MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Protection Bureau
P.O. Box 200901, Helena, MT 59620-0901

Permit Fact Sheet
Montana Pollutant Discharge Elimination System

Permittee:	Montanore Minerals Corporation
Permit Number:	MT0030279
Receiving Waters:	Libby Creek and alluvial ground water Ramsey Creek Poorman Creek
Facility Name:	Montanore Project
Facility Location:	Section 15, Township 27 North, Range 31 West, Lincoln County
Facility Address:	Upper Libby Creek Drainage Libby, MT 59923
Facility Contacts:	Glenn M. Dobbs, Chief Executive Officer Montanore Minerals Corporation 34524 US Highway 2 Libby, MT 59923 Eric Klepfer, President Klepfer Mining Services, LLC 2257 W. Dakota Ave. Hayden, ID 83835
Facility Type:	Privately-Owned Treatment Works
Major/Minor:	Minor
Number of Outfalls:	Three – Mine Drainage, Outfalls 001 – 003 Five – Integrated Storm Water, Outfalls 004 – 008

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1 BACKGROUND

This fact sheet identifies the principal facts and the significant factual, legal, methodological, and policy issues considered in preparing a draft permit in accordance with Administrative Rules of Montana (ARM) 17.30.1371. A fact sheet is prepared for any draft permit that established new or amended effluent limitations or standards, schedules of compliance, nonsignificance determinations under ARM 17.30.706, denial or granting of mixing zones under ARM 17.30.515, or other significant requirements.

Montanore Minerals Corporation (hereinafter permittee) is the owner and operator of the Montanore Project (hereinafter facility), a silver ore and copper ore mining operation.

For the purposes of this fact sheet and associated draft 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 the permit and fact sheet.

1.1 Permit and Application Information

The permittee is currently regulated by Montana Pollutant Discharge Elimination System (MPDES) permit number MT0030279. This permit became effective on April 1, 2006, and expired on March 31, 2011. The permit was modified on May 23, 2008, to reflect a permittee name change from Noranda Minerals Corporation to Montanore Minerals Corporation.

The permittee submitted a MPDES permit renewal application on August 23, 2010. Supplemental information was requested on November 12, 2010, and was received on January 18, 2011. The application was deemed complete on February 23, 2011. The current renewal application requests the continuance of the three (3) originally permitted outfalls and the addition of five (5) storm water only outfalls. In accordance with ARM 17.30.1313, the terms and conditions of the 2006-issued permit have been administratively continued and remain in effect until a new MPDES permit is issued.

1.2 Description of the Facility and Discharge Points

This section describes the facility and discharge points (outfalls) as provided by the permittee in their permit application. As defined in ARM 17.30.1304, a facility or activity is any point source, including land appurtenances thereto, that are subject to regulation under the MPDES regulations. For the purposes of this permit, an outfall designates the location at which the facility or activity is authorized to discharge pollutants to state waters.

1.2.1 Description and Location of Facility

The Montanore Project is a proposed copper and silver underground mine located about 18 miles south of Libby in the Cabinet Mountains of northwestern Montana. The facility is located on patented mining claims within and adjacent to the Cabinet Mountains Wilderness. The targeted mineralized resource is underneath the Cabinet Mountains Wilderness; access is via an adit under the Cabinet Mountains Wilderness with a portal(s) on private land bordering the wilderness area. The permittee also has unpatented mining, mill site, and tunnel claims on National Forest System lands that cover the proposed mine development.

The mineralized resource associated with the Montanore Project, a stratabound copper-silver deposit, is estimated at about 135 million tons. The permittee anticipates mining up to 120 million tons over the projected 16 year lifespan of the mine. The Montanore Project would consist initially of a 12,500-tons-per-day underground mining operation that would expand to a 20,000-tons-per-day at full production. Mining would use conventional room-and-pillar methods.

The mined ore would be crushed underground and conveyed to the surface for milling at the proposed Libby Plant Site between Libby Creek and Ramsey Creek. This milling facility would use a froth flotation process to produce a concentrate from the crushed ore. Collector and frother reagents added during the flotation process would separate the copper and silver minerals (sulfides) from the host rock to produce a copper-silver concentrate. The tailings (non-mineralized host rock) would consist mainly of quartzite and would sink to the bottom of the flotation cells. The flotation process would continue through cleaner flotation cells; this process would be repeated several times to improve both mineral recovery and concentrate quality.

After the froth flotation process, the concentrate would be sent to a dewatering system where a polyacrylamide flocculant would be used to assist the dewatering of the concentrate and the fine fraction of the final tailings in their respective thickeners. After dewatering, the concentrate would be stored in a covered building prior to loading and transport to the loadout facility for subsequent shipment to the smelter. At peak production, an estimated 420 tons of concentrate (21 trucks per day) would be transported daily to a loadout facility in the Kootenai Business Park. The tailings produced during the milling and dewatering processes would be transported via a pipeline to the proposed Poorman Tailings Impoundment Site north of Poorman Creek for storage.

The permittee is currently regulated by the Department of Environmental Quality's (DEQ) Environmental Management Bureau (EMB) under Operating Permit #00150.

The permittee is authorized to discharge from the following discharge structures (outfalls) that are currently regulated under MPDES permit number MT0030279:

- Outfall 001 – percolation pond discharging into ground water;
- Outfall 002 – drainfield with three infiltration zones discharging into ground water; and
- Outfall 003 – end-of-pipe direct discharge from the percolation pond into Libby Creek.

Outfalls 001 and 002 are permitted as surface water discharges that incorporate a ground water mixing zone. The percolation pond (Outfall 001) has an estimated capacity of 25 acre-feet. The drainfields (Outfall 002) are designed to accommodate discharge flows in excess of 200 gallons per minute (gpm). If the pond reaches full capacity then an overflow pipe (Outfall 003) routes water directly into Libby Creek. The permittee has not reported a discharge from Outfalls 002 and 003 during the term of the 2006-issued permit.

The permittee is proposing the addition of the following storm water only outfalls within this permit renewal:

- Outfall 004 – runoff from the 1 acre Upper Libby Adit Pad area discharging into Libby Creek;

- Outfall 005 – runoff from the 3.8 acre road segment between the Libby Adit Pad and the Libby Plant Site discharging into Libby Creek;
- Outfall 006 – runoff from the 6.2 acre road segment north of the Libby Plant Site discharging into Ramsey Creek; and
- Outfalls 007 – runoff from the 2.8 acre road segment south of the Poorman Tailings Impoundment Site discharging into Poorman Creek; and
- Outfalls 008 – runoff from the 2.9 acre road segment south of the Poorman Tailings Impoundment Site discharging into Poorman Creek.

Precipitation and runoff from the Libby Adit Pad area is collected and directed into Outfall 001. The drainage area for Outfall 005 is separate from and does not include the drainage area for Outfall 001.

Based on the information provided by the permittee in Form 2C Part II.B, the source(s) of wastewater contributing to each outfall and their corresponding average flows, in gallons per minute (gpm), are summarized in Table 1. The average flow presented for Outfalls 001, 002, and 003 represents the sum of the adit water (360 gpm) and the runoff for the Libby Adit Pad (5 gpm). Based on the information provided by the permittee in Form 2F Part IV and supplemental application information, the volume of storm water contributing to each outfall, in cubic feet per second (cfs), are also summarized in Table 1. The storm water controls are designed based on a 10-year, 24-hour storm event.

Table 1. Sources of Wastewater and Storm Water Contributing to Each Outfall

Outfall	Description	Average Flow	Intermittent (Y/N)
001	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	No
002	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	Yes
003	Discharge of ground water from adits and underground mine workings, water from tailings impoundments, runoff from mine-related facilities	365 gpm	Yes
004	Storm water runoff from the Upper Libby Adit Pad area	3.20 cfs	Yes
005	Storm water runoff from mine access roads	3.58 cfs	Yes
006	Storm water runoff from mine access roads	5.41 cfs	Yes
007	Storm water runoff from mine access roads	2.74 cfs	Yes
008	Storm water runoff from mine access roads	2.80 cfs	Yes

1.2.2 Wastewater Treatment or Controls

The wastewater treatment processes for each outfall are summarized below in Table 2.

Table 2. Treatment Process for Each Outfall

Outfall	Source	Treatment Process
001	Ground water from mine adits and underground mine workings, water from tailings impoundments	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
	Storm water runoff from the Libby Adit Pad area	Ditches and Sediment Traps at Libby Adit Pad area, Pressure Sand Filtration, Ultra/Membrane Filtration
002	Ground water from mine adits and underground mine workings, water from tailings impoundments	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
003	Ground water from mine adits and underground mine workings, water from tailings impoundments	Underground Sediment Removal, Pressure Sand Filtration, Ultra/Membrane Filtration
004	Storm water runoff	Ditches and Sediment Traps around Upper Libby Adit Pad area
005	Storm water runoff	Ditches and Sediment Traps along mine access road
006	Storm water runoff	Ditches and Sediment Traps along mine access road
007	Storm water runoff	Ditches and Sediment Traps along mine access road
008	Storm water runoff	Ditches and Sediment Traps along mine access road

1.2.3 Discharge Points

The permittee discharges or proposes to discharge wastewater from the outfalls described in Section 1.2.1 above to state waters at the locations identified in Table 3. These locations were identified in the MPDES permit application. By definition, state waters means any body of water, irrigation system or drainage system, either surface or underground. Ponds, lagoons, or other waste impoundments used solely for treating, impounding, or transporting wastes are not state waters. The discharge of pollutants to state waters is prohibited unless expressly authorized in the facility's discharge permit. The beneficial use classifications and applicable water quality standards for the receiving water are defined in Section 2.2.2 of this fact sheet.

Table 3. Discharge Location and Receiving Water for Each Outfall

Outfall	Latitude	Longitude	Receiving Water	Receiving Water Classification
001	48º06'08" N	115º34'18" W	Libby Creek via Alluvial Ground Water	B-1
002	48º06'10" N	115º34'27" W	Libby Creek via Alluvial Ground Water	B-1
003	48º06'08" N	115º34'18" W	Libby Creek	B-1
004	48º05'37" N	115º35'04" W	Libby Creek	B-1
005	48º06'37" N	115º33'22" W	Libby Creek	B-1
006	48º07'50" N	115º33'09" W	Ramsey Creek	B-1
007	48º08'39" N	115º33'09" W	Poorman Creek	B-1
008	48º08'52" N	115º32'49" W	Poorman Creek	B-1

1.2.4 Permit Fee Determination

The Montana Water Quality Act (WQA) requires that permit fees be assessed that are sufficient to cover the cost administering the permit program (75-5-516, MCA). Permit fees are based on the type of waste (sewage, process wastewater, storm water, noncontact cooling water, etc.) and receiving water. An application and annual fee for multiple outfalls is not required unless the discharges are to different receiving waters that result in multiple or variable effluent limits. Table 4

below identifies, individually or by group, the type of wastewater and receiving water by outfall for which effluent limits will be required.

Table 4. Summary of Outfall Categories for Fee Purposes

Group	Effluent Description	Receiving Water	Outfall(s)
A	Ground water from mine adits and underground mine workings, water from tailings impoundments	Libby Creek via Alluvial Ground Water	001, 002
B	Storm water runoff from Libby Adit Pad area	Libby Creek via Alluvial Ground Water	001
C	Ground water from mine adits and underground mine workings, water from tailings impoundments	Libby Creek	003
D	Storm water runoff	Libby Creek	004, 005
E	Storm water runoff	Ramsey Creek	006
F	Storm water runoff	Poorman Creek	007, 008

1.2.5 Effluent Characteristics

Effluent characteristics are given in Appendix 3 and are based on the information provided by the applicant in the MPDES permit renewal application Forms 2C and 2F as well as any supplemental application materials. In addition to the requirements of ARM 17.30.1371, these effluent characteristics provide a basis for the water quality-based effluent limitations (WQBELs) developed in Section 2.2 of this fact sheet, and for new or increased sources, fulfill the requirements of ARM 17.30.706(3).

1.2.6 Other Information

This section includes any additional information that is relevant to development of the permit and is matter of record based on the permit application and supplement material, including:

ENVIRONMENTAL IMPACT STATEMENT

The U.S. Department of Agriculture, Kootenai National Forest (KNF) and DEQ are the lead agencies for the Montanore Project Environmental Impact Statement (EIS) and have prepared a Joint EIS in compliance with the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA). The EIS serves as a report required by the Major Facility Siting Act (75-20-216, MCA). The lead agencies (KNF and DEQ) are responsible for the analysis of the Montanore Project. The cooperating agencies are the Bonneville Power Administration, the U.S. Army Corps of Engineers (USACE), and Lincoln County, Montana. A single EIS for the Montanore Project has been prepared to provide a coordinated and comprehensive analysis of potential environmental impacts. KNF and USACE will use the analysis to determine whether to issue the approvals necessary for the construction and operation of the Montanore Project. Other permits, licenses, and/or approvals from the two lead agencies as well as from other agencies are also required.

OPERATING PERMIT

This MPDES permit authorizes the permittee to discharge to state surface waters within the operational boundary approved under Operating Permit #00150 issued by DEQ's EMB under Title

82, Chapter 4, Part 3 of the MCA. The facility size and treatment system evaluated in this MPDES permit application is based on the exploration phase proposed by the permittee; any changes to Operating Permit #00150 that alters the basis for the effluent limits found in the MPDES permit or otherwise results in any relevant changes to the MPDES permit may require a modification of this MPDES permit.

DISCHARGES TO SURFACE WATER VIA GROUND WATER

The discharge of pollutants to surface water via hydrologically connected ground water (e.g. the facility's discharges from Outfalls 001 and 002) is regulated by DEQ's Water Protection Bureau via the MPDES permitting program (see 75-5-401(7), MCA). The discharge of pollutants to ground water within the operational boundary of the facility is regulated by DEQ's EMB via Operating Permit #00150 (see 75-5-401(5), MCA).

AUTHORIZATION TO DEGRADE

The MPDES permitting process for the Montanore Project began in 1989. In December of that year, Noranda Minerals Corporation (NMC) submitted a "Petition for Change in Quality of Ambient Waters" (Petition) to the Board of Health and Environmental Sciences (BHES) requesting an increase in the concentration of select parameters in surface water and ground water above ambient water quality as required by Montana's 1971 nondegradation statute. In November of 1992, the BHES issued BHES Order 93-001-WQB (Order) in response to NMC's Petition.

The Order authorized degradation and established limits in surface water and ground water in the Libby, Poorman and Ramsey Creek watersheds adjacent to the Montanore Project for discharges from the facility. The Order established numeric limits for the parameters Chromium, Copper, Iron, Manganese, Zinc, Nitrate + Nitrite, Total Ammonia, and Total Dissolved Solids. The nitrogen species were also addressed as Total Inorganic Nitrogen since no organic forms of nitrogen were expected from mine discharges. The Order limits for surface water and ground water are summarized below in Table 5. Pursuant to the Order, these limits remain in effect during the operational life of the mine and for so long thereafter as necessary.

Table 5. BHES Order Limits

Parameter	Units	Surface Water Limitation	Ground Water Limitation
Total Dissolved Solids	mg/L	100	200
Chromium, Total Recoverable	mg/L	0.005	0.02
Copper, Total Recoverable	mg/L	0.003	0.1
Iron, Total Recoverable	mg/L	0.1	0.2
Manganese, Total Recoverable	mg/L	0.05	0.05
Zinc, Total Recoverable	mg/L	0.025	0.1
Nitrate + Nitrite, as N	mg/L	1.0	10
Total Inorganic Nitrogen	mg/L	1.0	10
Total Ammonia	mg/L	1.5	NA

A consent decree was signed between the Montana Department of Health and Environmental Sciences and NMC on May 12, 1993, that adopted the BHES Order establishing limits for inorganic nitrogen at the Libby Creek Station LB-300 of 1.0 mg/L. Further control of the discharge was addressed by an agreement that NMC would apply for a MPDES permit. The facility was initially permitted in 1997 when DEQ issued a MPDES permit to NMC (MT-0030279) to allow discharges of water flowing from the Libby Adit to Libby Creek. Three discharge locations were authorized in the permit: Outfall 001 – percolation pond; Outfall 002 – infiltration system of buried pipes; and Outfall 003 – pipeline outlet to Libby Creek. Surface discharge from the adit ceased in 1998 and water in the adit flowed to the underlying ground water.

Surface discharge from the adit resumed in 2007; Montanore Minerals Corporation (MMC) is currently maintaining groundwater levels in the Libby Adit at 7,200 feet from the adit portal. Water from the adit is pumped to the surface, treated at the facility's water treatment plant, and then discharged via Outfall 001; no discharges from Outfalls 002 and 003 have been reported. Further mine exploration and operations are on hold.

BIOLOGICAL MONITORING

The permittee has conducted biological monitoring of the receiving waters and provided DEQ with the results on an annual basis as required under EMB's Operating Permit #00150. The aquatic monitoring required includes the following components:

- Physical and Chemical Water Characteristics;
- Habitat Types;
- Substrate;
- Macroinvertebrates;
- Periphyton;
- Salmonid Abundance; and
- Fish Tissue.

1.3 Compliance Summary

The effluent limits and monitoring requirements from the 2006-issued permit with a period of record (POR) from January 1, 2008, through December 31, 2015, for the discharges from Outfalls 001, 002, and 003 are summarized in Tables 6, 7, and 8 below. The permittee did not report any discharges from Outfalls 002 and 003 during the POR; the effluent data reported by the permittee is from Outfall 001 only.

