MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

Permit Fact Sheet

Permittee: Big Sky Coal Company
State Highway 39 South
Colstrip MT 59323

County: Rosebud

Permit No.: MT0000884

Receiving Waters: Lee, Emile, Miller, and Hay Coulees

Facility Information:

Name: Big Sky Mine

Mailing Address: Peabody Investments Corporation
701 Market Street
St. Louis, MO 63101

Contact: Bryce West, Vice President Environmental – America

Fee Information:

Type: Privately Owned Treatment Works – Minor Surface Coal Mine (SIC 1221)

Number of Outfalls: 1 (for fee determination only)
Group A (Western Alkaline Standards) – All Outfalls

I. BACKGROUND

This Fact Sheet identifies the legal requirements and technical rationale that serve as the basis for the requirements of this Permit. The Permit and Fact Sheet have been prepared using a standardized format that accommodates a broad range of discharge requirements for dischargers in Montana.

A. Permit and Application Information

The Facility is currently regulated by Montana Department of Environmental Quality (DEQ) Permit No. MT0000884 which became effective on July 1, 2011, was modified on December 6, 2013, and expires on June 30, 2016. The Permittee submitted an application for renewal of its Montana Pollutant Discharge Elimination System (MPDES) Permit dated January 21, 2016; the application was determined to be complete on February 1, 2016.

1. Fee Determination

The Montana Water Quality Act (MWQA) requires that permit fees be assessed that are sufficient to cover the cost administering the permit program (75-5-516, Montana Code Annotated, MCA). Permit fees are based on the type of waste (sewage, process wastewater, storm water, noncontact cooling water, etc.) and number of receiving waters or stream segments. This analysis is based on Administrative Rules of Montana (ARM) 17.30.201(6)(a) which states an application and annual fee for multiple outfalls is not required unless the discharges are to different receiving waters and result in multiple or variable effluent limits. Based on this analysis, there is one category of outfalls for fee purposes. Table 1 identifies, individually or by group, the type of wastewater and receiving water by outfall for which effluent limits will be required.

Table 1. Summary Outfall Categories for Fee Purposes

Group	Effluent Description	Receiving Water Drainage	Outfalls
A	Treated storm water from reclaimed mine areas	Lee, Emile, Miller, and Hay Coulees	All

B. Description of Facility, Discharge Point(s), and Mixing Zone(s)

1. Description and Location of Facility

Big Sky Coal Company (hereinafter Permittee) is the owner and operator of the Big Sky Mine (hereinafter Facility), a reclaimed surface coal mine. Table 2 summarizes general information related to the Facility.

For the purposes of this Permit, references to the “discharger” or “permittee” in applicable Federal and State laws, regulations, policy, plans, or implementation procedures are held to be equivalent to references to the Permittee in this Permit.

The Big Sky Mine is a former surface coal mine located approximately six miles south of Colstrip, MT, on Highway 39. The Big Sky complex is comprised of two mine areas: Area A (1719 acres) and Area B (5472 acres). Mining commenced in Area A of the

Table 2. Facility Information

Permittee	Big Sky Coal Company
Name of Facility	Big Sky Mine
Facility Address	State Highway 39 South
	Colstrip MT 59323
	Rosebud County
Facility Contact and Title	Bryce West, Vice President Environmental – America
Mailing Address	Peabody Investments Corporation 701 Market Street St. Louis, MO 63101
Billing Address	SAME
Type of Facility	Industrial (SIC 1221)
Major or Minor Facility	Minor
Pretreatment Program	N/A
Number of Outfalls	21
Receiving Waters	Lee, Emile, Miller and Hay, Coulees

Facility in 1979, and expanded into Area B in 1989. Mining in Area A was completed in 1989, and mining in Area B was completed in 2004. All of Areas A and B have been reclaimed under the requirements of Surface Mine Permits (SMPs) C1983004CR and C1988004B and are in various stages of the four-phase process leading to final reclamation bond release.

2. Discharge Points and Mixing Zone

The Facility discharges storm water to Lee, Emile, Miller, and Hay Coulees, which are tributaries to Rosebud Creek. All are considered waters of the State. The Rosebud Creek drainage basin is part of the Rosebud Hydrologic Unit (HUC 10100003). Table 3 provides a description of the discharge points for each outfall. Outfall numbers and locations remain unchanged from the previous Permit.

