggregate which is suitable for the anticipated volume, weight, and speed of traffic and will require much less maintenance than scoria.

(8) Following construction or reconstruction of each haul road, access road, and railroad loop, Otter Creek Coal, LLC (OCC) will submit to the department a report, prepared by a qualified licensed professional engineer experienced in the design and construction of roads or railroad loops, as applicable, stating that the road or railroad loop was constructed or reconstructed in accordance with the plan approved pursuant to ARM 17.24.321. The Road Construction Notes on Plate 1 – Road Plan View include this statement pertinent to Road construction.

(9) Application of water as necessary during active use and periodic application of dust control agent will be employed to prevent loss of road surface material in the form of dust. Lignin sulfonate or an acceptable alternative will be used for externally draining roads which includes

the access roads and the drainage control service road. On internally drained roads, dust control may employ lignin sulfonate, magnesium chloride or an acceptable alternative.

(10) Immediately upon abandonment of any road or railroad loop, the area will be reclaimed in accordance with the approved reclamation plan. If necessary, embankment and fill materials will be hauled away and disposed of properly. All bridges and culverts will be removed and natural drainage patterns restored. Adequate measures will be taken to prevent erosion through the use of BMPs.

(11) Upon completion of mining and reclamation activities, each road and railroad loop will be reclaimed unless retention of the road or railroad loop is part of the approved post-mining land use pursuant to ARM 17.24.762 and the landowner requests in writing and the department concurs that the road, railroad loop, or specified portion(s) thereof be retained. In such event, necessary maintenance will be assured by OCC or the landowner and drainage of the road or railroad loop will be controlled according to the provisions of ARM 17.24.601 through 17.24.610 while the road or railroad loop is under permit.

6.0 ARM 17.24.602 Location of Roads and Railroad Loops

(1) The location of a proposed road or railroad loop will be identified on the site by visible markings prior to the commencement of construction. The Road Construction Notes on Plate 1 – Road Plan View include this statement pertinent to Road construction. Construction will not proceed along dry coulees, or intermittent or perennial drainage ways unless it is demonstrated that no off-site sedimentation will result and all the requirements of this subchapter are met, or in wet, boggy, steep, or unstable areas.

(2) All roads, insofar as possible, will be located on ridges or on the available flatter and more stable slopes to minimize erosion. Stream fords will not be utilized, except for temporary routes across dry, ephemeral streams that are specifically approved by the department. Other stream crossings will be made using bridges, culverts or other structures designed and constructed to meet the requirements of this section. Roads will not be located in stream channels or be constructed or maintained in a manner that increases erosion or causes significant sedimentation or flooding.

7.0 ARM 17.24.603 Road and Railroad Loop Embankments

(1) After soil is salvaged from embankment areas pursuant to ARM 17.24.701 through 17.24.703, all organic material will be removed from the embankment foundation to increase stability. The Road Construction Notes on Plate 1 – Road Plan View include this statement pertinent to Road construction.

(2) All material used in embankments will be suitable for the intended use. The material will be free of organic matter, coaly or carbonaceous material, wet or frozen materials, and any other material considered unsuitable by the department for use in embankment construction. The Road Construction Notes on Plate 1 – Road Plan View include this statement pertinent to Road construction.

(3) Embankment layers will be compacted as necessary to ensure that the embankment is adequate to support the anticipated volume, weight, and speed of vehicles to be used. The Road Construction Notes on Plate 1 – Road Plan View include this statement pertinent to Road embankment construction.

(4) Road and railroad loop embankments will have a minimum static safety factor of 1.3 under any condition of loading likely to occur, or such higher factor as the department determines to be reasonably necessary for safety or protection of property.

(5) Any embankment that impounds water as part of the sediment control plan will be designed and constructed in accordance with ARM 17.24.639.

8.0 ARM 17.24.605 Hydrologic Impact of Roads and Railroad Loops

(1) Access and haul roads and railroad loops and associated bridges, culverts, ditches, and road rights-of-way will be constructed, maintained, and reclaimed to prevent additional contributions of suspended solids to stream flow, diversions, or to runoff outside the permit area to the extent possible, using the BTCA.

(2) Drainage ditches will be placed at the toe of all cut slopes formed by the construction of roads. Drainage structures will be constructed to cross a stream channel and will not affect the flow or sediment load of the stream unless otherwise approved by the department in writing for a site-specific situation.

(3) Railroad loops and all roads except ramp roads will be adequately drained using structures such as, but not limited to, ditches, water barriers, cross-drains, ditch-relief drainages, culverts, and bridges.

(4) For railroad loops and for roads that are to be maintained for more than six months and for all roads used to haul coal or spoil (excluding ramp roads) or to be retained for the post-mining land use, water-control structures will be designed with a discharge capacity capable of safely passing the peak runoff from a 10-year, 24-hour precipitation event or greater event as specified by the department.

(5) Bridges with a span of 30 feet or less will be designed to safely pass a 25-year, 24-hour precipitation event. All other bridges will be designed to safely pass the 100-year, 24-hour precipitation event or greater event as specified by the department.

(6) Drainage pipes and culverts will be constructed to avoid plugging or collapse and erosion at inlets and outlets. Culverts will be designed, constructed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles to be used.

(7) Natural channel drainage ways will not be altered or relocated for road or railroad loop construction or reconstruction without the prior approval of the department in accordance with this subsection and ARM 17.24.635 through 17.24.637.

(8) Drainage structures will be utilized for stream channel crossings. Drainage structures will not affect the normal flow or gradient of the stream or adversely affect fish migration and aquatic habitat or related environmental values. Riprap may be used for roads where an ephemeral channel is too shallow for placement of a culvert.

(9) Vegetation will not be cleared for more than the width necessary for road, railroad loop, and associated ditch construction, to serve traffic needs, and for utilities.

9.0 ARM 17.24.607 Maintenance of Roads and Railroad Loops

(1) All roads will be routinely maintained by means such as, but not limited to, wetting, scraping or surfacing, and replacement of paving materials, such that the required design standards of the roads are met throughout the life of the operation.

(2) Ditches, culverts, drains, trash racks, debris basins and other structures serving to drain roads and railroad loops will not be restricted or blocked in any manner that impedes drainage or adversely affects the intended purpose of the structure unless the department determines that:

- (a) OCC cannot maintain structures indicated in (2) above due to wet field conditions;
 - (b) Obstructions to these structures will not result in environmental damage or imminent harm to the health and safety of the public; and
 - (c) Runoff and sediment are contained in accordance with the approved drainage control plan.
- (3) Roads and railroad loops severely damaged by events such as floods, earthquakes, or equipment damage will be reconstructed or reclaimed as soon as practicable after the damage has occurred.

10.0 ARM 17.24.608 Impacts of Other Transport Facilities

Other transportation facilities within the area of land affected, including railroad spurs, sidings, surface conveyor systems, chutes, aerial tramways, pipelines, power lines, and other transport facilities will be designed, constructed, reconstructed, maintained, and reclaimed to:

- (1) control and minimize diminution or degradation of water quality and quantity;
 - (2) control and minimize air pollution;
 - (3) prevent damage to public and private property; and
 - (4) prevent, to the extent possible using the BTCA:
 - (a) damage to fish, wildlife, and related environmental values; and
 - (b) additional contributions of suspended solids to streamflow or runoff outside the permit area.
- Any such contributions will not be in excess of limitations of state or federal law.

11.0 ARM 17.24.610 Permanent Roads

- (1) Permanent roads approved as a part of the post-mining land use will be designed and built to minimize maintenance needs and to provide maximum control of erosion through ditching, seeding, and other appropriate measures approved by the department.