Table 6. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 001

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 12/31/2015)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	374	-
pH, maximum	s.u.	-	8.5	-	-	8.49	-
pH, minimum	s.u.	-	6.5	-	-	6.70	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	0.190	0.557	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	0.441	1.940	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.5	-	-	-	-	-
	lbs/day	-	-	15.0	-	-	0.41
Cadmium, Total Recoverable	mg/L	0.0008	0.0012	-	0.00002	0.0001	-
	lbs/day	-	-	0.005	-	0.000055	0.0000360
Chromium, Total Recoverable	mg/L	0.013	0.020	-	0.0040	0.0052	-
	lbs/day	-	-	0.078	-	0.0126	0.0070
Copper, Total Recoverable	mg/L	0.007	0.010	-	0.0040	0.0040	-
	lbs/day	-	-	0.042	-	0.0060	0.0050
Iron, Total Recoverable	mg/L	0.25	0.38	-	0.260	0.590	-
	lbs/day	-	-	1.50	-	0.757	0.240
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	0.0002	0.0006	-
	lbs/day	-	-	0.004	-	0.0004	0.0001
Manganese, Total Recoverable	mg/L	0.11	0.15	-	0.0220	0.0640	-
	lbs/day	-	-	0.66	-	0.0953	0.1800
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	0.00015	0.00015	-
	lbs/day	-	-	0.00006	-	0.0000016	0.000001
Zinc, Total Recoverable	mg/L	0.10	0.15	-	0.0240	0.0370	-
	lbs/day	-	-	0.66	-	0.0860	0.0700
Sulfate	mg/L	-	-	-	123	943	-
	lbs/day	-	-	-	-	-	-

Table 7. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 002

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 12/31/2015)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	-	-
pH, maximum	s.u.	-	8.5	-	-	-	-
pH, minimum	s.u.	-	6.5	-	-	-	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.5	-	-	-	-	-
	lbs/day	-	-	15.0	-	-	-
Cadmium, Total Recoverable	mg/L	0.0008	0.0012	-	-	-	-
	lbs/day	-	-	0.005	-	-	-
Chromium, Total Recoverable	mg/L	0.013	0.020	-	-	-	-
	lbs/day	-	-	0.078	-	-	-
Copper, Total Recoverable	mg/L	0.007	0.010	-	-	-	-
	lbs/day	-	-	0.042	-	-	-
Iron, Total Recoverable	mg/L	0.25	0.38	-	-	-	-
	lbs/day	-	-	1.50	-	-	-
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	-	-	-
	lbs/day	-	-	0.004	-	-	-
Manganese, Total Recoverable	mg/L	0.11	0.15	-	-	-	-
	lbs/day	-	-	0.66	-	-	-
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	-	-	-
	lbs/day	-	-	0.00006	-	-	-
Zinc, Total Recoverable	mg/L	0.10	0.15	-	-	-	-
	lbs/day	-	-	0.66	-	-	-
Sulfate	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-

Table 8. Summary of the 2006-issued Permit Limitations and Monitoring Data – Outfall 003

Parameter	Units	Effluent Limitations			Monitoring Data (1/1/2008 through 12/31/2015)		
		Average Monthly	Maximum Daily	Annual Average Load	Maximum Average Monthly Discharge	Maximum Daily Discharge	Maximum Annual Average Load
Flow	gpm	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	20	30	-	-	-	-
	lbs/day	-	-	-	-	-	-
pH, maximum	s.u.	-	8.5	-	-	-	-
pH, minimum	s.u.	-	6.5	-	-	-	-
Temperature	°F	-	-	-	-	-	-
Oil & Grease	mg/L	-	10	-	-	-	-
Ammonia, Total (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Nitrite-Nitrate (as N)	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-
Total Inorganic Nitrogen (as N)	mg/L	2.2	-	-	-	-	-
	lbs/day	-	-	13.2	-	-	-
Cadmium, Total Recoverable	mg/L	0.0007	0.0010	-	-	-	-
	lbs/day	-	-	0.0042	-	-	-
Chromium, Total Recoverable	mg/L	0.011	0.016	-	-	-	-
	lbs/day	-	-	0.066	-	-	-
Copper, Total Recoverable	mg/L	0.006	0.009	-	-	-	-
	lbs/day	-	-	0.036	-	-	-
Iron, Total Recoverable	mg/L	0.22	0.33	-	-	-	-
	lbs/day	-	-	1.32	-	-	-
Lead, Total Recoverable	mg/L	0.0006	0.0009	-	-	-	-
	lbs/day	-	-	0.004	-	-	-
Manganese, Total Recoverable	mg/L	0.09	0.14	-	-	-	-
	lbs/day	-	-	0.54	-	-	-
Mercury, Total Recoverable	mg/L	0.00001	0.000015	-	-	-	-
	lbs/day	-	-	0.00006	-	-	-
Zinc, Total Recoverable	mg/L	0.057	0.086	-	-	-	-
	lbs/day	-	-	0.342	-	-	-
Sulfate	mg/L	-	-	-	-	-	-
	lbs/day	-	-	-	-	-	-

WHOLE EFFLUENT TOXICITY

The 2006-issued permit for the facility included the narrative effluent limitation of "There shall be no acute toxicity in the effluent discharged by the facility" applicable to the discharges from Outfalls 001, 002, and 003. Whole Effluent Toxicity (WET) monitoring and reporting was not required in

the 2006-issued permit. WET limitations for this permit issuance are evaluated below in Sections 2.2.8 and 2.2.10.

1.3.1 Compliance History

Data and information either submitted to DEQ or collected by DEQ indicate that the permittee has exceeded existing effluent limitations or failed to comply with other existing permit requirements as outlined in Table 9.

Table 9. Summary of Violations

Date	Monitoring Period	Violation Type	Parameter	Units	Reported Value	Effluent Limitation
9/30/2008	3rd Quarter, 2008	Average Monthly	Iron, dissolved (as Fe)	mg/L	0.26	0.25
9/30/2008	3rd Quarter, 2008	Maximum Daily	Iron, dissolved (as Fe)	mg/L	0.59	0.38

1.3.2 Inspection Results

DEQ performed a compliance evaluation inspection of the facility on February 9, 2011; no violations were documented.

2 RATIONALE FOR EFLUENT LIMITATIONS

The WQA requires that DEQ clearly specify in the permit any limitations imposed on the volume, strength, and other significant characteristics of the waste to be discharged. The control of pollutants discharged is established through effluent limitations and other requirements in the permit. There are two principal bases for effluent limitations: technology-based effluent limitations that specify the minimum level of treatment or control for conventional, non-conventional, and toxic pollutants; and water quality-based effluent limitations that attain and maintain applicable numeric and narrative water quality standards.

2.1 Technology-based Effluent Limitations (TBELs)

The Clean Water Act (CWA) Section 402(a)(1) (33 U.S.C. 1342(a)(1)) and the federal code of regulations (CFR) at 40 CFR 125.3(a) require that permits issued under Section 402, including those issued by state programs, contain TBELs that implement the technology-based treatment requirements specified in the CWA. These technology-based requirements may be national technology standards for existing sources or new sources established by the U.S. Environmental Protection Agency (EPA) pursuant to Section 304 of the CWA, or, in some cases, standards established by the permit writer on a case-by-case basis.

2.1.1 Scope and Authority

EPA promulgates effluent guidelines under the authority of Sections 301, 304, 306, 307, 308, 402, and 501 of the CWA (33 U.S.C. 1311, 1314, 1316, 1318, 1342, and 1361). The Board of Environmental Review (Board) pursuant to 75-5-304(1), MCA, has adopted effluent limitations and standards and new source performance standards in Title 17, Chapter 30, Subchapter 12 based on the applicable federal regulation. EPA has promulgated national technology-based standards of performance for both existing and new sources at 40 CFR Subchapter N for dischargers other than POTWs.

Effluent guidelines establish the following standards for direct discharges from facilities other than POTWs:

- Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best conventional pollutant control technology (BCT) represents the control of conventional pollutants including BOD, TSS, fecal coliform, pH, and Oil & Grease in an existing discharge or new discharge that is not a new source. The BCT standard is established after considering the "cost reasonableness" of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

- New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources. A source is a new source if it meets the definition of new source in ARM 17.30.1304 and 1340(1) and a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger (ARM 17.30.1340(2)). A source is an existing source if it is not a new source or a new discharger. For purposes of applying effluent guidelines, the existing sources standards (BPT, BAT, and BCT) apply to existing sources and new dischargers. NSPS apply to new sources.

Pursuant to Section 402(a)(2) of the CWA (33 U.S.C. 1342(a)(2)), where EPA has not established effluent guidelines that are applicable to a particular class or category of industrial discharger or to a specific discharge, the permit writer establishes applicable technology-based treatment requirements on a case-by-case basis using best professional judgment (BPJ). Regulations for establishing these case-by-case requirements using BPJ are given in 40 CFR 125.3 and ARM 17.30.1203.

Finally, ARM 17.30.1345(1) requires that permit limitations, standards, and prohibitions must be established for each outfall or discharge point of the permitted facility, except that best management practices may be imposed under 40 CFR 122.44(k) to control or abate pollutions, including:

- As authorized under Section 304(e) of the CWA for the control of toxic pollutants or hazardous wastes;
- As authorized under Section 402(p) of the CWA for the control of storm water dischargers;
- When numeric effluent limitation are infeasible; or
- When the practices are reasonably necessary to achieve effluent limitation or standards or to carry out the purposes and intent of the CWA.

Compliance with any applicable TBELs must be measured prior to dilution with the receiving water.

2.1.2 Applicable Technology Standards

The technology standards applicable to the facility are described below.

EFFLUENT LIMITATION GUIDELINES

EPA has promulgated effluent limitation guidelines (ELGs) in 40 CFR Part 440, Subpart J for facilities in the Ore Mining and Dressing Point Source Category and the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory. These ELGs are found at 40 CFR 440.100 through 440.105. These guidelines address the following processes employed or other activities conducted at the facility:

- Mines that produce copper, lead, zinc, gold, silver, or molybdenum bearing ores, or any combination of these ores from open-pit or underground operations other than placer deposits.

In addition, the General Provisions and Definitions of 40 CFR 440 Subpart L, found at 40 CFR 440.130 through 132, are also applicable to the facility and are incorporated by reference into this fact sheet.

Applicable Effluent Limitation Guidelines, Outfalls 001-003

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfalls 001-003 began after the new source date, meeting the ELG definition of a new source. Accordingly, the NSPS are the applicable level of control required.

The processes and activities conducted at the facility contributing to the discharge(s) from Outfalls 001-003 that are addressed by the applicable ELGs are as follows:

- Mine drainage; and
- Storm water that comes in contact with waste rock and/or ore.

The numeric ELGs in 40 CFR 440.104 are summarized in Table 10.

Table 10. 40 CFR 440.104(a) – Mine Drainage

Parameter	Performance Standard	Units	Daily Maximum Limitation	30-day Average Limitation
Total Suspended Solids (TSS)	NSPS	mg/L	30.0	20.0
Copper	NSPS	mg/L	0.30	0.15
Zinc	NSPS	mg/L	1.5	0.75
Lead	NSPS	mg/L	0.6	0.3
Mercury	NSPS	mg/L	0.002	0.001
Cadmium	NSPS	mg/L	0.10	0.05
pH	NSPS	s.u.	Between 6.0 and 9.0 at all times	

The effluent guidelines found at 40 CFR 440.104(b)(1) state that there shall be no discharge of process wastewater to navigable waters from mills that use the froth-flotation process alone, or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores or any combination of these ores.

The effluent guidelines found at 40 CFR 440.104(b)(2)(i) state that in the event that the annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility exceeds the annual evaporation, a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized in Table 10 above.

The effluent guidelines found at 40 CFR 440.104(b)(2)(ii) state that in the event there is a buildup of contaminants in the recycle water which significantly interferes with the ore recovery process and this interference cannot be eliminated through appropriate treatment of the recycle water, the permitting authority may allow a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment. This discharge shall be subject to, at a minimum, the limitations summarized in Table 10 above. The facility shall have the burden of demonstrating to the permitting authority that the discharge is necessary to eliminate interference

in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water.

The effluent guidelines found at 40 CFR 440.104(c)(1-2) are not applied to the facility since the facility does not use or propose to use dump, heap, in-situ leach, or vat-leach processes to extract copper from ores or ore waste materials.

The effluent guidelines found at 40 CFR 440.104(d)(1-2) are not applied to the facility since the facility does not use or propose to use the cyanidation process to extract gold or silver.

In general, the NSPS TBELs at 40 CFR 440.104(a) apply to any discharges at Outfalls 001, 002, and 003. These TBELs must be met prior to any dilution with the receiving surface water(s). Specifically with respect to the parameter TSS, DEQ assessed the need for a NSPS TBEL for TSS at Outfalls 001 and 002 after taking into consideration the following factors:

- The discharges from Outfalls 001 and 002 infiltrate into ground water first; and
- The percolation pond/infiltration gallery provides treatment for the removal of any suspended solids remaining in the effluent prior to the effluent percolating into state surface waters.

These factors were considered in accordance with ARM 17.30.1203. Given that the TSS in the effluent will either settle out or otherwise be removed prior to infiltration into ground water, DEQ has determined using BPJ on a case-by-case basis that the NSPS TBEL for TSS is not applicable to the discharges at Outfalls 001 and 002. The discharges from Outfall 003 have, at a minimum, the NSPS TBELs from 40 CFR 440.104(a) applied.

In order to qualify for the discharge exception provided at 40 CFR 440.104(b)(2)(i) the facility must, at a minimum, determine and document the volume of rainfall in excess of the 10-year, 24-hour storm event based on the surficial area of the facility producing runoff as well as the duration and intensity of the storm event producing the runoff. These discharge allowances are not based on cumulative or multiple events; e.g. a discharge resulting from back-to-back storm events that are less than the 10-year, 24-hour design storm is not allowed.

Applicable Effluent Limitation Guidelines, Outfall 004

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfall 004 will begin after the new source date, meeting the ELG definition of a new source. Accordingly, the NSPS are the applicable level of control required.

Outfall 004 is a storm water only outfall for runoff from the proposed Upper Libby Adit Pad. The Upper Libby Adit will begin construction underground from within the existing Libby Adit and will eventually daylight at the Upper Libby Adit Pad about 1 mile away. The Upper Libby Adit will be constructed in a manner such that any waste rock produced and/or any water encountered during the construction of the Upper Libby Adit will be directed into the existing Libby Adit for removal and

subsequent treatment as necessary. DEQ's understanding is that the facility will not store any ore on the Upper Libby Adit Pad. Given the proposed method of construction for the Upper Libby Adit, the storm water discharges from Outfall 004 are not expected to contain any process wastewater or mine drainage; there are not any numeric ELGs applicable to this type of discharge at Outfall 004. The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfall 004 is prohibited.

Finally, given the proposed nature of discharge at Outfall 004 and the nature of storm water-driven discharge events, DEQ is establishing the use of Best Management Practices (BMPs) for the control of pollutants discharged at Outfall 004 (40 CFR 122.44(k); ARM 17.30.1345); see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric effluent limits to prevent or control the discharge of pollutants to surface state waters.

Applicable Effluent Limitation Guidelines, Outfalls 005-008

The new source date for the ELGs in the Ore Mining and Dressing Point Source Category is December 3, 1982. For the purposes of determining the applicable ELGs only and based on the information in the permit application, DEQ has determined that discharges from Outfalls 005-008 would begin after the new source date, meeting the ELG definition of a new source.

Outfalls 005-008 are storm water only outfalls for runoff from access roads and haul roads which are not part of the active mine area. Discharges from these outfalls are not expected to contain process wastewater or mine drainage; there are not any numeric ELGs applicable to this type of discharge at Outfalls 005-008. The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 005-008 is prohibited.

Finally, given the description of the proposed discharges at Outfalls 005-008 and the nature of storm water-driven discharge events, DEQ is establishing the use of BMPs for the control of pollutants discharged at Outfalls 005-008 (40 CFR 122.44(k); ARM 17.30.1345); see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric effluent limits to prevent or control the discharge of pollutants to state surface waters.

2.1.3 TBEL Calculations

The effluent limitation guidelines applicable to the facility are not expressed in terms of mass or other production-based limitations. The effluent limitations will therefore be expressed in terms of concentration as given in 40 CFR Part 440 Subpart J.

2.1.4 Final TBELs

This section summarizes the TBELs applicable to the facility.

NUMERIC TBELS, OUTFALLS 001-002

Table 11 below summarizes the numeric TBELs for the facility applicable to Outfalls 001-002.

Table 11. Technology-Based Effluent Limitations, Outfalls 001-003

Parameter	Units	Daily Maximum Limitation	30-day Average Limitation
Copper	mg/L	0.30	0.15
Zinc	mg/L	1.5	0.75
Lead	mg/L	0.6	0.3
Mercury	mg/L	0.002	0.001
Cadmium	mg/L	0.10	0.05
pH	s.u.	Between 6.0 and 9.0 at all times	

NUMERIC TBELS, OUTFALL 003

Table 12 summarizes the numeric TBELs for the facility applicable to Outfall 003.

Table 12. Technology-Based Effluent Limitations, Outfall 003

Parameter	Units	Daily Maximum Limitation	30-day Average Limitation
Total Suspended Solids (TSS)	mg/L	30.0	20.0
Copper	mg/L	0.30	0.15
Zinc	mg/L	1.5	0.75
Lead	mg/L	0.6	0.3
Mercury	mg/L	0.002	0.001
Cadmium	mg/L	0.10	0.05
pH	s.u.	Between 6.0 and 9.0 at all times	

NUMERIC TBELS, OUTFALL 004-008

There are no numeric TBELS applicable to the discharges from Outfalls 004-008.

ALTERNATIVE TBELS FOR PRECIPITATION, OUTFALLS 001-003

If the permittee documents and demonstrates that a discharge occurs as a result of the conditions outlined in both 40 CFR 440.104(b)(2)(i) and 40 CFR 440.131(c) then the discharge of a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized in Table 12 above. This documentation must be submitted to DEQ and must include, at a minimum, the following:

- The annual evaporation value for the facility and how this value was determined;
- The drainage area contributing runoff to these outfalls and how this value was determined;
- The rainfall hyetograph for each individual storm event in excess of the 10-year, 24-hour design storm; and
- Confirmation monitoring in accordance with the storm water monitoring requirements as outlined below in Table 34 of Section 3.1.1 of this fact sheet.

ALTERNATIVE TBELS FOR INTERFERENCE, OUTFALLS 001-003

If the permittee documents and demonstrates the need for a discharge due to interference that meets all of the requirements under both 40 CFR 440.104(b)(2)(ii) and 40 CFR 440.131(d) then a

discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment may be discharged subject to, at a minimum, the effluent limitations as listed above in Table 12 above. The facility has the burden of demonstrating to DEQ that a discharge of this nature is necessary to eliminate interference in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water.

ALTERNATIVE TBELS, OUTFALLS 004-008

Pursuant to 40 CFR 122.44(k) and ARM 17.30.1345, DEQ is establishing the use of BMPs for the control of pollutants discharged at Outfalls 004-008; see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric water quality-based effluent limits to prevent or control the discharge of pollutants to state surface waters.

NARRATIVE TBELS, OUTFALLS 001-003

There are not any narrative TBELs that are applicable to any discharges from Outfalls 001-003.

NARRATIVE TBELS, OUTFALLS 004-008

The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 004-008 is prohibited.

2.2 Water Quality-based Effluent Limitations (WQBELs)

Section 301(b) of the CWA and 40 CFR 122.44(d), incorporated into ARM 17.30.1344(2)(b) by reference, require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. ARM 17.30.635 requires that the degree of waste treatment required to restore and maintain the quality of state water shall be based on the surface water quality standards, and: 1) the state's policy of nondegradation of existing water quality in 75-5-303, MCA; 2) present and anticipated (designated) uses of the receiving water; 3) the quality and nature of flow of the receiving water; 4) the quantity and quality of sewage, industrial or other wastes to be treated; and, 5) the presence or absence of other sources of pollution in the watershed.

2.2.1 Scope and Authority

The WQA at 75-5-401(2), MCA states that a permit may only be issued if DEQ finds that the issuance or continuance of the permit will not result in pollution of any state waters. The Montana water quality standards (general prohibitions) at ARM 17.30.637 require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or may reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 and states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards.