Table 3. Description of Discharge Points

Outfall	Mine Area	Latitude	Longitude	Description	Receiving Water
001	A	45º 48 ’44” N	106 º35 ’42” W	Reclaimed mine area; Treated storm water	Miller Coulee
002	A	45º 49’ 45” N	106 º36’ 01” W	Reclaimed mine area; Treated storm water	Emile Coulee
003	A	45º 49’46” N	106 º35’ 32” W	Reclaimed mine area; Treated storm water	Emile Coulee
005	A	45º 49’ 34” N	106º 34’ 32” W	Reclaimed mine area; Treated storm water	Emile Coulee
006	A	45º 49’ 03” N	106º 35’ 53” W	Reclaimed mine area; Treated storm water	Emile Coulee
007	B	45º 48’ 06” N	106º 36’ 37” W	Reclaimed mine area; Treated storm water	Lee Coulee
008	B	45º 48’ 03” N	106º 39’ 20” W	Reclaimed mine area; Treated storm water	Lee Coulee
009	B	45º 48’ 09” N	106º 39’ 29” W	Reclaimed mine area; Treated storm water	Lee Coulee

Outfall	Mine Area	Latitude	Longitude	Description	Receiving Water
010	B	45º 48’ 16” N	106º 40’ 04” W	Reclaimed mine area; Treated storm water	Lee Coulee
011	B	45º 48’ 23” N	106º 40’ 08” W	Reclaimed mine area; Treated storm water	Lee Coulee
012	B	45º 48’ 33” N	106º 40’ 39” W	Reclaimed mine area; Treated storm water	Lee Coulee
013	B	45º 48’ 07” N	106º 40’ 25” W	Reclaimed mine area; Treated storm water	Lee Coulee
014	B	45º 48’ 03” N	106º 40’ 00” W	Reclaimed mine area; Treated storm water	Lee Coulee
015	B	45º 48’ 02” N	106º 40’ 01” W	Reclaimed mine area; Treated storm water	Lee Coulee
016	B	45º 47’ 52” N	106º 39’ 04” W	Reclaimed mine area; Treated storm water	Lee Coulee
017	B	45º 47’ 53” N	106º 38’ 41” W	Reclaimed mine area; Treated storm water	Lee Coulee
018	B	45º 48’ 36” N	106º 40’ 43” W	Reclaimed mine area; Treated storm water	Lee Coulee
019	A	45º 50’ 01” N	106º 34’ 26” W	Reclaimed mine area; Treated storm water	Hay Coulee
020	B	45º 48’ 06” N	106º 40’ 28” W	Reclaimed mine area; Treated storm water	Lee Coulee
021	B	45º 48’ 38” N	106º 41’ 17” W	Reclaimed mine area; Treated storm water	Lee Coulee
022	B	45° 48’53” N	106° 41’28” W	Reclaimed mine area; Treated storm water	Lee Coulee

3. Wastewater Treatment or Controls

All outfalls were originally associated with a sediment pond designed to contain mine drainage and runoff from rainfall or snowmelt events. During the term of the previous Permit, outfall reclamation advanced significantly, including the following:

- The pond embankments associated with Outfalls 002, 007, 008, 009, 010, 011, 013, 014, 015, 016, 017, 018, 020, and 021 were removed and reclaimed;
- The ponds associated with Outfalls 001, 006, 012, 019, and 022 remained in place and were altered somewhat to serve as stock ponds, vegetated depressions, or permanent impoundments; and
- Portions of the embankments at Outfalls 003 and 005 were modified as approved by SMP C1983004CR to remain in place.

4. Summary of Existing Permit Requirements and Effluent Quality Data

During the term of the previous Permit (July 1, 2011 through present), no discharges occurred. From July 1, 2011, to December 6, 2013, Outfall 006 was the only outfall with numeric effluent limitations and monitoring requirements (Table 4). Effluent limitations applicable to the remaining 20 outfalls consist of an approved Sediment Control Plan as described in Section II.A.1, below. Upon completion of reclamation in the Outfall 006

drainage, the numeric effluent limitations in Table 4 were replaced by an approved Sediment Control Plan per a December 6, 2013, major Permit modification.

Table 4. Effluent Limitations and Monitoring Requirements for Outfall 006 (Applicable July 1, 2011, through December 6, 2013).

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
Flow	mgd	Report only	
Settleable solids(1)	ml/L	--	0.5
pH	s.u.	Between 6.0 and 9.0 at all times	
Oil and grease	mg/L	--	10
Electrical conductivity	µS/cm	500	500
Sodium adsorption ratio(2)	n/a	3.0	4.5
Sodium adsorption ratio(3)	n/a	5.0	7.5

Footnotes:
(1) Not applicable to discharges caused by precipitation or snow melt within any 24-hour period greater than the 10-year, 24-hour precipitation event size of 2.4 inches.
(2) Applicable March 2 through October 31.
(3) Applicable November 1 through March 1.

5. Compliance Summary

One compliance inspection was conducted during the term of the previous Permit on March 29, 2012. The Facility was found to be in compliance with MPDES Permit requirements and no violations were issued.

II. RATIONALE FOR PERMIT CONDITIONS

A. Rationale for Effluent Limitations

The Clean Water Act (CWA) and the MWQA require point source dischargers to control the amount of pollutants discharged into State waters. MPDES permits establish effluent limitations and other requirements to control the discharge of pollutants. There are two principal bases for effluent limitations: technology-based effluent limitations (TBELs) that attain technology-based standards and limitations found in the regulations and water quality-based effluent limitations (WQBELs) that attain and maintain applicable numeric and narrative WQS within Montana's WQS. TBELs are based on implementing available technologies to reduce or treat pollutants while WQBELs are designed to protect designated uses of receiving water. Federal regulation at 40 CFR 122.44 [incorporated into ARM 17.30.1344(2)(b) by reference] requires that MPDES permits include conditions that meet all applicable technology-based standards and limitations necessary to meet applicable WQS.

1. Technology-based Effluent Limitations (TBELs)

TBELs are based on Federal or State technology-based standards and reflect a minimum level of treatment or control for point source discharges. The performance of currently available treatment and control technologies guide the development of these standards.

The United States Environmental Protection Agency (EPA) has established effluent guidelines for the coal mining industry at 40 CFR Part 434, *Effluent Limitations Guidelines for the Coal Mining Point Source Category*. Subpart H – Western Alkaline Coal Mining (Subpart H) is applicable to discharges from all outfalls at the Big Sky Mine and has been used to determine TBELs in this Permit.

All outfalls at the Facility meet the definition of Subpart H, which applies to "alkaline mine drainage at western coal mining operations from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas" (40 CFR 434.81). In accordance with the requirements established by Subpart H, the Permittee submitted a Sediment Control Plan (SCP) for each outfall at the Facility. Included in the SCP are best management practices (BMPs) implemented by the Permittee to control sediment and erosion and to minimize disturbance to the prevailing hydrologic balance. The SCP also summarizes design and construction specifications, inspection criteria, and maintenance schedules. The Permittee submitted these materials to DEQ for Outfalls 001-005 and 007-022 in a letter and attachments on November 9, 2009. SCP information for Outfall 006 was submitted to DEQ on May 8, 2013, as part of a major Permit modification.

The sediment yield demonstration included in the SCP was conducted using the SEDCAD 4 (SEDCAD) computer model (Civil Software Design, 1998), an updated version of the same watershed model that was used to obtain the mine's surface mining permits. SEDCAD is a hydrology and sedimentology model developed to design storm water, erosion and sediment control systems. It is widely used in coal mining by both industry and regulatory agencies. Results of the modeling demonstrations conducted for the SCP are provided in Appendix 1 of the SCP (BSCC, 2009b, 2009c, and 2013).

The SCP demonstrates that the average annual sediment yields for the postmining, or reclaimed mine-land condition are less than or equal to the average annual sediment yields for the premining, or undisturbed conditions. The average annual sediment yields are summarized in Table 5.

In accordance with 40 CFR Part 434.82, the Permittee has prepared watershed demonstrations that show the BMPs implemented at the mine have resulted in average annual sediment yields from the postmining, or reclaimed landscape that are less than or equal to the average annual sediment yields from the premining, or undisturbed landscape.

Runoff and sediment transport modeling output files (SEDCAD) for the various storm events under both premining and postmining conditions for all outfalls are presented in Appendix 1 of the SCP (BSCC, 2009b, 2009c, and 2013).

Table 5. Summary of Average Annual Sediment Yields for Big Sky Mine Outfalls

Outfall	Watershed Area (acres)		Premine Sediment Yields (tons/acre)	Postmine Sediment Yields (tons/acre)
	Premine	Postmine		
001(1)	1595.4	1619.5	0.523	0.521
002	1073.6	1072.8	0.719	0.131
003	134.5	133.8	0.377	0.090
005(2)	227.6	241.5	0.244	0.004
006	11.3	12.5	0.168	0.165
007	1328.3	1359.6	0.050	0.043
008	40.8	35.8	0.119	0.016
009	67.8	71.4	0.108	0.021
010	37.7	46.8	0.206	0.121
011	106.8	85.1	0.253	0.070
012	590.0	615.1	0.115	0.007
013(3)	636.7	312.1	0.371	0.276
014(3)	636.7	181.5	0.371	0.042
015	16.7	16.7	0.103	0.007
016	41.9	35.8	0.175	0.014
017	519.5	522.4	0.033	0.027
018	40.1	39.2	0.056	0.004
020	1573.9	1575.3	0.077	0.070
021	17.2	20.7	0.122	0.007
022	6331.6	6331.2	0.160	0.058