On July 25, 2014, the Board adopted new rules governing nutrients for surface waters, including Circulars DEQ-12A (Montana Base Numeric Nutrient Standards) and DEQ-12B (Nutrient Standard Variances). These standards apply to the parameters Total Nitrogen and Total Phosphorus.

2.2.2 Applicable Water Quality Standards

WQBELs are evaluated for all parameters of concern based on the water quality standards that are applicable to the receiving water at the point of discharge. The water use classification and water quality standards that apply to the receiving water body for each regulated outfall are summarized below.

Water Use Classification, Outfalls 001 and 002

Outfalls 001 and 002 discharge indirectly into Libby Creek via alluvial ground water. Libby Creek is located within the Upper Kootenai watershed in U.S. Geological Survey (USGS) Hydrological Unit Code (HUC) 17010101. This reach of Libby Creek does not have a Montana stream assessment identification; Montana stream assessment unit MT76D002_061 (Libby Creek, from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station LB-300. The designated water-use classification for the drainage is B-1.

Water Use Classification, Outfalls 003, 004, and 005

The receiving water for Outfalls 003, 004, and 005 is Libby Creek. Libby Creek is located within the Upper Kootenai watershed (HUC 17010101). This reach of Libby does not have a Montana stream assessment identification; Montana stream assessment unit MT76D002_061 (Libby Creek, from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station LB-300. The designated water-use classification for the drainage is B-1.

Water Use Classification, Outfall 006

The receiving water for Outfall 006 is Ramsey Creek. Ramsey Creek is located within the Upper Kootenai watershed (HUC 17010101). A Montana stream assessment unit identification is not available for this stream. The designated water-use classification for the drainage is B-1.

Water Use Classification, Outfalls 007 and 008

The receiving water for Outfalls 007 and 008 is Poorman Creek. Poorman Creek is located within the Upper Kootenai watershed (HUC 17010101). A Montana stream assessment unit identification is not available for this stream. The designated water-use classification for the drainage is B-1.

B-1 Beneficial Uses and General Prohibitions

The beneficial uses for waters classified as B-1 are summarized in Table 13.

Table 13. Receiving Water Use

Classification	Beneficial Uses
B-1	Drinking, culinary and food processing purposes after conventional treatment Bathing, swimming, and recreation Growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers Agricultural and industrial water supply

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining

shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to these general provisions, DEQ has determined that at the point of discharge the receiving water is considered perennial and therefore the specific water quality standards identified in ARM 17.30.623 are applicable to the receiving water for these outfalls. The specific water quality standards are summarized in Appendix 1.

Water Quality Standards, Outfalls 001-008

The numeric water quality standards applicable to the discharges from Outfalls 001-008 are summarized in Appendix 1. The applicable water quality standards are based on design conditions discussed in Section 2.2.8 of this fact sheet. The magnitude of some numeric standards is dependent on characteristics of the receiving water (such as hardness, pH, and temperature) and is summarized in Table 14; additional receiving water characteristics are found in Appendix 2.

Table 14. Basis for Certain Numeric Water Quality Standards

Dependent Parameter	Measured Upstream Parameter	Statistic
Metals – Cadmium, Chromium (III), Copper, Lead, Nickel, Silver, and Zinc	Total Hardness (mg/L as $CaCO_3$)	25th percentile
Ammonia – Acute	pH	75th percentile
Ammonia – Chronic	pH	75th percentile
	Temperature	75th percentile

2.2.3 Nutrients

The facility is located in the Northern Rockies (15) ecoregion; the numeric nutrient standards for Total Phosphorus (0.025 mg/L) and Total Nitrogen (0.275 mg/L) apply from July 1st through September 30th.

With respect to the parameter Total Phosphorus, DEQ evaluated the data in the MPDES permit application and supplemental materials and determined that the facility does not currently demonstrate reasonable potential to violate the Total Phosphorus numeric nutrient standard (see Sections 2.2.7 through 2.2.9 below for further discussion).

With respect to the parameter Total Nitrogen, on June 29, 2015, the permittee requested that the Board Order for the facility be honored for nitrogen in surface and ground waters of the Libby Creek, Ramsey Creek, and Poorman Creek drainages. Lacking a numeric nutrient standard for nitrogen, the Board determined, after evaluating the information and testimony provided during the proceedings, that a limitation of 1.0 mg/L for Total Inorganic Nitrogen in the surface and ground

waters listed above was protective of the current and future beneficial uses of these state waters. This was based, in part, on the fact that the form of nitrogen in the wastewater from this mine is expected to be comprised entirely of the inorganic forms of nitrogen; as such, DEQ will use the authorization to degrade value for Total Inorganic Nitrogen of 1.0 mg/L in the development of a Total Nitrogen effluent limit. DEQ will not relax the Total Nitrogen standard to the higher human health water quality standard for Nitrate (10 mg/L) or keep this limit at 1.0 mg/L in perpetuity since the applicable Total Nitrogen standard is 0.275 mg/L for surface waters in this Montana ecoregion.

The permittee has also asked for a 20-year compliance schedule to allow for the development of technology to meet the nutrient standards as listed in Department Circular DEQ-12A. The issuance of this MPDES permit will include a compliance schedule; please see Section 2.5 of this fact sheet for further details. The compliance schedule will require the permittee to optimize nutrient reduction and to meet the nutrient standards as listed in Department Circular DEQ-12A 20 years from the effective date of the numeric nutrient standards (i.e. no later than August 7, 2034). DEQ will evaluate the compliance schedule under each subsequent MPDES permit renewal application. Please see Section 2.2.6 for the nondegradation analysis of Total Nitrogen.

2.2.4 Impaired Waters

The WQA at 75-5-702, MCA requires that DEQ monitor state waters and assess the quality of those waters to identify surface water bodies or segments of surface water bodies whose designated uses are either threatened or impaired. The WQA at 75-5-703, MCA requires that DEQ complete a Total Maximum Daily Load (TMDL) for those water bodies that are identified as either threatened or impaired. These requirements satisfy Sections 303(d) and 305(b) of the federal CWA.

2014 303(d) List

Poorman Creek and Ramsey Creek are not listed as impaired on Montana's 2014 Clean Water Act 303(d) list.

TMDL Listed Impairments Not Pollutant-Related

Montana stream assessment unit MT76D002_061 (the reach of Libby Creek from 1 mile above Howard Creek to the Highway 2 bridge) begins about 0.5 miles downstream from monitoring station LB-300. The water quality category for assessment unit MT76D002_061 is 4C. This reach is listed as not supporting aquatic life; the probable causes of the identified impairment for this assessment unit are listed as physical substrate habitat alterations and/or alteration in stream-side or littoral vegetative covers. These categories of impairments are not caused by contaminants affecting aquatic life so a TMDL for contaminants in stream assessment unit MT76D002_061 is not required.

TMDL Completed

A TMDL for Montana stream assessment unit MT76D002_062 (the reach of Libby Creek from the Highway 2 bridge to mouth (Kootenai River)) is complete (*Kootenai – Fisher Project Area Metals, Nutrients, Sediment, and Temperature TMDLs and Water Quality Improvement Plan*; approved May 7, 2014). The TMDL for sediment, expressed as an average annual load, for Montana stream assessment unit MT76D002_062 is 4,234 tons/year. As part of this TMDL, the facility is assigned a WLA of 24 tons/year. However, because of the conditions set within the MPDES permit and the nature of sediment loading associated with this MPDES permit, the WLA is not intended to add load

limits to the MPDES permit. Based on the BMPs and other conditions in MPDES permit for the facility, the TMDL states that the intent of the WLA will be met by adhering to the terms and conditions as listed in the MPDES permit for the facility.

2.2.5 Pollutants and Parameters of Concern

WQBELs are only assessed for those parameters or pollutants of concern (POC) based on the effluent characteristics and the water quality objectives for the affected receiving water(s). DEQ has identified the POCs listed in Table 15 below for purposes of assessing WQBELs.

Table 15. Parameters and Pollutants of Concern

Parameter	Basis for Identifying a Parameter as a Pollutant of Concern
Outfalls 001-003	
TSS, Copper, Zinc, Lead, Mercury, Cadmium, pH	Applicable TBELs
TDS, Cadmium, Chromium, Copper, Iron, Manganese, Mercury, Lead, Zinc, Total Inorganic Nitrogen, Total Ammonia	Existing WQBELs (including parameters listed in the BHES Order)
TSS, Nitrate + Nitrite, Oil & Grease, Total Phosphorus, Sulfate, Aluminum, Barium, Iron, Manganese, Antimony, Arsenic, Cadmium, Chromium, Copper, Lead, Zinc	Required monitoring
TSS	TMDL
Oil & Grease, Aluminum	Existing Sources: Potentially present in the discharge at levels exceeding any applicable water quality standard
Outfalls 004-008	
TSS, Oil & Grease, Nitrate (Outfall 004 only), Metals (e.g. Iron, Manganese, and Zinc; Outfall 004 only)	Application and supplemental materials

<u>Temperature</u>

Based on the current MPDES permit application and supplemental materials provided by the permittee, DEQ has not identified temperature as a parameter of concern in this MPDES permit renewal. The facility does not add, propose to add, or otherwise use heat in any of their industrial processes or wastewater treatment processes. Supplemental temperature data for Libby Creek at monitoring stations LB-200 and LB-300 are found in Appendix 6. This data indicates that the observed temperatures for Libby Creek were within the range of temperatures necessary for bull trout survival (U.S. Fish and Wildlife Service) but potentially below temperatures for optimal bull trout growth (Idaho Department of Environmental Quality; Selong *et al*.).

The U.S. Fish and Wildlife Service's 2014 Biological Opinion on bull trout indicates that the agency's preferred alternatives for the Montanore Project are not likely to jeopardize the continued existence of the bull trout and are not likely to either destroy or adversely modify bull trout critical habitat; please refer to Volume I Chapter 1.6.1.2 (U.S. Fish and Wildlife Service) of the Joint Final Environmental Impact Statement for the Montanore Project for further discussion. Additionally, please refer to the Volume I Chapter 3.6.3.9 (Threatened and Endangered Fish Species) of the Joint Final Environmental Impact Statement for the Montanore Project for a discussion on the bull trout

population in the vicinity of the Montanore Project as well as the surrounding areas. Finally, this permit will require both upstream and downstream monitoring of temperature in Libby Creek as well as monitoring of the temperature of the effluent in order to determine if reasonable potential exists for the discharge to violate a temperature water quality standard that would require a temperature limit under a future MPDES permit action.

2.2.6 Nondegradation Analysis

The WQA includes a nondegradation policy at 75-5-303, MCA which protects existing water quality from undue degradation. This policy applies to any new or increased activity which results in a change in existing water quality. The WQA states that it is unlawful to cause degradation of state waters unless authorized by DEQ pursuant to ARM 17.30.706-708. The regulations at ARM 17.30.701 *et seq*. implement the state's nondegradation policy. The level of protection provided to the receiving water(s) is specified in ARM 17.30.705(2) and conforms to three "tiers" of the federal antidegradation policy at 40 CFR 131.12. These three levels of protection are as follows:

- *Protection of Existing Uses (Tier 1)* – Existing and anticipated (designated) uses of state waters and the level of water quality necessary to protect those uses must be maintained and protected (ARM 17.30.705(2)(a)). Tier I protection applies to all state waters including waters not designated as high quality. The effluent limitations applied to outfalls subject to this level of protection are derived from and comply with the state's numeric and narrative water quality standards and, therefore, ensure the level of water quality necessary to attain and maintain existing and anticipated uses are fully protected. In accordance with ARM 17.30.706(3)(d) effluent limitations based on this level of protection might need to be based on protection of any downstream or downgradient receiving waters, which could require a higher level of protection.
- *Protection of High Quality Waters (Tier 2)* – Unless authorized by DEQ under ARM 17.30.706 – 708 (authorization to degrade) or exempted from review under 75-5-317, MCA, the quality of high-quality waters must be maintained (75-5-303(2), MCA; ARM 17.30.705(2)(b)). High quality waters, as defined 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 designated uses for their classification or that have zero flow or surface expression for more than 270 days during most years. Any water body for which the critical receiving water pollutant concentration (C_s) is less than the applicable water quality standard (S) is considered high quality. This determination is made on a parameter by parameter basis and may include waters listed on the state's 303(d) list.
- *Protection of Outstanding Resource Waters (Tier 3)* – 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.

DETERMINATION – EXISTING, NEW, OR INCREASED SOURCES

For the purposes on nondegradation, DEQ has made the following determinations, based on the information provided in Section 1.1 of this fact sheet, for each outfall with respect to the proposed discharges. This information is summarized below in Table 16.

Table 16. Source Determination

Outfall(s)	Receiving Water	Source Determination	Nondegradation - Level of Protection Required
001, 002	Libby Creek via Alluvial Ground Water	New	Tier 2 with an Authorization to Degrade[(1)(2)]
003	Libby Creek	New	Tier 2 with an Authorization to Degrade[(1)(2)]
004, 005	Libby Creek	New	Tier 2 with an Authorization to Degrade[(1)(2)]
006	Ramsey Creek	New	Tier 2 with an Authorization to Degrade[(1)]
007, 008	Poorman Creek	New	Tier 2 with an Authorization to Degrade[(1)]

Footnotes:
1. The Authorization to Degrade is only for the specific parameters listed in the BHES Order; other parameters not listed in the BHES Order are subject to the application of the nondegradation policy.
2. Libby Creek is considered a Tier 1 water with respect to the Total Nitrogen parameter.

IMPLEMENTATION

For new sources discharging to Tier 2 receiving waters and in the absence of a request by the permittee to degrade state waters, DEQ develops WQBELs based on criteria for determining nonsignificant changes in water quality in ARM 17.30.715(1). For purposes of determining the significance of a proposed activity or discharge, the change is measured relative to the existing water quality. Existing water quality means the quality of the receiving water, including chemical, physical, and biological conditions immediately prior to commencement of the proposed activity or discharge, or that which may be adequately documented to have existed on or after July 1, 1971, whichever is the highest quality (ARM 17.30.702(4)). DEQ uses the 25th percentile of the background water quality of the receiving water as the "existing water quality."

Since WQBELs for pollutants or parameters discharged to high quality waters are derived from and comply with the criteria for determining nonsignificant changes in water quality, they protect the existing water quality of a high quality receiving water to the extent practicable. Any applicable nondegradation criteria for the parameters of concern are summarized in Appendix 1. The nonsignificance criteria were developed based on consideration of the quantity and strength of the pollutant, the length of time the changes will occur, and the character of the pollutant (ARM 17.30.715). The applicable WQBELs calculated from nondegradation criteria are discussed in Appendix 5. The WQBELs for new discharges to Tier 2 receiving waters are based on the nonsignificance criteria at ARM 17.30.715(1); these criteria are summarized in Table 17 below.

Table 17. Nonsignificance Criteria for Discharges to Tier 2 Receiving Waters

Category of Parameter	Criterion (S_{ND})	Basis
Flow	± 15% of the Mean Monthly Flow or ± 10% of the 7Q10	ARM 17.30.715(1)(a)
Carcinogens or parameters with a bioconcentration factor greater than 300	Background (C_{75})	ARM 17.30.715(1)(b)
Toxic	15% of applicable standard	ARM 17.30.715(1)(c)
Harmful (other than carcinogenic, bioconcentrating, or toxic parameters) and parameters listed in Circular DEQ-12A)	10% of applicable standard if receiving water quality is 40% of applicable standard	ARM 17.30.715(1)(f)

New Sources, Outfalls 001-003

On November 20, 1990, the BHES granted NMC's petition to discharge at the water quality standards limits for specific parameters in surface and ground waters in the Libby, Poorman and Ramsey Creek watersheds adjacent to the Montanore Project (BHES 93-001-WQB). The Order established numeric limits for the parameters Chromium, Copper, Iron, Manganese, Zinc, Nitrate + Nitrite, Total Ammonia, and Total Dissolved Solids. The nitrogen species were also addressed as Total Inorganic Nitrogen as only the inorganic species of nitrogen is generated by the mine; no organic nitrogen would be generated by mine processes or operations. The Order limits supersede and/or replace any nondegradation criteria for only the parameters similarly specified in the Order.

New Sources, Outfalls 004-008

In accordance with ARM 17.30715(3), DEQ may determine the significance of changes in water quality using 75-5-301(5)(c), MCA as guidance. Specifically, 75-5-301(5)(c), MCA establishes criteria for determining whether an activity results in nonsignificant changes to water quality based on the following factors:

- Equates significance with the potential for harm to human health, a beneficial use, or the environment;
- Considers both the quantity and the strength of the pollutant;
- Considers the length of time the degradation will occur; and
- Considers the character of the pollutant so that greater significance is associated with carcinogens and toxins that bioaccumulate or biomagnify and lesser significance is associated with substances that are less harmful or less persistent.

The facility's storm water controls are designed based, in part, on the 10-year, 24-hour storm event; this type of storm event has a 10% probability of occurring during any given year. Discharges from Outfalls 004-008 are expected to be as a result of precipitation falling on the drainage area of each individual outfall that is in excess of that from a 10-year, 24-hour storm event.

Similarly, discharges from storm events greater than the 10-year, 24-hour event (e.g. a 50-year, 24-hour storm) would benefit from some initial treatment and/or retention from the storm water controls that are designed based on a 10-year, 24-hour storm event, lessening the potential impacts when compared to the same magnitude storm event without any storm water controls in place. Discharges as a result storm events with a magnitude that is greater than that of the 10-year, 24-hour design storm (e.g. a 50-year, 24-hour storm event) do not represent discharges with the potential to harm human health, a beneficial use, or the environment since any impacts from these events occur on a much less frequent basis and are alleviated by the storm water controls based on the 10-year, 24-hour event and required as a condition of the MPDES permit for the facility.

The major pollutant of concern in storm water-driven discharges is sediment. Controlling for sediment will also control for many other pollutants since most of these constituents are attached to or become attached to sediment particles that are transported by runoff and subsequently captured by BMPs. Pollutants associated with carcinogens and toxins that bioaccumulate or biomagnify are not expected as the discharges here are comprised solely of storm water runoff. To further minimize the potential impacts from of any storm water driven discharges, DEQ is establishing the use of BMPs for the control of pollutants discharged at Outfalls 004-008 (40 CFR 122.44(k); ARM 17.30.1345); see Sections 2.1 and 4.2 of this fact sheet.

BMPs are defined as a permit condition and are used in conjunction with numeric effluent limits to prevent or control the discharge of pollutants to state surface waters. The MPDES permit for the facility stipulates that (in addition to any applicable numeric effluent limits) BMPs must be implemented prior to the commencement of any regulated activities at these outfalls. The MPDES permit also includes provisions for the ongoing evaluation of BMPs to ensure the minimization and/or elimination of pollutants contained in storm water runoff as well as the required monitoring of any discharges from Outfalls 004-008. DEQ has determined that with the proper selection, installation, and maintenance of BMPs, the discharge of storm water and storm water-driven sediment does not represent a significant change in water quality since the magnitude, duration, and frequency of any storm water discharge events (and their potential short-term impacts) are minimized and/or eliminated.