Footnotes:
(1) Values represent areas and average sediment yields above Pond I-4 in Miller Coulee
(2) The watershed area for Outfall 019 (I-ST-3) was included in the watershed area modeled for both premining and postmining conditions for Outfall 005 (Pond I-29)
(3) The premining watershed area for both Outfalls 013 and 014 was modeled as one watershed due to the premining drainage system

a. SEDCAD Hydrologic Calculations.

SEDCAD was used to evaluate runoff and sediment yield from a series of design storms having recurrence intervals of 2, 5, 10, 25, 50, and 100 years. Hydrographs were developed on a subwatershed basis with the input of area, time of concentration, curve number and the unit hydrograph shape. Routing of hydrographs was accomplished by Muskingum's Method.

Storm Type and Precipitation

The Natural Resource Conservation Service (NRCS) Type II storm distribution was input as an estimation of area storms. NRCS storm distributions are considered very conservative – i.e., peak flow predictions based on these distributions will be higher than most actual measured storms (Warner et. al., 1998). The 24-hour storm durations were used to evaluate runoff and sediment yield from the entire watersheds above the sediment ponds.

Site specific rainfall data collected by the Permittee were used for the 10 and 25-year, 24-hour storm event rainfall amounts. Precipitation amounts for the 2, 5, 10, 25, 50, and 100-year, 24-hour recurrence intervals were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas, Volume III – Montana (Miller et al., 1973). Rainfall amounts used as model inputs were:

2-year, 24-hour event = 1.4 inches
5-year, 24-hour event = 2.0 inches
10-year, 24-hour event = 2.4 inches
25-year, 24-hour event = 2.9 inches
50-year, 24-hour event = 3.2 inches
100-year, 24-hour event = 3.8 inches

NRCS Curve Number

The NRCS curve number is used to calculate runoff. The value is a function of land use condition and hydrologic soil group. The land use condition is a function of being "undisturbed" or "disturbed" vegetation type and vegetation cover condition (e.g., poor, fair and good, qualitative assessments that are based on percent ground cover). The hydrologic soil group (HSG) is based on a soil series infiltration rate where soil series are classified into one of four hydrologic soil groups (A, B, C and D). An "A" HSG is a soil with high infiltration and low runoff potential; a "D" HSG is a soil with low infiltration and high runoff potential.

Vegetation type information and cover condition values for undisturbed areas are based on baseline vegetation studies presented in Tab 9, Vegetation, of the Area B Permit Application Package (PAP) (Volume 7) and available baseline vegetation studies conducted near Area A. Vegetation information for the reclaimed areas is based on recent re-vegetation monitoring and studies documented in Annual Revegetation Monitoring Reports.

The hydrologic soil group values for the undisturbed areas are based on baseline soil studies presented in Tab 8, Soils, in the Area B PAP, Volume 7(BSCC,

2008). Reclaimed areas were assigned a conservative curve number of 68 assuming fair hydrologic conditions with fair cover and a Hydrologic Soil Group of "B." The curve number values used in these demonstrations are provided in Attachment A of Tab, 13, Facilities, in the Area B PAP, Volume 9, (BSCC, 2008). Curve number values were calculated for each subwatershed on an area-weighted basis. The curve number values for each subwatershed modeled above the sediment ponds are presented in the Subwatershed Hydrology Detail portion of each SEDCAD output file provided in Appendix 1 of the SCP (BSCC, 2009b, 2009c, and 2013).

Watershed Areas

The pond watershed areas were subdivided into several subwatersheds to delineate differences in land use conditions and spatial considerations. For the premining demonstrations, the subwatersheds were delineated on spatial considerations so that each outlet represented a common drainage area. For the postmining demonstrations, disturbed and reclaimed areas were generally separated into separate subwatersheds; areas with similar land use condition were subdivided on spatial considerations. Reclaimed areas were subdivided to account for postmining drainage channels. Postmining demonstrations assumed all diversions had been removed and reclaimed.

b) SEDCAD Sedimentology Calculations.