Based on the discussion above, DEQ finds that, pursuant to ARM 17.30.715(3), the proposed discharge at Outfalls 004-008 are a nonsignificant change in existing water quality due to their low potential for harm to human health, a beneficial use, or the environment and in consideration of the quantity and the strength of the expected pollutants; the length of time any degradation may occur; and the expected character of the discharges (see 75-5-301(5)(c), MCA; 75-5-303(3)(c), MCA; 75-5-317(2)(b), MCA).

Total Nitrogen, Outfalls 001-003

The ambient Total Nitrogen data for Libby Creek evaluated by DEQ indicates that, in consideration of the Total Nitrogen numeric nutrient standard of 0.275 mg/L recently adopted by the Board, Libby Creek is above the standard. DEQ is not aware of any known anthropogenic sources in the Libby Creek drainage upstream of the regulated activity considered within this MPDES permitting action that are negatively impacting the Total Nitrogen water quality of Libby Creek. As such, and with respect to the parameter Total Nitrogen only, Libby Creek is considered Tier 1 water for the purpose

of implementing the state's nondegradation policy. The permittee is also authorized to discharge 1.0 mg/L of Total Inorganic Nitrogen by the Board (BHES 93-001-WQB). Since Total Nitrogen is the same as Total Inorganic Nitrogen expected in discharges from the mine, DEQ will use the Total Inorganic Nitrogen standard established by the Board (1.0 mg/L), as appropriate with a compliance schedule, in developing effluent limits for Total Nitrogen to protect the beneficial uses of state water.

Increased Sources

DEQ has determined that there are no increased discharges proposed by the permittee that are subject to the nondegradation requirements.

2.2.7 Mixing Zones

A mixing zone is an area where the effluent mixes with the receiving water and certain numeric water quality standards may be exceeded (ARM 17.30.502(6)). The Board has adopted rules governing the granting of mixing zones in surface and ground water in ARM 17.30.501 *et seq*. These rules require DEQ to determine the applicability of any currently granted mixing zones in the permit renewal process (ARM 17.30.505(1)). Discharges that do not conform to the criteria of ARM 17.30.501 *et seq*. are deemed to be causing impairment and are therefore subject to review and modification.

A mixing zone is necessary for any parameter which has a reasonable potential to exceed a water quality standard or nondegradation criterion. A discharger may request a standard or source specific mixing zone during the permit application process and provide the necessary information. DEQ must determine the appropriateness of the requested mixing zone and will either grant the requested mixing zone, deny the mixing zone, or grant an alternative or modified mixing zone (ARM 17.30.515). A mixing zone is not assumed for any parameter unless specifically authorized in the MPDES permit.

The length of a mixing zone is the distance from the point of discharge to the point in the receiving water where all applicable water quality standards must be met. The length of the mixing zone and dilution ratio must be smallest practicable size and have minimal effect on beneficial uses. The length of the mixing zone must be specified in the permit.

The discharge must also comply with the general prohibitions of ARM 17.30.637(1), which requires that state waters, including mixing zones, be free from certain substances. A mixing zone may not be granted for any parameter subject to either a technology-based effluent limitation(s) or standard(s), or a new source performance standard(s) as described in Section 2.1 of this fact sheet or at ARM 17.30.1203 through 1209. For new sources and discharges, changes in water quality at the boundary of the mixing zone must be must be nonsignificant pursuant to the criteria of ARM 17.30.701 *et seq*.

ACUTE MIXING ZONE

In accordance with ARM 17.30.517(1)(b), acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless DEQ finds that allowing minimal initial dilution will not threaten or impair existing uses. An acute mixing zone (zone of initial dilution) is not granted for any toxic or persistent substances (ARM 17.30.506(1)(d)) unless the discharger

demonstrates complete and rapid mixing. Complete and rapid mixing is demonstrated through the use of an effective effluent diffuser.

DEQ does not authorize an acute mixing zone for any parameters within this issuance of the MPDES permit.

CHRONIC AND HUMAN HEALTH MIXING ZONES

DEQ may grant a mixing zone for numeric chronic aquatic life, human health, and other narrative water quality standards in Department Circular DEQ-7 or the nondegradation criteria in ARM 17.30.715. A mixing zone may also be granted for chronic WET. Chronic mixing zones are based on the critical flow of the receiving water specified in ARM 17.30.635 and Section 2.2.8 of this fact sheet. Except for nutrients, the design condition for discharges to flowing rivers and streams is the seven-day, 10-year low flow (7Q10). For purposes of water quality-based permitting calculations, the mixing zone provided is generally equated with a dilution allowance (i.e., a percentage of critical low flow) or a dilution ratio (D). ARM 17.30.516(3) defines the dilution ratio as 7Q10 of the stream segment without the discharge divided by the flow of the discharge. The facility design discharge is less than one (1) mgd. The dilution ratio of Libby Creek's 7Q10 to the facility's design discharge is 2.7. Pursuant to ARM 17.30.516(3)(b), DEQ authorizes a chronic mixing zone, at 25% of the 7Q10, at Outfalls 001-003 for the following parameters:

- Nitrate + Nitrite;
- Total Inorganic Nitrogen;
- Chromium;
- Copper
- Iron;
- Lead;
- Manganese; and
- Zinc.

NUTRIENT MIXING ZONE

Nutrients, as listed in Circular DEQ-12A, include the parameter Total Nitrogen. For the discharge of nutrients to flowing rivers and streams, the design condition is the 14-day, 5-year low flow (14Q5). The WQBEL for Total Nitrogen must be based on dilution with the entire seasonal 14Q5 low flow of the receiving water without the discharge (ARM 17.30.516(3)(e)). Accordingly, DEQ authorizes dilution with 100% of the 14Q5 at Outfalls 001-003 for the parameter Total Nitrogen.

GROUND WATER MIXING ZONE

The 2006-issued MPDES permit for the facility authorized a chronic ground water mixing zone for Outfalls 001 and 002 from their point of discharge to Libby Creek at the downgradient to monitoring station LB-300 for the following parameters:

- Nitrate + Nitrite;
- Total Inorganic Nitrogen;
- Chromium;
- Copper;

- Iron;
- Manganese; and
- Zinc.

The ground water mixing zone authorized in the 1997-issued MPDES permit and continued in the 2006-issued MPDES permit will be retained in this issuance of the MPDES permit.

PREVIOUSLY AUTHORIZED MIXING ZONES

The standard mixing zone authorized in the 1997-issued MPDES permit and continued in the 2006-issued MPDES permit is summarized in Table 18.

Table 18. Previously Authorized Mixing Zone Characteristics

Outfall	Parameters	Length (L)
001	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
002	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
003	Total Inorganic Nitrogen, Chromium, Copper, Iron, Manganese, and Zinc	Point of discharge into Libby Creek downgradient two stream widths

This standard mixing zone is based, in part, on the facility's Authorization to Degrade (BHES 93-001-WQB) as issued by the Board; the decision to authorize a standard mixing zone is also based on the criteria in ARM 17.30.516(3). Specifically, DEQ determined that Libby Creek is a high gradient, low volume stream where complete and nearly instantaneous mixing was documented based on monitoring data collected between 1990 and 1992. Accordingly, the authorized surface water mixing zone in Libby Creek for Outfalls 001 and 002 was from the point of discharge to monitoring location LB-300; the authorized surface water mixing zone in Libby Creek for Outfall 003 was two (2) stream widths downstream from the point of discharge. This mixing zone is for chronic conditions only; DEQ did not authorize an acute mixing zone for any parameters.

MIXING ZONE DETERMINATION, OUTFALLS 001-003

The standard mixing zone authorized in this MPDES permit issuance is summarized in Table 19. This mixing zone is for chronic conditions only; DEQ does not authorize a mixing zone for any acute conditions.

Table 19. Authorized Mixing Zone

Outfall	Parameters	Length
001	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
002	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge via ground water to Libby Creek downgradient to monitoring location LB-300
003	Nitrate + Nitrite, Total Inorganic Nitrogen, Chromium, Copper, Iron, Lead, Manganese, and Zinc	Point of discharge into Libby Creek downstream two stream widths

MIXING ZONE DETERMINATION, OUTFALLS 004-008

DEQ does not authorize a mixing zone for any parameters discharged from Outfalls 004-008; any applicable effluent limitations for these outfalls must be met at the end-of-pipe discharge.

WATER QUALITY ASSESSMENT

A water quality assessment is required for any authorized mixing zone. In accordance with ARM 17.30.506(1) a mixing zone will not be authorized if it would threaten or impair existing beneficial uses.

Outfalls 001-003

DEQ authorizes a mixing zone for the discharges from Outfalls 001-003; see Table 19 above. A water quality assessment for Libby Creek is presented below in Table 20.

Outfalls 004-008

DEQ does not authorize a mixing zone for any discharges from Outfalls 004-008; a water quality assessment for these outfalls is not required.

Table 20. Water Quality Assessment

Condition	Basis
Biologically Important Area: Discuss presence of any species of special concern, endangered or listed species; does downstream receiving water support spawning or rearing habitat for these species.	The potential impacts to bull trout and grizzly bears and any associated mitigations are addressed in the Joint Final EIS for the Montanore Project.
Drinking Water Intake: Distance to nearest downstream drinking water intake.	The only listed public water supply in Lincoln County utilizing surface water as a water source is the City of Libby. The City of Libby uses Flower Creek as their source water; Flower Creek is in a different drainage that is unaffected by the discharges from the facility. There is one known private domestic intake on Libby Creek estimated at 2.5 miles downstream from the boundary of the mixing zone.
Recreational Area: Distance to nearest downstream designated recreation area (fish access sites, public beach, etc.).	The facility is within the Kootenai National Forest. The Howard Lake Campground is the closest recreational area; this campground is about two miles east of the facility and is physically located in a different drainage that is unaffected by the facility's discharge. Rapid and complete mixing of the effluent in the receiving water ensures no impairment of use beyond the boundaries of the mixing zone.
Attraction to Aquatic Life: Describe thermal effect (heating or cooling) of discharge.	Outfalls 001 and 002: discharge into ground water is expected to attenuate any thermal effects; synoptic temperature data indicates less than one degree change between monitoring locations LB-200 and LB-300. Outfall 003: there has not been a reported discharge at this outfall. The conditions where a direct discharge to Libby Creek is necessary are expected to be limited in duration and frequency during the term of the permit; the adit water treated by the facility is at or near typical ground water temperatures. Heat is not added as part of the facility's wastewater treatment process. Synoptic temperature data indicates less than one degree change between monitoring locations LB-200 and LB-300. A direct discharge to Libby Creek is not expected to attract aquatic life or to have a thermal effect on Libby Creek.

Table 20. Water Quality Assessment

Condition	Basis
Toxic or Persistence Substances: 1. Has effluent been adequately characterized for toxic and persistent parameters, including seasonal variation? 2. Has effluent been adequately characterized for WET, including seasonal variation? 3. Bioavailability of toxic or persistent parameters in far field considered.	There is adequate data available for most parameters expected in discharge. Planned operations of the facility indicate that seasonal variation in the parameters in the any effluent discharged is not expected. The facility has not performed WET testing; quarterly WET testing will be required in this MPDES permit. Biological monitoring is required as part of Operating Permit #00150 and under the BHES Order. The water quality standards and/or nondegradation criteria used in the reasonable potential analysis consider bioavailability (when appropriate). Mixing is nearly instantaneous.
Passage of Aquatic Organisms: 1. Area or percent of receiving water unaffected by mixing at design flow. 2. If tributaries present in mixing zone discus why passage is not expected to be affected.	This MPDES permit does not authorize an acute mixing zone for any parameters discharged from any outfall. Outfalls 001 and 002: instantaneous mixing due to diffuse ground water discharge into Libby Creek; fish passage is not expected to be impacted. Outfall 003: high gradient stream system with instantaneous mixing; fish passage is not expected to be impacted.
Cumulative Effects: 1. Adequate upstream characterization for all mixing zone parameters (min. 10 samples within 3 years). 2. Distance to nearest downstream point source discharge. 3. Distance to upstream to nearest point source discharge.	Monitoring data dates back as early as 1973. There is adequate data available for most parameters. The continued monitoring of ambient upstream conditions is required under this MPDES permit renewal. The nearest downstream point source discharges are the City of Libby's Water Treatment Plant and Waste Water Treatment Plant; there are no upstream point source discharges regulated by DEQ.

2.2.8 Reasonable Potential Analysis and Design Conditions

Montana water quality standards at ARM 17.30.637(2) state that no wastes may be discharged, either alone or in combination with other wastes, or activities, that will violate or may reasonably be expected to violate any of the standards. The federal regulations at 40 CFR 122.44(d), incorporated by reference at ARM 17.30.1344, require that all effluents be assessed by the permitting authority to determine the need for WQBELs in the permit. Specifically, 40 CFR 122.44(d)(1)(i) states that limitations must be established in permits to 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. A "reasonable potential analysis" (RPA) is used to determine whether a discharge, alone or in combination with other sources of pollutants to a water body may lead to an excursion above an applicable water quality standard or nondegradation criterion.

40 CFR 122.44(d)(1)(ii) requires that the procedures used by the permitting authority account for: the existing controls on point and nonpoint sources of pollution; the variability of the pollutant or pollutant parameter; the sensitivity of the species to toxicity testing (WET); and, where appropriate, the dilution of the effluent in the receiving water. For purposes of developing WQBELs and the RPA, DEQ uses a mass-balance equation, which is a simple, steady-state model. The mass-balance equation is used to determine the concentration of a pollutant of concern after accounting for other sources of pollution in the receiving water and any dilution provided by a mixing zone. The values used in the mass-balance equation applied to a river or stream to establish the maximum allowable change in surface water quality are based on the design conditions specified in the specific water quality standards in ARM 17.30.620-629 and ARM 17.30.635; these values are referred to as critical

conditions. The critical conditions that determine the values for the variables (Q_s, C_s, Q_d, and C_d) in Equation 1 are discussed below. These critical conditions are incorporated into the mixing zone regulations and nondegradation regulations by reference.

$$Q_rC_r = Q_sC_s + Q_dC_d \text{ (Equation 1)}$$

Where:

Q_r	=	resultant instream flow after discharge ($Q_r = Q_s + Q_d$)
C_r	=	resultant instream pollutant concentration (after available dilution)
Q_s	=	critical stream flow upstream of discharge
C_s	=	critical upstream receiving water pollutant concentration
Q_d	=	critical effluent flow
C_d	=	critical effluent pollutant concentration

The amount of pollutant in the discharge that the receiving water may assimilate and not exceed the applicable water quality standard is referred to as the wasteload allocation (WLA). The procedures for developing a WLA follow the federal guidance for developing waste load allocations (*Stream Sampling for Waste Load Allocation Applications* (EPA/625/6-86/013, September 1986); *Technical Guidance Manual for Performing Waste Load Allocations, Book VII: Permit Averaging Period* (EPA/440/4-87.002, September 1984); *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001; March 1991)).

CRITICAL STREAM FLOW (Q_s)

The critical stream flow is based on the applicable provisions of ARM 17.30.620-629 requiring that discharge permits do not cause the receiving water concentrations to exceed any applicable standards when stream flows equal or exceed the critical flows. Pursuant to ARM 17.30.635(2), the receiving water critical flow for point source discharges must be based on the minimum consecutive seven-day average flow that is expected to occur, on average, once in 10 years (7Q10). If there is insufficient data to establish a 7Q10, DEQ must establish an acceptable stream flow. The 7Q10 value used in this MPDES permitting action is based on the estimated 7Q10 of 3.03 cfs at monitoring station LB-300. DEQ assumes that this is also representative of LB-200 since the LB-300 drainage has characteristics of an upper drainage with limited surficial deposits capable of transmitting shallow ground water. The 7Q10 value for Outfall 003 is 3.03 cfs. For Outfalls 001 and 002 only, Q_s is 3.70 cfs; this value is the sum of the 7Q10 for Libby Creek (3.03 cfs) and the ground water flux (0.67 cfs). For a further discussion of the Libby Creek 7Q10 value and baseflow contributions to LB-300, please refer to Volume II Chapter 3.8.3 (Streamflow, Baseflow, and 7Q2 and 7Q10 Flow Definitions and Uses in EIS Analyses) of the Joint Final Environmental Impact Statement for the Montanore Project.

In accordance with ARM 17.30.635(4), effluent limitations for controlling nitrogen and phosphorus concentration in surface water are based on the seasonal 14Q5, which is the lowest average 14 consecutive day low flow, occurring from July through October, with an average recurrence frequency of once in five years. Since there is not an established 14Q5 for Libby Creek, a reasonable estimation of the 14Q5 for Libby Creek at LB-200 must be determined. DEQ estimates the 14Q5 for Libby Creek at 3.28 cfs based on a comparison of the Libby Creek drainage basin to the nearby Flower Creek drainage basin.

The critical stream flows in Ramsey Creek and Poorman Creek for Outfalls 006-008 are not presented since any effluent limit(s) applicable to any discharges from these outfalls must be met at their respective end-of-pipe discharge; the use of any critical stream flows in meeting or determining applicable effluent limits is not authorized.

CRITICAL BACKGROUND RECEIVING WATER POLLUTANT CONCENTRATION (C_s)

For purposes of the reasonable potential analysis and determining assimilative capacity, the critical background concentration (C_s) is defined to be the 75th percentile or upper bound estimate of the data. In some cases, including application of the nondegradation criteria in ARM 17.30.715(1), changes in existing water quality or the water quality standard is expressed relative to the background concentration in the receiving water. In these situations the WQBEL is based on the lower bound estimate of the interquartile range (25th percentile value) to maintain the existing water quality of the receiving water. See Appendix 2 for a more detailed description of the procedures used to estimate the value of C_s for the applicable receiving waters.

CRITICAL EFFLUENT FLOW (Q_d)

Effluent flow is a measure of the average daily flow expected to occur over the next 5-year permit cycle or the effective life of the regulated facility or activity. The critical effluent flows used for the assessment of the discharges from Outfalls 001-003 is 500 gpm (or 1.11 cfs).

CRITICAL EFFLUENT POLLUTANT CONCENTRATION (C_d)

The critical effluent concentration is based on the 95th percentile of the expected effluent concentration observed or predicted in the discharge. Due to the low frequency (percentage) of samples and the non-normal distribution of most effluents, DEQ follows the estimation procedures described in EPA's *Technical Support Document for Water Quality Based Toxic Control* (EPA/505/2-90-001, March 1991) to estimate the 95th percentile of the daily values. Critical effluent concentration is not used to determine the value of a water quality-based effluent limitation.

The MPDES permit application and supplemental materials as well as DMRs submitted by the permittee provide the basis for determining the critical effluent pollutant concentrations. The critical effluent pollutant concentrations (C_d) and the estimation procedures used are provided in Appendix 3 for Outfalls 001-003.