The erosion and sediment yields from the watershed for the 2, 5, 10, 25, 50, and 100-year, 24-hour storm events were determined using the average annual "R" computation method in the SEDCAD sedimentology subroutine. The model determines erosion and consequently sediment yield for the design storm based on the ratio of the RUSLE "R annual factor" to the calculated "R storm value" and the annual sediment yield to the storm sediment yield (Warner, et al., 1998). The equation that SEDCAD uses to determine the sediment yield is (Warner, et al., 1998):

$$\text{Sediment Yield} = (Y)(\text{Predicted Storm Sediment Yield}) \frac{\text{(R Annual Factor)}}{\text{(R Storm Factor)}}$$

The model calculates the predicted storm sediment yield and the "R storm factor" as a function of the rainfall amount and distribution. "Y" is the number of years of sediment storage. It was set at one (1) year for the purposes of these sediment calculations. The "R annual factor" is input by the user – the Permittee used a value of 10. This value was obtained from Figure 8a.1, Isolines of R factor for Western U.S. as presented in Design Hydrology and Sedimentology for Small Catchments (Haan, et al., 1993).

Soil Erodibility Factor, K

A soil's susceptibility to erosion is determined by its resistance to detachment by rainfall and flowing water. Factors affecting a soil's resistance to erosion are the size of the soil particle, aggregation, and infiltration capacity. The NRCS has calculated K values for the soil series found at Area B as listed in Tab 13, Appendix A of the Area B PAP (BSCC, 2008). The K-factor values used in this

demonstration represent approved Area B values; they were calculated for each subwatershed on an area-weighted basis. Area B K values were assigned to comparable soils series known to be present in Area A. The values for each subwatershed modeled above the Sediment Ponds are presented in the Subwatershed Sedimentology Detail portion of each SEDCAD output file provided in Appendix 1 of the SCP (BSCC, 2009b, 2009c, and 2013).

Length-Slope Factor, LS

The effect of topography on erosion is determined through the LS factor. The LS values are calculated from representative lengths (L) and slopes (S). Values are measured from the watershed maps. It was assumed that the maximum overland flow length was 400 feet.

Cover Factor, C

The control factor is used to account for the influence of cover material on or just beneath the surface of the soil. BSCC used a "C-Factor" value of 0.05 for both premining and postmining conditions for all modeling.

c) Computation of Average Sediment Yield.

To define annual conditions, the average annual sediment yield (Y_s) generated from the series of design storm events was computed using the following equation (Lagasse, et al., 1985):

$$Y_s = 0.01(Y_s)_{100} + 0.01([(Y_s)_{100} + (Y_s)_{50}]/2) + 0.02([(Y_s)_{50} + (Y_s)_{25}]/2) + 0.06([(Y_s)_{25} + (Y_s)_{10}]/2) + 0.1([(Y_s)_{10} + (Y_s)_5]/2) + 0.3([(Y_s)_5 + (Y_s)_2]/2) + 0.5([(Y_s)_2]/2)$$

The subscripts in the equation denote the return period of the storm in years. The Lagasse equation represents an integration of the sediment yield frequency curve based on the incremental probability of the occurrence of relatively large storm events during any given year. Thus, it considers the importance of high-intensity, short-duration rainfall on erosion processes in the watershed areas. This procedure provides a consistent basis for comparison of sediment yield from undisturbed and reclaimed mined-land conditions.

Appendix 1 of the SCP contains tables that summarize the calculated sediment yields for each design storm event (tons/acre) and the average annual sediment yield (tons/acre) for each sediment pond (outfall) modeled (BSCC, 2009b, 2009c, and 2013).

Table 6 provides an example of these tables, and presents the calculated sediment (tons) and normalized sediment (tons/acre) for each design storm event for the premining and reclaimed mine land conditions for Outfall 007. There is a slight difference between the premining and postmining watershed areas above each pond, which is common to surface mine reclamation. The difference can be attributed to the fact that the postmining landscape is shaped slightly different from the premining landscape. The annual average sediment yield is calculated

using normalized sediment yield calculations for each design storm event and the Lagasse equation.

Note that the postmining sediment yield values in the tables represent the sediment yield in the inflow to each respective pond. The inflow value is representative of the sediment load prior to treatment by the pond. If the ponds are left in place, the postmining sediment yields will be minimal due to the sediment trapping efficiencies of each structure. If the ponds are breached, the modeling indicates the BMPs will be effective in keeping annual sediment yields at or below premining rates.

Table 6. Comparison of sediment yield for Bad Bob Gulch above Pond B-3 (Outfall 007).

Unit	Recurrence Interval						
	2-Year	5-Year	10-Year	25-year	50-Year	100-Year	Annual Average
Premining Conditions (1328.3 acres)							
Tons	12.3	84.4	166.5	315.8	415.9	642.5	
Tons/acre	0.009	0.063	0.125	0.238	0.313	0.483	0.050
Reclaimed Mine-Land Conditions (1359.6 acres)							
Tons	11.3	74.7	149.3	273.2	359.6	558.2	
Tons/acres	0.008	0.055	0.110	0.201	0.265	0.411	0.043

d) Summary and Conclusion.

Modeling results indicate that the average annual sediment yields from the postmining watersheds above outfalls covered by the SCP are less than or equal to the average annual sediment yield from their respective premining watersheds. Sediment yield data demonstrate that the BMPs utilized by the Permittee are successful at minimizing erosion and consequent sediment loads from the reclaimed mine-lands. Furthermore, the results demonstrate that upon completion of the reclamation activities and successful establishment of the revegetation community, sediment ponds are no longer the best practicable control technology available for minimizing sediment loads, and the sediment ponds may be removed and reclaimed.

DEQ has concluded that the SCP has been submitted in accordance with the requirements of 40 CFR Part 434, and that the SCP meets all minimum requirements to demonstrate that average annual sediment yields will not be greater than sediment yield levels from pre-mined, undisturbed conditions. Therefore, DEQ approves the SCP consistent with the Requirements of Subpart H. Additionally, in accordance with Subpart H, the Permit requires that the approved SCP be incorporated into the Permit as an effluent limit, and requires that the Permittee design, implement and maintain the BMPs in the manner specified in the SCP.

2. Water Quality-based Effluent Limitations (WQBELs)

EPA regulations at 40 CFR 122.44, which are incorporated into ARM 17.30.1344 by reference, require that permits include limitations more stringent than applicable Federal technology-based requirements where necessary to achieve applicable State water quality standards (WQS).

a. Scope and Authority

Section 303(c) of the CWA requires every state to develop WQS applicable to all water bodies or segments of water bodies within the state. The MWQA, Title 75, Part 3 specifically requires the Board of Environmental Review (Board) to establish the classification of all State waters in accordance with their present and future most beneficial uses; to formulate and adopt standards of water quality, giving consideration to the economics of waste treatment and prevention; adopt rules implementing the State's nondegradation policy; and adopt rules governing mixing zones. Montana WQS include designated use classifications, numeric and narrative WQS, and a nondegradation policy and implementing regulations. The use classification system designates the beneficial uses that each water body within the State is expected to achieve; and the numeric and narrative WQS are the criteria deemed necessary by the State to support the beneficial use designation. The State's nondegradation policy ensures that the existing beneficial uses are maintained and provides protection of high quality and outstanding resource waters. These components match the basic components of WQS – designated uses, water quality criteria, and an antidegradation policy - required by Federal regulations at 40 CFR 131.

The Montana Surface Water Quality Standards and Procedures (ARM 17.30, Subchapter 6) incorporates, by reference, Circular *DEQ-7 – Montana Numeric Water Quality Standards*, Circular *DEQ-12A – Montana base Numeric Nutrient Standards*, and the *Water Quality Standards Handbook, Second Edition*, EPA-823-B-94-005a, August 1994 (WQS Handbook), which sets forth procedures for development of site-specific criteria. Montana's regulations on Nondegradation of Water Quality are in ARM 17.30.701-718 and regulations on Mixing Zones in Surface and Ground Water are in ARM 17.30.501-518.

ARM 17.30.603 (Application and Composition of Surface Water Quality Standards) states, "The standards in this subchapter are adopted to establish maximum allowable changes in surface water quality and to establish a basis for limiting the discharge of pollutants which affect prescribed beneficial uses of surface waters." The WQS applicable to the receiving waters for the discharges regulated by this Permit establish a basis for WQBELs in the Permit.

b. Applicable Beneficial Uses and Numeric and Narrative Standards

All receiving waters are located within the Middle Yellowstone watershed, belonging to the Rosebud hydrologic unit (HUC 10100003). They are tributary to Rosebud Creek, which is tributary to the Yellowstone River. The receiving waters fall under the Water-Use Classifications for the Yellowstone River drainage from the Billings water supply intake to the North Dakota state line [ARM 17.30.611(1)(c)]. The

beneficial uses applicable to Lee, Miller, Hay and Emile Coulees, are summarized in Table 7.