REASONABLE POTENTIAL ANALYSIS

The mass-balance equation (Equation 1 above) may be expressed in terms of the dilution ratio at the edge of the approved mixing zone. The dilution ratio is the volume of receiving water at the edge of the mixing zone to the volume of effluent at the edge of the mixing zone. Equation 2 below is the mass-balance equation (Equation 1) arranged to solve for the receiving water concentration of a pollutant of concern:

$$C_r = \frac{C_d + (D * C_s)}{(1 + D)} \quad \text{(Equation 2)}$$

Where:

C_r	=	resultant instream pollutant concentration (after any available dilution)
C_d	=	critical effluent pollutant concentration

C_s = critical upstream receiving water pollutant concentration
D = dilution ratio (Q_s / Q_d)

Where the projected receiving water concentration (C_r) exceeds any applicable numeric water quality standard or nondegradation criteria for a parameter of concern, there is a finding of reasonable potential and a WQBEL must be calculated for that parameter. The receiving water data (C_s) and effluent data (C_d) are based on the critical conditions as discussed above and in the analyses presented in Appendices 2 and 3, respectively. The critical effluent flow rate (Q_d) is discussed above. For Outfalls 001 and 002 only, Q_s is the sum of the 7Q10 and the ground water flux. The chronic and acute dilution ratios for the facility are summarized in Table 21.

Table 21. Dilution Ratio Summary

Outfall(s)	Q_s (gpm)	Q_d (gpm)	Chronic Dilution Allowance (%)	Acute Dilution Allowance (%)	Chronic Dilution Ratio (D_C)	Acute Dilution Ratio (D_A)
001, 002	1,661[1]	500	25[2]	0	0.83	0
003	1,360	500	25[2]	0	0.68	0
Nutrients	1,472	500	100[3]	--	2.94	--

Footnotes:
1. This value includes the amount of allowed dilution in ground water prior to entering Libby Creek.
2. Available for the following parameters only: chromium, copper, lead, zinc, iron, manganese, nitrate + nitrite, and total inorganic nitrogen.
3. Available for the following parameters only: total nitrogen and total phosphorus.

REASONABLE POTENTIAL ANALYSIS – STORM WATER

In accordance with 40 CFR 122.44, the implementation of WQBELs is required when the applicable TBELs are not protective of state water quality standards or nondegradation criteria.

Outfalls 001-003

Storm water runoff from the Libby Adit Pad may come into contact with waste rock and/or ore and is therefore subject to both the TBELs (see Section 2.1.4 above) and the WQBELs (see Section 2.2.9 below) as discussed in this fact sheet; see Table 22 below. Runoff from the Libby Adit Pad area is directed into the wastewater treatment system for treatment prior to discharge at Outfalls 001-003.

Outfalls 004-008

Outfalls 004-008 are not yet constructed. This issuance of the MPDES permit requires, as a TBEL, the installation and maintenance of site-specific BMPs that minimize or eliminate short-term water quality impacts associated with storm water driven discharges. A qualitative RPA that takes into consideration the selection and implementation of suitable BMPs prior to any discharges from Outfalls 004-008 indicates that the control of sediment and the storm water driven discharges of sediment, as required by the BMPs, will reduce or eliminate the discharge of pollutants to state surface waters. Since cations (e.g. iron, manganese, and zinc) bind easily to sediment, any treatment that reduces the amount of sediment in the runoff will also reduce the concentration of cations present in the runoff. Additionally, the MPDES permit includes a narrative TBEL that prohibits the discharge of any process wastewater or any water resulting from mine dewatering activities from

Outfalls 004-008. DEQ is also establishing WQBELs at Outfalls 004-008 based on the water quality standards at ARM 17.30.623 for parameter pH and based on the general prohibitions at ARM 17.30.637 for the parameter Oil & Grease. Finally, this issuance of the MPDES permit requires the permittee to monitor and report the water quality of any storm water discharges from the facility for use in a RPA under future MPDES permitting actions.

REASONABLE POTENTIAL ANALYSIS – WET

In addition to specific chemical parameters, federal regulations at 40 CFR 122.44(d)(1) specify that the discharge permit must contain effluent limitations to control toxicity when DEQ determines that the discharge has a reasonable potential to violate numeric or narrative criterion prohibiting toxicity. The Montana Water Quality Standards at ARM 17.30.635 prohibit the discharge of substances that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life. ARM 17.30.646 requires the use of bioassay or WET tests using the most sensitive local or economically important species to implement aquatic life prohibition of toxicity in state waters.

WET testing is required for industrial discharges that DEQ determines may contain toxic pollutants, or where these effluents have not been fully characterized for the presence of toxic pollutants. Facilities that discharge non-process wastewaters are generally not required to conduct WET testing. For additional information and decision criteria, refer to *Montana DEQ Whole Effluent Toxicity (WET) Testing Policy and Procedures* (in draft).

Outfalls 001-003

The 1997-issued and 2006-issued permits contained a narrative standard prohibiting acute toxicity in the effluent discharged by the facility; WET monitoring was not required in either of these permits. The permittee has not conducted any WET testing; a RPA for WET has not been performed.

DEQ has determined that, given the expected nature and constituents of the effluent discharged from the facility, the renewed permit will require WET monitoring. The dilution ratio of the 7Q10 for Libby Creek (3.03 cfs) to the average discharge from the facility (1.11 cfs) is 2.7. Based on this, the appropriate WET monitoring for the facility is the chronic WET test. The WET monitoring and reporting requirements are further discussed in Section 3.1.2 of this fact sheet.

Outfalls 004-008

DEQ has determined that WET testing on the discharge from Outfalls 004-008 is not required due to the expected nature and characteristics of any discharges from these outfalls as well as the design of the storm water controls. Additionally, the monitoring requirements and the required BMPs in this MPDES permit provide the necessary level of protection for state surface waters. Finally, this issuance of the MPDES permit requires the permittee to monitor and report the water quality of any storm water discharges from the facility for use in a RPA under future MPDES permitting actions.

REASONABLE POTENTIAL ANALYSIS – SUMMARY

Where the projected receiving water concentration (C_r) exceeds any applicable numeric water quality standard or nondegradation criteria for a parameter of concern, there is a finding of reasonable potential and a WQBEL must be calculated for that parameter. Appendix 4 of this fact

sheet provides a complete description of the RPA and results for the applicable outfalls and discharges from this facility. A summary of this analysis is provided below in Table 22. With respect to the parameters Total Dissolved Solids and Total Suspended Solids at Outfalls 001-003, it is expected that the wastewater treatment system will significantly reduce or eliminate the concentrations of these parameters in the effluent. Additionally, with respect to Total Suspended Solids, it is expected that additional treatment in either the percolation pond or drainfield prior to discharge into ground water will significantly reduce or eliminate the concentration of Total Suspended Solids found in the effluent.

Table 22. Reasonable Potential Analysis – Summary

Outfall(s)	Parameters of Concern	RPA Determination (Yes/No)
001, 002, 003	Antimony, Chromium, Iron, Lead, Mercury, Zinc, Oil & Grease, Nitrate + Nitrite, Total Nitrogen	Yes
001, 002, 003	Aluminum, Arsenic, Barium, Cadmium, Copper, Manganese, Sulfate, Total Inorganic Nitrogen, Total Ammonia, Total Phosphorus	No
001, 002, 003	Total Dissolved Solids, Total Suspended Solids	No(1)
004	Total Suspended Solids, Nitrate, Oil & Grease, Iron, Manganese, Zinc	No(2)
005-008	Total Suspended Solids, Oil & Grease	No(2)

Footnotes:
1. The RPA indicates that the discharge is not expected to have the potential to cause or contribute to an exceedance of a water quality standard due to the facility wastewater treatment system design and disposal methods.
2. The RPA indicates that these types of discharges are not expected to have the potential to cause or contribute to an exceedance of a water quality standard since TBELs that require the selection and installation of BMPs that minimize or eliminate sediment from any discharges prior to the start of any discharge(s) is a condition of the MPDES permit.

2.2.9 Water Quality-based Effluent Limitations

To establish WQBELs for an existing discharger, DEQ first calculates the WLAs from the numeric water quality standards based on the applicable acute aquatic life, chronic aquatic life, or human health standards as listed in the current version of Department Circular DEQ-7; the numeric nutrient standards as listed in the current version of Department Circular DEQ-12A; the nondegradation criteria; and/or those standards as determined by the Board in granting an authorization to degrade. These WLAs are then translated into average monthly limitations (AMLs) and maximum daily limitations (MDLs) to reflect the respective averaging times given in the surface water quality standards (ARM 17.30.635) and Department Circular DEQ-7.

The mass-balance equation (Equation 1) given in Section 2.2.8 is rearranged to calculate the WLA such that the discharge does not cause or contribute to an exceedance of the applicable water quality standard for a given pollutant of concern under critical conditions:

$$WLA = S + D(S - C_s) \text{ (Equation 3)}$$

Where:

WLA = calculated wasteload allocation
S = applicable numeric water quality standard

D	=	dilution ratio (see Sections 2.2.7 and 2.2.8)
C_s	=	critical upstream receiving water pollutant concentration

Rearranging Equation 1 in this manner allows for the application of Equation 3 to any effluent and receiving water where the dilution ratio is known. Where an existing discharge is to a water body that is not meeting a concentration-based numeric standard in the water column the WLAs for that pollutant of concern may be set equal to the applicable numeric water quality standards.

WLAs are then translated into MDLs and AMLs using the procedures outlined in Appendix 5. The calculated WQBELs based on the applicable water quality standard, nondegradation criteria, or authorization to degrade is presented below in Tables 23 through 25.

Table 23. WQBELs for Outfalls 001 and 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Total Dissolved Solids	mg/L	86	172	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.9	3.8	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	1.37	2.74	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.37	NA	Authorization to Degrade
Total Nitrogen, as N	lbs/day	9.3(2)	NA	Authorization to Degrade
Antimony, Total Recoverable	µg/L	0.69	1.38	Nondegradation
Cadmium, Total Recoverable(1)	µg/L	0.012	0.025	Nondegradation
Chromium, Total Recoverable	µg/L	4.78	9.58	Authorization to Degrade
Copper, Total Recoverable	µg/L	1.89	3.79	Authorization to Degrade
Iron, Total Recoverable	µg/L	116	233	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.07	0.13	Nondegradation
Manganese, Total Recoverable	µg/L	61	123	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.007	0.013	Nondegradation
Zinc, Total Recoverable	µg/L	18	37	Authorization to Degrade

Footnotes:
NA = Not Applicable
1. WQBEL developed due to stringency requirements.
2. Limits effective July 1st through September 30th of each year.

Table 24. WQBELs for Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Total Dissolved Solids	mg/L	85	170	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.7	3.5	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	1.27	2.54	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.27	NA	Authorization to Degrade
Total Nitrogen, as N	lbs/day	9.3(2)	NA	Authorization to Degrade
Antimony, Total Recoverable	µg/L	0.69	1.38	Nondegradation
Cadmium, Total Recoverable(1)	µg/L	0.012	0.025	Nondegradation
Chromium, Total Recoverable	µg/L	4.65	9.33	Authorization to Degrade
Copper, Total Recoverable	µg/L	1.89	3.79	Authorization to Degrade
Iron, Total Recoverable	µg/L	110	220	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.07	0.13	Nondegradation
Manganese, Total Recoverable	µg/L	58	116	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.007	0.013	Nondegradation
Zinc, Total Recoverable	µg/L	18	37	Authorization to Degrade

Footnotes:
NA = Not Applicable
1. WQBEL developed due to stringency requirements.
2. Limits effective July 1st through September 30th of each year.

Table 25. WQBELs for Outfalls 004 – 008

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for WQBEL Calculations
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

The final WQBELs must be compared to the TBELs calculated for the same parameter in order to determine the most protective limitations that meet the requirements of both technology-based standards and water quality-based standards, including the nondegradation criteria when applicable. After determining the most protective of the calculated limitations, DEQ considers the need for an anti-backsliding analysis before determining the final effluent limitations that are included in the MPDES permit (see Section 2.3 below)

2.2.10 WET Limitations

Based on the RPA for WET discussed in Section 2.2.8 above, the permit will not contain any numeric WET effluent limits. Additionally, the previous MPDES permits for the facility included narrative prohibitions on acute toxicity. These limits were established without determining RP and will be removed in this permit. Finally, this permit establishes a monitoring requirement for two species chronic WET testing based on the design characteristics of the discharge in order to collect the necessary data to determine the need, if any, for WET limits in future MPDES permits.

2.3 Final Effluent Limitations

The final effluent limitations in the permit are based on the more stringent of the calculated TBELs and WQBELs for each parameter, subject to an anti-backsliding analysis. The more stringent limitations will attain both the technology-based and water quality-based standards.

2.3.1 Anti-backsliding Analysis

Section 402(o) of the CWA and 40 CFR 122.44(l) require, with some exceptions, that the effluent limitations or conditions in reissued permits be at least as stringent as those in the existing permit. The effluent limitations in this issuance of the permit are at least as stringent as the effluent limitations in the 2006-issued permit.

2.3.2 Stringency Analysis

The permit contains both technology-based and water quality-based numeric effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on the parameter Total Suspended Solids. This permit's technology-based pollutant restrictions implement the minimum applicable federal technology-based requirements. In addition, this permit also contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet Montana's water quality standards or to implement Montana's nondegradation policy. Tables 26-28 below provide a summary of the final effluent limitations for Outfalls 001-008 and the basis for each pollutant limited in this issuance of the MPDES permit for the facility.

Table 26. Final Numeric Effluent Limitations, Outfalls 001 and 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Total Dissolved Solids	mg/L	86	172	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.9	3.8	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	1.37	2.74	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.37	NA	Authorization to Degrade
Total Nitrogen, as N	lbs/day	9.3(1)	NA	Authorization to Degrade
Antimony, Total Recoverable	µg/L	0.69	1.38	Nondegradation
Cadmium, Total Recoverable	µg/L	0.012	0.025	Nondegradation
Chromium, Total Recoverable	µg/L	4.78	9.58	Authorization to Degrade
Copper, Total Recoverable	µg/L	1.89	3.79	Authorization to Degrade
Iron, Total Recoverable	µg/L	116	233	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.07	0.13	Nondegradation
Manganese, Total Recoverable	µg/L	61	123	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.007	0.013	Nondegradation
Zinc, Total Recoverable	µg/L	18	37	Authorization to Degrade

Footnotes:
NA = Not Applicable
1. Limits effective July 1st through September 30th of each year.

Table 27. Final Numeric Effluent Limitations, Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Total Suspended Solids	mg/L	20	30	Effluent Limitation Guideline
Total Dissolved Solids	mg/L	85	170	Authorization to Degrade
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard
Total Ammonia, as N	mg/L	1.7	3.5	Authorization to Degrade
Nitrate + Nitrite, as N	mg/L	1.27	2.54	Authorization to Degrade
Total Inorganic Nitrogen, as N	mg/L	1.27	NA	Authorization to Degrade
Total Nitrogen, as N	lbs/day	9.3[(1)]	NA	Authorization to Degrade
Antimony, Total Recoverable	µg/L	0.69	1.38	Nondegradation
Cadmium, Total Recoverable	µg/L	0.012	0.025	Nondegradation
Chromium, Total Recoverable	µg/L	4.65	9.33	Authorization to Degrade
Copper, Total Recoverable	µg/L	1.89	3.79	Authorization to Degrade
Iron, Total Recoverable	µg/L	110	220	Authorization to Degrade
Lead, Total Recoverable	µg/L	0.07	0.13	Nondegradation
Manganese, Total Recoverable	µg/L	58	116	Authorization to Degrade
Mercury, Total Recoverable	µg/L	0.007	0.013	Nondegradation
Zinc, Total Recoverable	µg/L	18	37	Authorization to Degrade

Footnotes:
NA = Not Applicable
1. Limits effective July 1st through September 30th of each year.

Table 28. Final Numeric Effluent Limitations, Outfalls 004 – 008

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitations
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

2.3.3 Additional Effluent Limitations and Conditions

The permittee is required to comply with the additional effluent limitations and conditions described below.

ALTERNATIVE TBELS, PRECIPITATION – OUTFALLS 001-003

If the permittee documents and demonstrates that a discharge occurs as a result of the conditions outlined in both 40 CFR 440.104(b)(2)(i) and 40 CFR 440.131(c) then the discharge of a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized above in Table 27. This documentation must be submitted to DEQ and must include, at a minimum, the following:

- The annual evaporation value for the facility and how this value was determined;
- The drainage area contributing runoff to these outfalls and how this value was determined;
- The rainfall hyetograph for each individual storm event in excess of the 10-year, 24-hour design storm; and
- Conformational monitoring in accordance with the storm water monitoring requirements as outlined below in Table 34 of Section 3.1.1 of this fact sheet.

ALTERNATIVE TBELS, INTERFERENCE – OUTFALLS 001-003

If the permittee documents and demonstrates the need for a discharge due to interference that meets all of the requirements under both 40 CFR 440.104(b)(2)(ii) and 40 CFR 440.131(d) then a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment may be discharged subject to, at a minimum, the effluent limitations as listed above in Table 27. The facility has the burden of demonstrating to DEQ that a discharge of this nature is necessary to eliminate interference in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water.

ALTERNATIVE TBELS, OUTFALLS 004-008

Pursuant to 40 CFR 122.44(k) and ARM 17.30.1345, DEQ is establishing the use of BMPs for the control of pollutants discharged at Outfalls 004-008; see Section 4.2 of this fact sheet. BMPs are defined as a permit condition and are used in conjunction with numeric water quality-based effluent limits to prevent or control the discharge of pollutants to state surface waters.

2.3.4 Narrative Prohibitions

The general prohibitions of ARM 17.30.637(1) contain the general provisions that apply to all state waters, including mixing zones, and typically are referred to as “free from” standards. These general prohibitions represent the minimum level of protection that applies to all state waters, including water quality within an authorized mixing zone and in ephemeral waters or drainage ways not subject the specific standards of ARM 17.30.621-629 and 650-658.

NARRATIVE PROHIBITIONS, OUTFALLS 001-003

With few exceptions, facilities that are subject to the minimum treatment requirements and that are in compliance with those limitations fulfill the requirements of ARM 17.30.637(1). However, where a discharge would either cause or have the reasonable potential to cause or contribute to an excursion of narrative standard, effluent limitations implementing that narrative standard must be included in the MPDES permit. This issuance of the MPDES permit includes the following effluent limitations implementing the narrative standards:

- ARM 17.30.637(1)(b) is implemented through the application of a numeric water quality standard and effluent monitoring requirements for the parameter Oil & Grease.
- ARM 17.30.637(1)(d) is implemented through application of numeric water quality standards for metal parameters and the WET monitoring requirements.
- ARM 17.30.637(1)(e) is implemented through the application of the numeric nutrient standards for Total Nitrogen and the effluent monitoring requirements for parameters Total Nitrogen and Total Phosphorus.

The MPDES permit contains narrative prohibitions enacting the provisions of ARM 17.30.637(1)(a and c).