Table 7. Beneficial Uses of Receiving Waters

Classification	Beneficial Uses
C-3	• Bathing, swimming, and recreation • Growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers • Quality of water is naturally marginally suitable for drinking, culinary and food processing purposes, agriculture, and industrial water supply.

c. Impaired Waters

Lee, Miller, Hay, and Emile Coulees are not identified as impaired waterbodies. However, the State of Montana 2014 Integrated 303(d) List and 305(b) Water Quality Report lists segment MT42A001_012 of Rosebud Creek from the Northern Cheyenne Reservation boundary to the boundary at Section 28/29, Township 6 North, Range 42 East, as a Category 5 stream. The report indicates that one or more applicable beneficial uses are impaired or threatened. Lee, Miller, Hay, and Emile Coulees are tributaries to Rosebud Creek. Rosebud Creek is listed as not supportive of aquatic life with dam construction listed as the probable cause of impairment. It is not anticipated that the Facility is a source of any parameters contributing to the impairment of Rosebud Creek.

d. Nondegradation

The MWQA includes a nondegradation policy in 75-5-303 MCA. This policy is applied during the Permit application process through a nondegradation review of any new or expanded discharge. The three aspects of the State nondegradation policy parallel the three "tiers" of an antidegradation policy as required by EPA in 40 CFR 131.13. These three "tiers" are as follows:

1. existing uses of State waters and the level of water quality necessary to protect those uses must be maintained and protected [75-5-303(1) MCA];
2. unless authorized by DEQ through a nondegradation analysis or exempted from review under 75-5-317 MCA, the quality of high-quality waters must be maintained [75-5-303(2)-(7) MCA]; and
3. the Board may not authorize degradation of State waters classified as "outstanding resource waters" [75-5-303(8) MCA].

The regulations at ARM 17.30.701-718 address implementation of this policy. These regulations apply when someone proposes an activity of man resulting in a new or increased source that may cause degradation.

i. New or Increased Sources

Discharges at Outfalls 020, 021, and 022 were permitted after April 29, 1993, making them "new or increased" sources as defined at ARM 17.30.702(17). DEQ has therefore included these discharges in its nondegradation review. Discharges

from Outfalls 001-003 and 005-019 were permitted prior to April 29, 1993, and are therefore not subject to the nondegradation review.

ii. Protection of Existing Uses

ARM 17.30.705(2)(a) requires that, for all State waters, existing and anticipated uses and the water quality necessary to protect those uses must be maintained. In practice, application of this regulation means that the effluent limitations in an MPDES permit for a new or expanding discharge, just as the permit for any point source discharge, must be derived from and comply with all numeric and narrative standards associated with the existing and anticipated beneficial uses of the receiving water. The new or expanding discharges in this Permit (i.e., Outfalls 020-022) are associated with reclaimed areas; thus, sediment is the only parameter of concern and is regulated by TBEL (40 CFR Part 434, Subpart H). Limitations associated with this subpart ensure the level of water quality necessary to attain and maintain existing and anticipated uses.

iii. Protection of High Quality Waters

The first step in a nondegradation review for protection of "high quality waters" is to determine whether a proposed discharge actually is to high quality waters. The definition of high quality waters in 75-5-103(13) MCA and ARM 17.30.702(8) includes all State surface waters except those not capable of supporting any one of the beneficial uses for their classification or that have zero flow or surface expression for more than 270 days during most years.

The receiving waters for Outfalls 020, 021, and 022 have zero flow or surface expression for more than 270 days during most years and are not high quality waters as defined at 75-5-103 MCA. Therefore, the criteria of ARM 17.30.715 do not apply.

iv. Protection of Outstanding Resource Waters

ARM 17.30.705(2)(c) requires that, for outstanding resource waters, no degradation is allowed and no permanent change in the quality of outstanding resources waters resulting from a new or increased point source discharge is allowed. Receiving waters at the Facility have not been designated as outstanding resource waters and therefore this regulation is not applicable.

e. Mixing Zones

75-5-301(4) MCA required DEQ to adopt rules governing the granting of mixing zones. DEQ adopted such regulations and codified them at ARM 17.30, Subchapter 5.

A mixing zone is defined by the regulations as a limited area of a water body where initial dilution of a discharge takes place, where water quality changes may occur, and where certain numeric WQS may be exceeded [ARM 17.30.502(6)].

The Permittee did not submit a request for an acute, chronic, or human health mixing zone with its MPDES Permit renewal application. Furthermore, critical low flows for the receiving waters are zero and would provide no water for a mixing zone and dilution for the Permittee's discharges.

f. Determining the Need for WQBELs

EPA regulations at 40 CFR 122.44, which are incorporated into ARM 17.30.1344 by reference, require that all effluents be assessed by DEQ to determine the need for WQBELs. 40 CFR 122.44(d)(1)(i) states, "Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria."