NARRATIVE PROHIBITIONS, OUTFALLS 004-008

This issuance of the MPDES permit includes the following effluent limitations implementing the narrative standards:

- ARM 17.30.637(1)(b) is implemented through the application of a numeric water quality standard and effluent monitoring requirements for the parameter Oil & Grease.

The MPDES permit contains narrative prohibitions enacting the provisions of ARM 17.30.637(1)(a, c-e).

2.3.5 Other Prohibitions

The permittee is required to comply with the additional conditions as described below.

DISCHARGE PROHIBITIONS, OUTFALLS 004-008

There shall be no discharge allowed from Outfalls 004-008 unless the measured precipitation exceeds 2.8 inches, or an equivalent amount of snowmelt runoff, in a 24-hour period as recorded at the rain gage for the facility. The facility shall be designed, constructed, and maintained to contain the maximum volume of storm water generated during a 10-year, 24-hour precipitation event.

The discharge of any process wastewater or any water resulting from mine dewatering activities at Outfalls 004-008 is prohibited.

2.4 Interim Effluent Limitations

The permit contains interim effluent limitations for Outfalls 001-003 and a compliance schedule. The period for the interim effluent limits ends three (3) years from the effective date of the permit. After this period, the final effluent limits for Outfalls 001-003 as listed in Section 2.3 above are effective for the remaining term of the permit. A compliance schedule is also required since this issuance of the MPDES permit enacts effluent limits for some previously limited parameters that are more stringent than those of the 2006-issued permit limits and includes new effluent limits for other parameters that were not previously subject to any effluent limitations. An additional discussion of the compliance schedule is in Section 2.5 below. The interim effluent limitations are summarized below in Tables 29 and 30.

Table 29. Interim Effluent Limitations, Outfalls 001 and 002

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitation
Total Inorganic Nitrogen, as N	mg/L	2.5	NA	2006-issued Permit Limit
Cadmium, Total Recoverable	µg/L	0.8	1.2	2006-issued Permit Limit
Chromium, Total Recoverable	µg/L	13	20	2006-issued Permit Limit
Copper, Total Recoverable	µg/L	7	10	2006-issued Permit Limit
Iron, Total Recoverable	µg/L	250	380	2006-issued Permit Limit
Lead, Total Recoverable	µg/L	0.6	0.9	2006-issued Permit Limit
Manganese, Total Recoverable	µg/L	110	150	2006-issued Permit Limit
Mercury, Total Recoverable	µg/L	0.01	0.015	2006-issued Permit Limit
Zinc, Total Recoverable	µg/L	100	150	2006-issued Permit Limit
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

Table 30. Interim Effluent Limitations, Outfall 003

Parameter	Units	Average Monthly Limitation (AML)	Maximum Daily Limitation (MDL)	Basis for Limitation
Total Suspended Solids	mg/L	20	30	2006-issued Permit Limit
Total Inorganic Nitrogen, as N	mg/L	2.2	NA	2006-issued Permit Limit
Cadmium, Total Recoverable	µg/L	0.7	1.0	2006-issued Permit Limit
Chromium, Total Recoverable	µg/L	11	16	2006-issued Permit Limit
Copper, Total Recoverable	µg/L	6	9	2006-issued Permit Limit
Iron, Total Recoverable	µg/L	220	330	2006-issued Permit Limit
Lead, Total Recoverable	µg/L	0.6	0.9	2006-issued Permit Limit
Manganese, Total Recoverable	µg/L	90	140	2006-issued Permit Limit
Mercury, Total Recoverable	µg/L	0.01	0.015	2006-issued Permit Limit
Zinc, Total Recoverable	µg/L	57	86	2006-issued Permit Limit
Oil & Grease	mg/L	NA	10	Water Quality Standard
pH	s.u.	Within the range of 6.5 – 8.5 at all times		Water Quality Standard

Footnotes:
NA = Not Applicable

INTERIM ALTERNATIVE TBELS, PRECIPITATION – OUTFALLS 001-003

If the permittee documents and demonstrates that a discharge occurs as a result of the conditions outlined in both 40 CFR 440.104(b)(2)(i) and 40 CFR 440.131(c) then the discharge of a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged subject to, at a minimum, the limitations summarized above in Table 30. This documentation must be submitted to DEQ and must include, at a minimum, the following:

- The annual evaporation value for the facility and how this value was determined;
- The drainage area contributing runoff to these outfalls and how this value was determined;
- The rainfall hyetograph for each individual storm event in excess of the 10-year, 24-hour design storm; and
- Conformational monitoring for each discharge resulting from this type of storm event in accordance with the storm water monitoring requirements as outlined below in Table 34 of Section 3.1.1 of this fact sheet.

INTERIM ALTERNATIVE TBELS, INTERFERENCE – OUTFALLS 001-003

If the permittee documents and demonstrates the need for a discharge due to interference that meets all of the requirements under both 40 CFR 440.104(b)(2)(ii) and 40 CFR 440.131(d) then a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment may be discharged subject to, at a minimum, the effluent limitations as listed above in Table 30. The facility has the burden of demonstrating to DEQ that a discharge of this nature is necessary to eliminate interference in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water.

2.5 Compliance Schedules

The MPDES regulations at ARM 17.30.1350 allow permit writers to establish schedules of compliance to give permittees additional time to achieve compliance with the WQA and the CWA when such time is necessary. Schedules developed under this provision must require compliance by the permittee "as soon as possible" and may not extend the date for final compliance beyond compliance dates established by the WQA or CWA. Compliance schedules that exceed one year from the date of permit issuance must set forth interim requirements and the dates for their achievement. In most cases, DEQ recommends that a permit containing a compliance schedule for final effluent limitations also include interim effluent limitations that apply prior to the final effluent limitations compliance deadline. Unless otherwise noted, the permit includes both an interim effluent limitation (see Section 2.4 above) and a compliance schedule (see Table 31 below).

The compliance schedule also includes actions and report submissions for requirements other than effluent limits; see Sections 3 and 4 of this fact sheet for further discussion. Consistent with ARM 17.30.1350, the compliance schedule in this MPDES permit requires compliance as soon as possible, and each compliance schedule that exceeds one year in length includes an enforceable sequence of events and interim milestones specified in the permit including, where appropriate, interim effluent limitations. Table 31 below contains a summary of the compliance schedules provided in this MPDES permit.

Table 31. Compliance Schedule

Action	Frequency	Action Scheduled Completion Date(1)	Report Due Date(2)
Complete a Facility Optimization Study for the Total Nitrogen parameter	Single Event	No later than Two Years from the Effective Date of the Permit	The 28th of the Following Month Two Years from the Effective Date of the Permit
Submit notification that the Facility Optimization Study is complete	Single Event	No later than Two Years from the Effective Date of the Permit	The 28th of the Following Month Two Years from the Effective Date of the Permit
Submit a Storm Water Pollution Prevention Plan	Single Event	No later than Sixty Days from the Effective Date of the Permit	The 28th of the Following Month Sixty Days from the Effective Date of the Permit
Submit a report documenting any action(s) taken towards meeting the final effluent limits of the permit(3)	1/Year	By December 31st of the years 2017, 2018, and 2019	Due on or before January 28th of the years 2018, 2019, and 2020
Comply with the numeric nutrient standards as listed in Circular DEQ-12A	Single Event	Beginning no later than August 7, 2034	NA
Submit a report documenting any action(s) taken towards meeting the numeric nutrient standards as listed in Circular DEQ-12A(4)	1/Year	By December 31st of the years 2017, 2018, and 2019	Due on or before January 28th of the years 2018, 2019, and 2020

Footnotes:
NA = Not Applicable
(1) The actions must be completed on or before the scheduled completion dates.
(2) This notification must be postmarked or electronically submitted to DEQ on or before the scheduled due date.
(3) This written report must address, at a minimum and on an individual parameter basis, any steps taken towards meeting the final limits for the following parameters: Antimony, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Zinc, Total Ammonia, Total Inorganic Nitrogen, Total Nitrogen, and Total Dissolved Solids. This written report must document, at a minimum and on an individual parameter basis, the mitigation, elimination, and/or treatment options taken into consideration for any process installed or method employed to meet the final effluent limitations. This written report must include, as necessary and appropriate, the performance criteria, any engineering drawings, any line diagrams or process flow charts, and/or any other pertinent design and/or installation materials.
(4) This written report must document any steps taken towards meeting the numeric nutrient standards for Total Nitrogen and Total Phosphorus. This written report must document, at a minimum and on an individual parameter basis, the mitigation, elimination, and/or treatment options taken into consideration for any process installed or method employed to meet the final effluent limitations. This written report must include, as necessary and appropriate, the performance criteria, any engineering drawings, any line diagrams or process flow charts, and/or any other pertinent design and/or installation materials.

3 RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Regulations requiring the establishment of monitoring and reporting conditions in MPDES permits are found at ARM 17.30.1351 and at 40 CFR 122.44(i) and 122.48. In addition to the specific monitoring requirements presented in this section, the permit contains as standard conditions, monitoring and records requirements.

The effluent must be measured and sampled prior to dilution with any receiving waters for compliance with the effluent limitations given in the discharge permit. Except for parameters measured on an instantaneous basis, all monitoring requirements, including flow, are based on a daily discharge. Daily discharge, as defined in ARM 17.30.1304, means the discharge of pollutants measured during a calendar day or any 24 hour period that is reasonably representative of a calendar day. For pollutants with limitation expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day by multiplying the concentration of a sample by the daily flow. For pollutants with effluent limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

ARM 17.30.1351 (40 CFR 122.48) requires that monitoring requirements in MPDES permits must specify the monitoring type, interval, and frequency that is sufficient to yield data representative of the monitored activity, including, when appropriate, continuous monitoring. All effluent and ambient monitoring must conducted in accordance with test procedures approved under 40 CFR Part 136 unless another method is specified in 40 CFR Subchapters N or O. Analytical methods must achieve the required reporting value (RRV) listed in Department Circular DEQ-7 unless otherwise specified in the permit. The permittee may use any approved analytical method capable of achieving the RRV or the level of accuracy specified in the permit.

Except storm water, continuous flow monitoring and totalizing is required when permit effluent limitations are expressed in terms of mass (load). Facilities must report flow gallons per minute (GPM or gallons per day (gpd). Any discharge or increase in volume of a discharge caused by precipitation must comply with the storm water monitoring requirements in Section 3.1.1, below.

3.1 Monitoring

Effluent monitoring locations, sampling frequencies, and reporting requirements for the facility are provided below in Tables 32 and 33.

Table 32. Annual Reporting Requirements, Outfalls 001-008

Parameter	Monitoring Location(s)	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)(2)	Reporting Frequency	Reporting Level
Total Suspended Solids	All permitted outfalls	tons/year	Calculated	1/Year	Annual Maximum	Annually	1

Footnotes:
1. See definitions in Part V of the permit.
2 Load calculation: the sum of all individual daily average loads (in lbs/day) for each calendar day from all outfalls recorded during the entire calendar year, converted to tons/year.

Table 33. Effluent Monitoring and Reporting Requirements, Outfalls 001-003

Parameter	Monitoring Location(s)	Units	Sample Type[1]	Minimum Sampling Frequency	Reporting Requirements[1][2][3]	Reporting Frequency	Reporting Level
Flow Rate	Effluent Flow Meter[4]	gpm	Instantaneous	1/Week	Maximum Daily and Average Monthly	Monthly	± 10% of actual flow
Total Suspended Solids	Effluent	mg/L lbs/day[5]	Composite Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	4
Total Dissolved Solids	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	4
pH	Effluent	s.u.	Instantaneous	1/Week	Daily Maximum and Daily Minimum	Monthly	0.1
Temperature	Effluent	°F	Instantaneous	1/Week	Daily Maximum and Daily Minimum	Monthly	0.1
Oil & Grease[6]	Effluent	mg/L	Grab	1/Week	Maximum Daily and Average Monthly	Monthly	5
Nitrate + Nitrite (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.02
Total Ammonia (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.07
Total Kjeldahl Nitrogen (as N)	Effluent	mg/L	Composite	1/Week	Maximum Daily and Average Monthly	Monthly	0.15
Total Inorganic Nitrogen (as N)[7]	Effluent	mg/L lbs/day[5]	Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.01
Total Nitrogen (as N)[8]	Effluent	mg/L lbs/day[5]	Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.01
Total Phosphorus (as P)	Effluent	mg/L lbs/day[5]	Composite Calculated	1/Week	Maximum Daily and Average Monthly	Monthly	0.001
Aluminum, Dissolved	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	9
Antimony, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.5
Arsenic, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	1
Beryllium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.8
Cadmium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.03
Chromium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	5
Copper, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	2
Iron, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	20
Lead, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.3
Manganese, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	50
Mercury, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.005
Nickel, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	2
Silver, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.2
Thallium, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	0.2

Table 33. Effluent Monitoring and Reporting Requirements, Outfalls 001-003

Parameter	Monitoring Location(s)	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)(2)(3)	Reporting Frequency	Reporting Level
Zinc, Total Recoverable	Effluent	µg/L	Grab	1/Month	Maximum Daily and Average Monthly	Monthly	8
Whole Effluent Toxicity-Chronic, Static Renewal, Three-Brood, *Ceriodaphnia dubia*(9)	Effluent	%Effluent	Composite	1/Quarter	Pass/Fail	Quarterly	Per Method(10)
Whole Effluent Toxicity-Chronic, Static Renewal, 7-Day, *Pimephales promelas*(9)	Effluent	%Effluent	Composite	1/Quarter	Pass/Fail	Quarterly	Per Method(11)

Footnotes:
1. See definitions in Part V of the permit.
2. Maximum Daily: Report highest measured daily value for the reporting period on Discharge Monitoring Report (DMR).
3. If no discharge occurs during the reporting period then "No Discharge" shall be recorded on the DMR form.
4. Effluent flow rate must be reported for each individual outfall.
5. Load calculation: lbs/day = the average of all calculated individual daily average loads (lbs/day) recorded during the reporting period.
6. EPA method 1664 (hexane extraction method) or other 40 CFR Part 136 approved method.
7. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
8. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.
9. A WET sample collected at the distribution box is considered representative of Outfalls 001 and 002. The WET sampling location for Outfall 003 is at the end-of-pipe discharge into Libby Creek. WET tests for Outfall 003 are required when there is any discharge from Outfall 003 during a reporting period.
10. EPA method 1002.0.
11. EPA method 1000.0.

3.1.1 Storm Water Monitoring Requirements

Storm water monitoring is required for Outfalls 004-008. A storm water discharge is any discharge or increase in the volume of a discharge as a result of either precipitation or snow melt runoff. Storm water monitoring must be performed for any event that results in a discharge. In the case of snow melt, the monitoring must be performed at a time when a measurable discharge occurs from the site. At a minimum, the permittee must collect a sample within the first 10 minutes of discharge event at a permitted outfall.

Grab samples must be collected within the first 10 minutes of the storm water discharge. Unless a grab sample is specified, a flow weighted composite sample must be taken for either the entire discharge event or for the first three hours of a discharge event. The flow weighted composite sample for a storm water discharge event may be taken with a continuous sampler or as a combination of a minimum of three aliquots (with each aliquot separated by a minimum period of 15 minutes) taken in each hour of the discharge over the course of either the entire discharge event or in the first three hours of the discharge event. Aliquots may be collected manually or automatically. For a flow weighted composite sample, only one analysis of the composite sample is required. The permittee may substitute a grab sample for a flow weighted composite sample for shorter duration discharge events (e.g. individual discharge events less than 40 minutes in duration) provided that the grab sample is collected within the first 10 minutes of the onset of the discharge event.

In addition to the collection and analysis of a sample for a discharge event, the permittee must provide flow information for the discharge event sampled and precipitation data for the storm event generating the discharge. The permittee must collect and report the total volume and maximum flow rate (in gallons per minute) for the discharge event sampled. If these values are estimated, the estimated values must follow those methods given in *Guidance Manual for the Preparation of NPDES Permit*

Application for Storm Water Discharges Associated with Industrial Activity (EPA 505/8-91-002, April 1991) unless otherwise specified in the MPDES permit.

The permittee must record the date and duration (in minutes) of the storm event sampled, the rainfall measurements or estimates for the storm event sampled, and the interval between the storm event sampled and the previous measurable storm event. A measurable storm event is any storm event producing an amount of rainfall greater than 0.1 inch. This information is not required to be reported on a DMR form but is subject to the record keeping and retention requirements of this MPDES permit. Storm water monitoring locations, sampling frequencies, and reporting requirements for the facility are provided in Table 34.

Table 34. Storm Water Monitoring Requirements, Outfalls 004-008

Parameter	Monitoring Location(s)	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)(2)(3)	Reporting Frequency	Reporting Level
Precipitation	Rain Gage	inches	Continuous	1/Discharge	Daily Total	Monthly	0.01
Flow Rate	Effluent Flow Meter(4)	gpm	Continuous	1/Discharge	Maximum Daily and Average Monthly	Monthly	± 10% of actual flow
Chemical Oxygen Demand (COD)	Each Outfall	mg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	1
Total Suspended Solids	Each Outfall	mg/L lbs/day(5)	Composite Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	4
Total Dissolved Solids	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	4
pH	Each Outfall	s.u.	Grab	1/Discharge	Daily Maximum and Daily Minimum	Monthly	0.1
Oil & Grease(6)	Each Outfall	mg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	5
Nitrate + Nitrite (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.02
Total Ammonia (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.07
Total Kjeldahl Nitrogen (as N)	Each Outfall	mg/L	Composite	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.15
Total Inorganic Nitrogen (as N)(7)	Each Outfall	mg/L lbs/day(5)	Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.01
Total Nitrogen (as N)(8)	Each Outfall	mg/L lbs/day(5)	Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.01
Total Phosphorus (as P)	Each Outfall	mg/L lbs/day(5)	Composite Calculated	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.001
Aluminum, Dissolved	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	9
Antimony, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.5
Arsenic, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	1
Beryllium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.8
Cadmium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.03
Chromium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	5
Copper, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	2

Table 34. Storm Water Monitoring Requirements, Outfalls 004-008

Parameter	Monitoring Location(s)	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)(2)(3)	Reporting Frequency	Reporting Level
Iron, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	20
Lead, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.3
Manganese, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	50
Mercury, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.005
Nickel, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	2
Silver, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.2
Thallium, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	0.2
Zinc, Total Recoverable	Each Outfall	µg/L	Grab	1/Discharge	Maximum Daily and Average Monthly	Monthly	8

Footnotes:
1. See definitions in Part V of the permit.
2. Maximum Daily: Report highest measured daily value for the reporting period on Discharge Monitoring Report (DMR) form.
3. If no discharge occurs during the reporting period then "No Discharge" shall be recorded on the DMR form.
4. Effluent flow rate must be reported for each individual outfall
5. Load calculation: lbs/day = the average of all calculated individual daily average loads (lbs/day) recorded during the reporting period.
6. EPA method 1664 (hexane extraction method) or other 40 CFR Part 136 approved method.
7. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
8. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.

3.1.2 Whole Effluent Toxicity Testing

When requiring chronic WET tests, DEQ must first determine the effluent concentration in the receiving water, after accounting for any available dilution. This concentration is referred to as the Receiving Water Concentration (RWC). The RWC is then used as the limiting endpoint, or critical dilution, in the WET test. The RWC is calculated by adding the two mixing components (the available dilution from the receiving water 7Q10, or 1.9 cfs, and the facility's average daily design flow, or 1.1 cfs) and determining what percentage the design flow is of the total downstream flow. For the facility, the DEQ has determined that the RWC is 37% (i.e. 1.1/(1.9 + 1.1)). For the discharge from the facility, chronic toxicity occurs in a WET test when the 25% inhibition concentration (IC_{25}) for any test species is less than or equal to 37% effluent. Each chronic WET test will consist of the following concentrations: control, 9%, 19%, 37%, 69%, and 100% effluent.

The permittee is required to conduct a chronic static renewal toxicity test on a composite sample of the effluent on a quarterly frequency. Testing will employ two species per quarter and will consist of 5 effluent concentrations (9%, 19%, 37%, 69%, and 100% effluent) and a control. Dilution water and the control shall consist of water from Libby Creek and must be collected upstream of the discharge at monitoring station LB-200. A minimum of three effluent samples are required for chronic toxicity tests. These samples must be collected within the same calendar week on days 1, 3, and 5. The first sample is used for WET test initiation and for test renewal on test day 2. The second sample is used for test renewal on test days 3 and 4. The third sample is used for test renewal on test days 5, 6, and 7.

The static renewal toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short Term Methods for Estimating the Chronic Toxicity of Effluent and*

Receiving Waters to Freshwater Organisms, EPA-821-R-02-013 (October 2002) and the *Region VIII NPDES Whole Effluent Toxics Control Program* (August 1997). The permittee shall conduct a three-brood (seven day) survival and reproduction static renewal toxicity test using *Ceriodaphnia dubia* (test method 1002.0) and a seven-day growth and survival static renewal toxicity test using *Pimephales promelas* (test method 1000.0). The control of pH in the toxicity test utilizing CO_2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of Libby Creek at the time of sample collection. The use of CO_2 to control pH drift must be in accordance with the requirements of sections 12.3.5, 12.3.5.1 through 4, and 12.3.5.2, and all other test requirements, in the chronic methods manual (EPA-821-R-02-013).

Chronic toxicity occurs when the inhibition concentration to 25% of the test population (IC_{25}) is less than or equal to the 37% effluent concentration. Control survival and growth or reproduction must meet the requirements specified in the method. If chronic toxicity occurs in a routine test, an additional test must be conducted within 14 days of the date of the initial sample. Should chronic toxicity occur in the second test, the frequency of WET testing increases to monthly and the permittee must initiate a TIE/TRE. In all cases, the results of all WET tests must be submitted to DEQ in accordance the permit.

3.2 Reporting Requirements

The permittee must comply with reporting requirements as specified in ARM 17.30.1342.

4 RATIONALE FOR SPECIAL CONDITIONS

The following provides the rationale for the special conditions included in the permit.

4.1 Additional Monitoring and Special Studies

Due to the type of permitted facility and the nature of the proposed discharges from the facility, this permit requires the permittee to perform additional monitoring as outlined in the following sections.

Metal mobility tests from the Troy mine, together with *in situ* monitoring, indicate a potential for a release of low levels of aluminum, antimony, copper, iron, lead, manganese, silver, and thallium from the ore zone where it would be exposed underground (please see Volume II Chapter 3.9 (Geology and Geochemistry) of the Joint Final Environmental Impact Statement for the Montanore Project for further discussion. Accordingly, this permit will require monitoring of the effluent at Outfalls 001-003 (see Section 3.1 above) and ambient receiving water (see Section 4.1.1 below) for these parameters.

4.1.1 Ambient Monitoring

The permittee is required to monitor the ambient conditions in Libby Creek upstream of the discharge at monitoring station LB-200. The permittee is also required to monitor temperature downstream at monitoring station LB-300. Monitoring for parameters (other than temperature) is required quarterly to capture high- and low-flow events in Libby Creek. The ambient monitoring and reporting requirements for Libby Creek are summarized in Table 35.

Table 35. Upstream Monitoring and Reporting Requirements, Libby Creek

Parameter	Monitoring Location	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)	Reporting Frequency	Reporting Level
Total Suspended Solids	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	4
Total Dissolved Solids	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	4
pH	LB-200	s.u.	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.1
Hardness (as $CaCO_3$)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
Oil & Grease(3)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
Temperature, Upstream	LB-200	°F	Instantaneous	Continuous	Average Daily	Monthly	0.1
Temperature, Downstream	LB-300	°F	Instantaneous	Continuous	Average Daily	Monthly	0.1
ΔT	NA	°F	Calculated(2)	1/Day	Temperature Difference	Monthly	0.1
Nitrate + Nitrite (as N)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.02
Total Ammonia (as N)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.07
Total Kjeldahl Nitrogen (as N)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.15
Total Inorganic Nitrogen (as N)	LB-200	mg/L	Calculated(4)	1/Quarter	Quarterly Maximum	Quarterly	0.01

Table 35. Upstream Monitoring and Reporting Requirements, Libby Creek

Parameter	Monitoring Location	Units	Sample Type(1)	Minimum Sampling Frequency	Reporting Requirements(1)	Reporting Frequency	Reporting Level
Total Nitrogen (as N)	LB-200	mg/L	Calculated(5)	1/Quarter	Quarterly Maximum	Quarterly	0.01
Total Phosphorus (as P)	LB-200	mg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.001
Aluminum, Dissolved	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	9
Antimony, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.5
Arsenic, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	1
Beryllium, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.8
Cadmium, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.03
Chromium, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	5
Copper, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	2
Iron, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	20
Lead, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.3
Manganese, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	50
Mercury, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.005
Nickel, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	2
Silver, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.2
Thallium, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	0.2
Zinc, Total Recoverable	LB-200	µg/L	Grab	1/Quarter	Quarterly Maximum	Quarterly	8

Footnotes:
1. See definitions in Part V of the permit.
2. The temperature difference (ΔT) is determined by subtracting the downstream average daily temperature from the upstream average daily temperature.
3. EPA method 1664 (hexane extraction method) or other 40 CFR Part 136 approved method.
4. Total Inorganic Nitrogen is the sum of the Nitrate + Nitrite and Total Ammonia parameters.
5. Total Nitrogen is the sum of the Nitrate + Nitrite and Total Kjeldahl Nitrogen parameters.

4.1.2 Supplemental Effluent Monitoring

The permittee is required to monitor and report precipitation for the facility's drainage basins using a precipitation gage that meets the standards in the National Weather Service's *Requirements and Standards for the Climate Observations* (Instructional Bulletin 10-1302, November 14, 2014), summarized below in Table 36. Precipitation monitoring is required to provide evidence for the alternative TBELs for Outfalls 001-003 as well as to determine permit compliance.

Table 36. Precipitation Gage Performance Standards

Parameter	Accuracy	Range	Resolution
Liquid Precipitation Accumulated Amount	±0.02 inches or 4% of hourly amount (whichever is greater)	0-10 inches/hour	0.01 inch
Snow Depth	0 to 5 inches: ±0.5 inches; >5 to 99 inches: ±1.0 inch	0 to 99 inches (auto)	1 inch
Freezing Precipitation	Detection occurs whenever 0.01 inch accumulates	0 to 40 inches	0.01 inch
Frozen precipitation (water equivalent)	±0.04 inches or 1% of total accumulation	0 to 40 inches	0.01 inch

4.2 Best Management Practices and Pollution Prevention

The NPDES regulations at 40 CFR 122.44(k) (incorporated by reference in ARM 17.30.1344(2)(b)) state that BMPs may be included as permit conditions when:

- Authorized under Section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities;
- Authorized under Section 402(p) of the CWA for the control of storm water discharges;
- Numeric effluent limitations are infeasible; or
- The practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

DEQ is establishing BMPs for the facility as a special condition in this permit.

4.2.1 BMPs

A number of sites and activities found at metal mining facilities require the implementation of BMPs to prevent the contamination of storm water. Implementation of BMPs are required not only for mineral extraction sites and material piles, but for discharges from roads accessing these sites. BMPs must be selected and implemented that address, at a minimum the following areas:

- Good Housekeeping Practices;
- Minimizing Exposure;
- Erosion and Sediment Control; and
- Management of Runoff and Run-on.

An overview of the BMPs that may be applicable to the facility (haul or access roads; pits or quarries; overburden, waste rock, and raw material piles; and reclamation activities) is discussed below. These BMPs are adapted from EPA's *Industrial Stormwater Fact Sheet, Sector G: Metal Mining (Ore Mining and Dressing) Facilities* (EPA-833-F-06-022, December 2006) and should be referenced and incorporated by the permittee into the facility's storm water pollution prevention plan (SWPPP) applicable or necessary (see Section 4.2.2 of this fact sheet). Additionally, the permittee should reference and implement as necessary any applicable BMPs from the Forest Service's *National Best Management Practices for Water Quality Management on National Forest System Lands* (USDA, Forest Service, FS-990a, April 2012) as required by the KNF; these BMPs should also be incorporated into the facility's SWPPP.

EPA has identified a wide variety of BMPs to mitigate discharges of contaminants at mines. These controls to prevent erosion and control sedimentation are the most effective if they are installed at the inception of operations and maintained throughout active operations and reclamation of the site. The following categories describe some of the BMP options available for reducing pollutants in storm water discharges at metal mining facilities:

Discharge Diversions

Discharge diversions provide the first line of defense in preventing the contamination of discharges, and subsequent contamination of receiving waters. Discharge diversions are temporary or permanent structures installed to divert flow, store flow, or limit storm water run-on and runoff. Diversion dikes, curbs, and berms are temporary or permanent diversion structures that prevent runoff from passing beyond a certain point, and divert runoff away from its intended path. Dikes, curbs or berms may be used to surround and isolate areas of concern, diverting flow around piles of overburden, waste rock, and storage areas, to minimize discharge contact with contaminated materials and to limit discharges of contaminated water from confined areas.

Drainage/Storm Water Conveyance Systems

Drainage or storm water conveyance systems can provide either a temporary or a permanent management practice which functions to channel water away from eroded or unstabilized areas, convey runoff without causing erosion, and/or carry discharges to more stabilized areas. The use of drainage systems as a permanent measure may be most appropriate in areas with extreme slopes, areas subject to high velocity runoff, and other areas where the establishment of substantial vegetation is infeasible or impractical. Some examples of drainage/storm water conveyance systems include: channels or gutters; open top box culverts and waterbars; rolling dips and road sloping; roadway surface water deflector; and culverts. Drainage and conveyance systems should be inspected periodically for blockages and erosion. Erosion and/or sedimentation that compromise the ability of these structures to convey storm water should be addressed. Where blockage or erosion occurs, more frequent maintenance of these structures may be required.

Runoff Dispersion

Drainage systems are most effective when used in conjunction with runoff dispersion devises designed to slow the flow of water discharged from a site. These devices also aid storm water infiltration into the soil and flow attenuation. Some examples of velocity dissipation devices include: check dams; rock outlet protection; level spreaders; serrated slopes and benched slopes; contouring; and drop structures.

Sediment Control and Collection

Erosion and sediment controls limit movement and retains sediments, preventing transportation offsite. Several structural collection devices have been developed to remove sediment from runoff before it leaves the site. Several methods of removing sediment from site runoff involve diversion mechanisms previously discussed, supplemented by a trapping or storage device. Structural practices typically involve filtering diffuse storm water flows through temporary structures such as straw bale dikes, silt fences, brush barriers or vegetated areas. Structural practices are typically low in cost. However, structural practices require periodic removal of sediment to remain functional. Several examples of sediment control and collection BMPs include: gabions, riprap, and native rock retaining walls; biotechnical stabilization; straw bale barrier; vegetated buffer strips; silt fence/filter fence; siltation berms; brush sediment barriers; sediment traps or catch basins; and sediment/settling

ponds. Sediment ponds or traps located at final discharge points are designed to detain runoff from a 10-year, 24-hour precipitation event during active mining operations.

Vegetation Practices

Vegetation practices involve establishing a sustainable ground cover by permanent seeding, mulching, sodding, and other such practices. A vegetative cover reduces the potential for erosion of a site by: absorbing the kinetic energy of raindrops which would otherwise impact soil; intercepting water so it can infiltrate into the ground instead of running off and carrying contaminated discharges; and by slowing the velocity of runoff to promote on-site deposition of sediment. These practices include: topsoiling; broadcast seeding and drill seeding; willow cutting establishment; plastic matting, plastic netting and erosion control blankets; mulch-straw or wood chips; and compaction. Given the limited capacity to accept large volumes of runoff, and potential erosion problems associated with large concentrated flows, vegetative controls should typically be used in combination with other management practices. Reclaimed vegetative cover must be similar to pre-mining vegetative cover. Permanent vegetation cover appropriate for the site typically is established by the end of the third growing season following initial seeding, although the reclaimed plant community will continue to develop. From a hydrologic perspective the objective is 75 percent cover, including litter, which defines "good" hydrologic condition for runoff and sediment modeling purposes.

Capping

Capping or sealing of waste materials is designed to prevent infiltration, as well as to limit contact between discharges and potential sources of contamination. Ultimately, capping should reduce or eliminate the contaminants in discharges. In addition, by reducing infiltration, the potential for seepage and leachate generation may also be lessened.

Treatment

In some cases (e.g., low pH and/or high metals concentrations), BMPs, and sediment and erosion controls may not be adequate to produce an acceptable quality of storm water discharge. Under those circumstances additional physical or chemical treatment systems may be necessary to protect the receiving waters. Treatment practices are those methods of control which normally are thought of as being applied at the “end of the pipe” to reduce the concentration of pollutants in storm water before it is discharged. This is in contrast to many BMPs, where the emphasis is on keeping the water from becoming contaminated. Treatment practices may be required where flows are currently being affected by exposed materials and other BMPs are insufficient to meet discharge goals. These practices are usually the most resource intensive as they often require significant construction costs and monitoring and maintenance on a frequent and regular basis.

Haul Roads and/or Access Roads

Placement of haul roads or access roads should occur as far as possible from natural drainage areas, lakes, ponds, wetlands, or floodplains where soil will naturally be less stable for heavy vehicle traffic. If a haul road must be constructed near water, as little vegetation as possible should be removed from between the road and the waterway, as vegetation is a useful buffer against erosion and is an efficient sediment collection mechanism. The width and grade of haul or access roads should be minimal and designed to match natural contours of the area. Construction of haul roads should be supplemented by BMPs that divert runoff from road surfaces, minimize erosion, and direct flow to appropriate channels for discharge to treatment areas or other well-stabilized areas.

Equipment/Vehicle Fueling and Maintenance

Fueling and maintenance activities should be conducted indoors or under cover on an impermeable surface. Berms, curbs, or similar means should be used to ensure that storm water runoff from other parts of the facility does not flow over maintenance and fueling areas. Runoff from fueling and maintenance areas should be collected and treated or recycled. Proper waste management and spill prevention and response procedures should be implemented. Select good housekeeping procedures to minimize the amount of contaminated runoff generated (e.g. use dry cleanup methods, use drip pans, and drain parts of fluids before disposal). Conduct inspections of fueling areas to prevent problems before they occur.

Overburden, Waste Rock, and Raw Material Piles

Overburden, topsoil, and waste rock, as well as raw material and intermediate and final product stockpiles, should be located away from surface waters, other sources of water, and from geologically unstable areas. In addition surface waters and storm water should be diverted around the piles. As many piles as possible should be revegetated, (even if only on a temporary basis). At closure, remaining piles should be reclaimed.

Reclamation Activities

When a mineral deposit is depleted and operations cease, a mine site must be reclaimed according to appropriate state or federal standards. Closure activities typically include restabilization of disturbed areas such as access or haul roads, pits or quarries, sedimentation ponds or work-out pits, and remaining waste piles. Overburden and topsoil stockpiles may be used to fill in a pit or quarry (where practical). Recontouring and revegetation should be performed to stabilize soils and prevent erosion. Major reclamation activities such as recontouring roads and filling in a pit or quarry can only be performed after operations have ceased. However, reclamation activities such as stabilization of banks, reseeding, and revegetation should be implemented in mined out portions, or inactive areas of a site as active mining moves to new areas.

A combination of preventive and treatment BMPs will yield the most effective storm water management for minimizing the discharge of pollutants via storm water runoff. BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training. All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. BMPs must be regularly inspected to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

The categories discussed above are not an exhaustive list of BMPs. The permittee may identify and implement any additional BMPs that minimize and/or eliminate the generation of pollutants and the potential discharge of pollutants into state waters through normal operations and ancillary activities. Additional guidance on BMPs is available in EPA's *Guidance Manual for Developing Best Management Practices* (EPA 833-B-93-004, October 1993) and the Forest Service's *National Best Management Practices for Water Quality Management on National Forest System Lands* (USDA, Forest Service, FS-990a, April 2012).

4.2.2 Storm Water Management

The permittee must develop and maintain a Storm Water Pollution Prevention Plan (SWPPP) that describes the facility, BMPs, control measures, and monitoring procedures that will ensure compliance

with the terms and conditions of their MPDES permit. The BMPs implemented at the facility may be structural or non-structural in nature. The SWPPP must be submitted to DEQ no later than 60 days after the effective date of the permit. SWPPPs are intended to be maintained such that they are updated and adjusted to reflect current conditions, activities, and any storm water issues identified at the facility. The SWPPP and any updates must be maintained onsite. Periodic evaluation of the SWPPP and the ongoing improvements to the facility, as documented in the SWPPP, will serve to improve the quality of storm water runoff.

The SWPPP must contain a narrative evaluation of the appropriateness of storm water management practices that divert, infiltrate, reuse, or otherwise manage storm water runoff such as to reduce the discharge of pollutants. The SWPPP must document, at minimum, the following:

Storm Water Pollution Prevention Team and SWPPP Administrator

The permittee must identify the staff members that comprise the facility's storm water pollution prevention team as well as their individual responsibilities. This team must include, and the SWPPP specify, a "SWPPP Administrator." The SWPPP Administrator is the lead responsible person for ensuring the development, implementation, and maintenance of the SWPPP. The SWPPP Administrator also serves as the primary contact person regarding the SWPPP. The facility's storm water pollution prevention team is responsible for assisting the facility manager in developing and revising the facility's SWPPP as well as maintaining control measures and taking corrective actions where required. Each member of the storm water pollution prevention team must have ready access to this permit and SWPPP.

Site Description

The SWPPP must provide a description of the nature of the industrial activities at the facility. The SWPPP must document the mining and associated activities with the potential to impact the storm water discharges covered by this permit.