The primary pollutant of concern for drainage from reclamation, brushing and grubbing, topsoil stockpiling, and re-graded areas is suspended solids. As demonstrated in the approved SCP, reclamation BMPs used by the Permittee are effective at maintaining postmining sediment yields at are below premining conditions (BSCC, 2009b, 2009c, and 2013). Implementation of the approved SCP will not create discharges at levels that will have the reasonable potential to exceed State WQS. Therefore, WQBELs are not required

3. Final Effluent Limitations

Final effluent limitations for all outfalls consist of restrictions on settleable solids via the implementation of an approved SCP. Narrative limits specific to all outfalls include those addressed in the approved SCP. The Permittee must adhere to design specifications, construction specifications, inspection criteria and maintenance schedules for BMPs as specified in the SCP.

Section 402(o) of the CWA and section 122.44(l) require that effluent limitations or conditions in reissued permits be at least as stringent as those in the existing Permit based on the submitted sampling data.

a. **Satisfaction of Anti-backsliding Analysis**

Effluent limitations and monitoring requirements for all outfalls remain unchanged from the previous Permit.

b. **Stringency of Requirements for Individual Pollutants**

This Permit contains technology-based effluent limitations for sediment. Effluent limitations for all outfalls consist of restrictions on settleable solids via the requirement for a SCP.

4. Interim Effluent Limitations – Not Applicable

B. <u>Rationale for Monitoring and Reporting Requirements</u>

Regulations requiring the establishment of monitoring and reporting conditions in MPDES permits are found at 40 CFR 122.44(i) and 122.48 and ARM 17.30.1351. Section I.C of the Permit establishes monitoring and reporting requirements to implement Federal and State

requirements. The following provides the rationale for the monitoring and reporting requirements for this Facility.

1. Monitoring Locations and Frequency

All outfalls will be monitored as dictated by the SCP. Qualified personnel shall inspect the BMPs described in the Permit following each significant storm water rainfall event resulting in 2.0 inches of precipitation or more, or after significant snowmelt events. Inspections must be documented and maintained by the Facility. Inspections and their respective records must include tracking or follow-up procedures to ensure adequate response and corrective actions have been taken based on any problems or deficiencies observed during the inspection. The Permittee must perform a Comprehensive Site Inspection to evaluate whether BMPs are adequate and properly implemented in accordance with the approved SCP. The Comprehensive Site Inspection must assess whether the BMPs implemented to control sediment and any other pollutants are adequate to control pollution from the site and whether any revisions to the SCP such as additional BMPs are necessary.

2. Other Monitoring Requirements

a. Precipitation Monitoring. The Permittee is required to monitor and report precipitation using a precipitation gauge that meets the standards provided in National Weather Services Instructional Bulletin 10-1302 (October 4, 2005), *Instrument Requirements and Standards for the NWS Surface Observing Programs (Land)*, which are provided in the Permit. Precipitation monitoring is required to provide evidence that a precipitation event resulted in a discharge, and that alternate limitations and monitoring requirements apply.

3. Reporting Requirements

The Permittee must comply with reporting requirements as specified in the Permit in accordance with ARM 17.30.1342.

C. **<u>Rationale for Special Conditions</u>**

1. Best Management Practices and Pollution Prevention

BMPs will be implemented, inspected, and maintained per the approved SCP.

2. Reopener Provisions

These provisions are based on 40 CFR Part 123 and the previous Permit. DEQ may reopen the Permit to modify Permit conditions and requirements. Causes for modifications include the promulgation of new Federal regulations, modification in toxicity requirements, adoption of a TMDL or adoption of new regulations by DEQ.

3. Storm Water Management

Storm water runoff will be managed per the approved SCP.

D. **Rationale for Standard Conditions**

Standard Conditions, which apply to all MPDES permits in accordance with ARM 17.30.1342 and additional conditions applicable to specified categories of permits in accordance with ARM 17.30.1343, are included in Section III of this Permit. The Permittee must comply with all standard conditions under ARM 17.30.1342 and the additional conditions that are applicable to the Permittee under ARM 17.30.1343.

40 CFR 123.25(a)(12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Permit omits Federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the ARM is more stringent. In lieu of these conditions, this Permit incorporates by reference MCA 75-5-633.

E. **Nonsignificant Determination**

DEQ has determined that Outfalls 020, 021, and 022 constitute new or increased sources; accordingly, the discharge is subject to Montana Nondegradation Policy (75-5-303, MCA; ARM 17.30.705). The new or expanding discharges in this Permit constitute nonsignificant degradation. Outfalls 020, 021, and 022 are associated with reclaimed areas; thus, sediment is the only parameter of concern and is regulated by TBEL (40 CFR Part 434, Subpart H). Limitations associated with this subpart ensure the level of water quality necessary to attain and maintain existing and anticipated uses.

III. REFERENCES

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