Site Map

The SWPPP must include a legible map(s) of sufficient scale which clearly shows current conditions including the following:

- Map scale;
- North arrow;
- The site boundaries for the facility or activity;
- Locations of all receiving waters in the immediate vicinity of the facility;
- The location and extent of structures and impervious surfaces;
- Directions of storm water flow (use arrows);
- Locations of all existing structural storm water control measures;
- Locations of all storm water conveyances including ditches, pipes, and swales;
- Locations of all storm water outfall and monitoring points;
- Locations of storm water inlets and outfalls, with a unique identification code for each outfall;
- Locations of potential pollutant sources;
- Locations where spills or leaks have occurred;
- Locations and descriptions of all non-storm water discharges;
- Locations and sources of run-on to the facility from adjacent property that contains pollutants; and
- Locations of the following activities where such activities are exposed to precipitation:

- Fueling stations;
- Vehicle and equipment maintenance and/or cleaning areas;
- Loading/unloading areas;
- Locations used for the treatment, storage, or disposal of wastes;
- Liquid storage tanks;
- Processing and storage areas;
- Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;
- Major permanent facility structures; transfer areas for substances in bulk; and
- Machinery.

In addition to the above items, the SWPPP must document the locations of the following (as appropriate):

- Mining or milling site boundaries;
- Access and haul roads;
- Outline of the drainage areas of each storm water outfall within the facility with indications of the types of discharges from the drainage areas;
- Location(s) of all permitted discharges covered under an individual MPDES permit;
- Outdoor equipment storage, fueling, and maintenance areas;
- Materials handling areas;
- Outdoor manufacturing, outdoor storage, and material disposal areas;
- Outdoor chemicals and explosives storage areas;
- Overburden, materials, soils, or waste storage areas;
- Location of mine drainage (where water leaves the mine) or other process water;
- Tailings piles and ponds (including proposed ones);
- Heap leach pads; off-site points of discharge for mine drainage and process water;
- Surface waters;
- Boundary of tributary areas that are subject to effluent limitations guidelines; and
- Location(s) of reclaimed areas.

Summary of any Potential Pollutant Sources

The permittee must document in the SWPPP areas at the facility where industrial materials or activities are exposed to storm water and from which allowable non-storm water discharges are released. Industrial materials or activities include, but are not limited to: material handling equipment or activities; industrial machinery; raw materials; industrial production and processes; and intermediate products, byproducts, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For each area identified, the description must include:

- A list of the industrial activities exposed to storm water (e.g., material storage; equipment fueling, maintenance, and cleaning);
- A list of the pollutant(s) or pollutant constituents (e.g. crankcase oil, zinc, sulfuric acid, and/or cleaning solvents) associated with each identified activity. The pollutant list must include materials that have been handled, treated, stored, or disposed, and that have been exposed to storm water in the 3 years prior to the date of the SWPPP; and

- Documentation of where potential spills and leaks may occur that might contribute pollutants to storm water discharges, and the corresponding outfall(s) potentially affected by such spills and leaks. The permittee must document spills and leaks of oil or toxic or hazardous pollutants that actually occurred at exposed areas or that drained to a storm water conveyance, in the 3 years prior to the date of the SWPPP.

Each facility component or system must be examined for its waste minimization opportunities and its potential for discharge to state waters due to equipment failure, improper operation, and natural phenomena. This examination must include, at a minimum, all normal operations and ancillary activities including (as appropriate) material storage areas, plant site runoff, in-plant transfer, process and material handling areas, loading or unloading operations, spillage or leaks, sludge and waste disposal, or drainage from raw material storage.

Description of Control Measures and BMPs

The permittee must document in the SWPPP the location and types of control measures installed and implemented at the facility and describe how the control measure selection and design considerations were addressed. This documentation must describe how the control measures address both the pollutant sources identified and any storm water run-on that commingles with any discharges covered under this permit. Documentation of control measures must include design and maintenance criteria for permanent and temporary structural control measures (i.e. plans, detail drawings, cross-sections, specifications, narrative description, etc.) and an appropriate maintenance schedule. The selection, design, installation, and implementation of these control measures must be in accordance with good engineering practices and/or manufacturer's specifications, and the SWPPP should reference all source(s) used in BMP design, installation, implementation, and maintenance specifications (i.e. EPA, Montana Department of Transportation, or other BMP manuals). Note that the permittee may deviate from such manufacturer's specifications as long as the permittee provide justification any deviation and includes documentation of the rationale in the part of the SWPPP that describes control measures. In addition, any other requirements for other programs or permitting activities which would meet the SWPPP requirements may be incorporated. If the permittee finds that any control measures are not achieving their intended effect of minimizing pollutant discharges, then the permittee must modify these control measures as expeditiously as practicable.

Control measures that must be documented in the SWPPP and implemented by the permittee must, at a minimum, include:

- Good Housekeeping Procedures. Keep clean all exposed areas that are potential sources of pollutants, using such measures as sweeping at regular intervals, keeping materials orderly and labeled, and storing materials in appropriate containers.
- Maintenance. Regularly inspect, test, maintain, and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharged to receiving waters. All control measures that are used to achieve the effluent limits required by this permit in must be maintained in effective operating condition. Non-structural control measures must also be diligently maintained (e.g., spill response supplies available, personnel appropriately trained). If control measures need to be replaced or repaired, then the permittee must make the necessary repairs or modifications before the next storm event.
- Spill Prevention and Response Procedures. Minimize the potential for leaks, spills and other releases that may be exposed to storm water and develop plans for effective response to such spills

if or when they occur. At a minimum, the SWPPP must document and the permittee must implement the following:
  - Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that may be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;
  - Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;
  - Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available; and
  - Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies.
- Erosion and Sediment Controls. The permittee must stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants. Among other actions, flow velocity dissipation devices must be placed at discharge locations and within outfall channels where necessary to reduce erosion and/or settle out pollutants. In selecting, designing, installing, and implementing appropriate control measures, the permittee is encouraged to consult with available guidance resources relating to BMPs for erosion and sedimentation, including industrial sector-specific information.
- Management of Runoff. The permittee must divert, infiltrate, reuse, contain, or otherwise reduce storm water runoff, to minimize pollutants in any discharges. In selecting, designing, installing, and implementing appropriate control measures, the permittee is encouraged to consult with available guidance resources relating to storm water BMPs for runoff management, including industrial sector-specific information.

Additionally, the permittee must address and document the following in their SWPPP:

- The number and quantity of pollutants and the toxicity of effluent generated, discharged, or potentially discharged at the facility must be minimized by the permittee to the extent feasible by managing each influent waste stream in the most appropriate manner;
- Storm water control measures must be designed, operated, and maintained to maximize the chemical and/or physical processes that reduce or eliminate the discharge of any pollutants to state surface waters;
- Sediment ponds must be clearly staked to indicate sediment accumulation;
- The permittee must ensure proper operation and maintenance of any control and/or discharge structures;
- To the maximum extent possible, 100-foot setbacks or 35-foot vegetated buffer strips between roads and/or other impervious surfaces and any downgradient surface waters or other conduits to surface waters will be established and/or maintained;
- Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances that may result in significant amounts of pollutants reaching state waters, the SWPPP should include a prediction of the direction, rate of flow and total quantity of pollutants that could be discharged from the facility as a result of each condition or circumstance;
- The permittee must take into account and control for sediment in any snow plowed or otherwise removed from the mine, ancillary facilities, and roads;

- The permittee must avoid the sidecasting of soils or snow. The sidecasting of road material is prohibited on road segments within or abutting Riparian Habitat Conservation Areas in priority watersheds; and
- Discharges to frozen or snow-covered ground must be minimized or eliminated.

Any Schedules and/or Standard Operating Procedures

The SWPPP must document any control measure inspections, routine maintenance, and/or procedures that impact the potential generation and/or discharge of pollutants by the facility. The permittee must conduct a facility inspection once every 30 days and within 24 hours of a significant precipitation event of 0.5 inches or greater. At a minimum, the documentation of each routine facility inspection must include the following:

- The inspection date and time;
- The name(s) and signature(s) of the inspector(s);
- Weather information;
- A description of any discharges occurring at the time of the inspection;
- Any previously unidentified discharges of pollutants from the site;
- Any observations of obvious indicators of storm water pollution;
- Any control measures needing maintenance or repairs;
- Any failed control measures that need replacement;
- Any incidents of noncompliance observed; and
- Any additional control measures needed to comply with the permit requirements.

An inspection for a significant storm event may also be used and credited towards one of the monthly inspections.

Corrective Actions

If any of the following conditions occur then the permittee must review and revise the selection, design, installation, implementation, and maintenance of the facility's control measures to ensure that the condition is eliminated and will not be repeated in the future:

- An unauthorized release or discharge (e.g., spill, leak, or discharge of non-storm water not authorized by this or another MPDES permit) occurs at the facility;
- The permittee become aware, or the DEQ determines, that the control measures are not stringent enough for the discharge to meet applicable water quality standards;
- An inspection or evaluation of the facility by a DEQ representative determines that modifications to the control measures are necessary to meet the non-numeric effluent limits in this permit; or
- An inspection finds that the control measures are not being properly operated and maintained.

Corrective Action Deadlines

If an inspection or other observation identifies storm water pollution or control measures needing repair or replacement then the permittee must document these conditions within 24 hours of making such discovery. Subsequently, within 14 days of such discovery, the permittee must document any corrective actions taken or needed, any further investigation the deficiency, or the basis for determining that no further action is needed. If the permittee determines that any changes are necessary following the review, then any modifications to the control measures must be made before

the next storm event if possible, or as soon as practicable following that storm event. The permittee must document the following:

- A summary of any corrective actions taken;
- Notice of whether any SWPPP modifications are required;
- The date any corrective action was initiated; and
- The date that the corrective action was completed.

These time intervals are not grace periods but are schedules considered reasonable for documenting any findings and for making necessary repairs and improvements. They are included in this permit to ensure that the conditions prompting the need for these repairs and improvements are not allowed to persist indefinitely.

Effect of Corrective Action

If the event triggering the corrective action review is a permit violation then correcting it does not remove the original violation. Additionally, failing to take corrective action in accordance with this section is an additional permit violation. DEQ will consider the appropriateness and promptness of corrective action in determining potential enforcement responses to permit violations.

Employee Training

The SWPPP Administrator must ensure all employees receive in-house training, including all members of the pollution prevention team, who work in areas where industrial materials or activities are exposed to storm water, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel). Training must cover both the specific control measures used to achieve the effluent limits in this permit, and the monitoring, inspection, planning, reporting, and documentation requirements in other parts of this permit. Training must be conducted at least annually at a minimum and the date of the training and employees in attendance must be documented.

SWPPP Modifications and Updates

The SWPPP must be maintained and kept up-to-date to reflect current site conditions. If construction or a change in the design, operation, or maintenance at the facility either changes the nature of pollutants discharged in storm water from the facility or increases the quantity of pollutants discharged, then the permittee must review the selection, design, installation, implementation, and maintenance of the facility's control measures to determine if any modifications to the SWPPP are necessary. Any SWPPP modification or update must be signed by a responsible corporate official as specified in ARM 17.30.1323.

The permittee is required to operate, build, and maintain the facility and storm water practices as identified in their SWPPP. The permittee is free to adjust or change the control measures used at any time. This flexibility allows the permittee to adjust practices as necessary to ensure continued compliance with the permit. The SWPPP must be kept up-to-date to document any changes in BMPs, control measures or corrective actions. Any changes to the SWPPP must be submitted to DEQ within 30 days for review. The initial submission of a SWPPP is addressed in the compliance schedule as summarized above in Section 2.5.

4.3 Facility Optimization Study

As a condition of the compliance schedule the facility must optimize nutrient reduction with existing infrastructure and analyze other cost-effective methods of nutrient load reductions. DEQ may request the permittee provide the results of the optimization study/nutrient reduction analysis.

Optimization studies should include, but are not limited to, facility operations and maintenance, reuse, recharge, and land application. The changes to facility operations resulting from the analysis carried out are only intended to be refinements to the wastewater treatment system already in place, addressing changes to facility operation and maintenance. Optimizations are not intended to include changes to the facility resulting in either structural modification or substantial capital investment.

This permit requires the completion of an optimization study/nutrient reduction analysis including an assessment of trading with a two year compliance schedule as summarized above in Section 2.5.

4.4 Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE)

The permit has established monitoring requirements for chronic toxicity. The permit includes a provision to develop and implement a TIE/TRE plan if monitoring indicates effluent toxicity as defined in the permit occurs.

4.5 Reopener Provisions

DEQ may reopen the permit to modify permit conditions and requirements. ARM 17.30.1361 addresses causes for modifying an MPDES permit based on information obtained after permit issuance. The permit also lists specific causes for which it may be reopened and modified. These reopener provisions include the following:

- New water quality standards (when requested by the permittee) (ARM 17.30.1361(2)(c));
- Water quality standards or trigger values being exceeded in the receiving water (ARM 17.30.1361(2)(b));
- Development and approval of a TMDL or wasteload allocation that applies to the permittee (ARM 17.30.1361(2)(b));
- A revision to the water quality management plan that calls for different effluent limitations than what are in the permit; establishment of a toxic prohibition or standard under CWA Section 307(a) that is more stringent than limitations for the toxic pollutant in the permit (ARM 17.30.1361(2)(f) and (g) and 1344(2)); or
- Changes in WET protocol or any other conditions related to the control of toxicants that have occurred or are needed (ARM 17.30.1361(b)).

As noted, the specific reopener provisions included in the permit are consistent with the various provisions of ARM 17.30.1361.

5 STANDARD CONDITIONS

Per ARM 17.30.1342, standard conditions must be included in all MPDES permits and the permittee must comply with the standard conditions at all times. These requirements are incorporated into the permit. In addition to these requirements, 40 CFR 122.42 and ARM 17.30.1343 establish additional conditions applicable to specific categories of MPDES permits; the facility is an industrial discharger and has the additional requirements of ARM 17.30.1343(a) included in the permit. These requirements establish additional notification for toxic pollutants that exceed a specified level, that exceed the level given in the facility's permit application, or that are not regulated in the permit.

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 MPDES 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, the permit incorporates by reference 75-5-633, MCA.

6 NONSIGNIFICANT DETERMINATION

The WQA states that it is unlawful to cause degradation of state waters without an authorization issued pursuant to 75-5-303, MCA (75-5-605(1)(d), MCA). ARM 17.30.706(2) states that DEQ will determine whether a proposed activity may cause degradation for all activities which are permitted, approved licensed or otherwise authorized by DEQ, such as issuance of a discharge permit. A nondegradation analysis was conducted in Section 2.2.6 of this fact sheet for the proposed discharges and activities regulated by this permit. Degradation of surface and ground water from sources not authorized to discharge by this permit are not addressed by this determination. Based on this analysis DEQ has made the following determinations:

OUTFALLS 001-003

The discharges from the facility at Outfalls 001-003 are new sources as defined in ARM 17.30.702 and are therefore subject to an additional nondegradation or nonsignificance review as required by ARM 17.30.705. The permittee submitted an authorization to degrade state water pursuant to ARM 17.30.706-709. The BHES issued order BHES Order 93-001-WQB (Order) authorizing degradation of state waters and establishing limits in surface water and ground water in the Libby, Poorman, and Ramsey Creek watersheds of the Montanore Project for discharges from the facility. The Order established numeric limits for the parameters Chromium, Copper, Iron, Manganese, Zinc, Nitrate + Nitrite, Total Ammonia, and Total Dissolved Solids. The nitrogen species were also addressed as Total Inorganic Nitrogen. Pursuant to the Order, these limits remain in effect during the operational life of the mine and for so long thereafter as necessary.

DEQ has set the effluent limits and conditions for Outfalls 001-003 that comply with the surface water quality standards, the nondegradation policy, and the Order to ensure that the current and future beneficial uses of state waters are protected.

OUTFALLS 004-008

The discharges from the facility at Outfalls 004-008 are new sources as defined in ARM 17.30.702 and are therefore subject to an additional review as required by ARM 17.30.705. DEQ finds that, pursuant to ARM 17.30.715(3) and using the guidance found at 75-5-301(5)(c), MCA, the proposed discharge at Outfalls 004-008 are a nonsignificant change in existing water quality due to their low potential for harm to human health, a beneficial use, or the environment and in consideration of the quantity and the strength of the expected pollutants; the length of time any degradation may occur; and the expected character of the discharges (see 75-5-301(5)(c), MCA; 75-5-303(3)(c), MCA; 75-5-317(2)(b), MCA).

DEQ has set the effluent limits and conditions for Outfalls 004-008 that comply with the surface water quality standards and the nondegradation policy to ensure that the current and future beneficial uses of state waters are protected.

7 PUBLIC PARTICIPATION

In accordance with ARM 17.30.1372, DEQ issued Public Notice No. MT-16-09 dated April 12, 2016. This public notice states that a tentative decision has been made to reissue an MPDES permit for the Montanore Project and that a draft permit and fact sheet has been prepared. Public comments are invited any time prior to the close of the business May 13, 2016. Comments may be directed to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620

or DEQWPBPublicComments@mt.gov

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments and issue a final decision within sixty days of the close of the public comment period or as soon as possible thereafter.

All persons, including the applicant, who believe any condition of a draft permit is inappropriate or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period.

7.1 Notification of Interested Parties

Copies of the public notice were mailed to the permittee, state and federal agencies, and interested persons who have expressed in interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this permit. In addition to mailing the public notice, a copy of the notice, draft permit, and fact sheet were posted on the DEQ website for 30 days.

Any person interested in being placed on the mailing list for information regarding this MPDES Permit should contact DEQ, reference this facility, and provide a name, address, and phone number.

7.2 Public Hearing

During the public comment period provided by the notice, DEQ will accept requests for a public hearing. Any request for a public hearing must be in writing and must state the nature of the issue(s) proposed to be raised in the hearing (ARM 17.30.1373).

7.3 Permit Appeal

After the close of the public comment period DEQ will issue a final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or, terminate a permit. A permit decision is effective 30 days after the date of issuance unless a later date is specified in the decision, a stay is granted pursuant to ARM 17.30.1379, or the applicant files an appeal pursuant to 75-5-403, MCA. The Applicant may file an appeal within 30 days of DEQ’s action to the following address:

Secretary, Board of Environmental Review
Department of Environmental Quality
1520 East Sixth Avenue
PO Box 200901
Helena, Montana 59620-0901

7.4 Additional Information

Any requests for additional information or any questions regarding this permit should be directed to: Tommy Griffeth at (406) 444-1454 or tgriffeth@mt.gov.

MASTER LIST OF APPENDICES

Appendix and Table Number	Description	Applicability	Status
1. Water Quality Standards and Nondegradation Criteria			
1.A	Applicable Water Quality Standards and Nondegradation Criteria	Libby Creek	Required
1.B	Applicable Water Quality Standards and Nondegradation Criteria	Ramsey Creek	Required
1.C	Applicable Water Quality Standards and Nondegradation Criteria	Poorman Creek	Required
2. Receiving Water Characteristics			
2.A.1	Receiving Water Characteristics—Conventional and Nonconventional Pollutants and Parameters	Libby Creek	Required
2.A.2	Receiving Water Characteristics—Toxic Priority Pollutants	Libby Creek	Required
3. Effluent Characteristics			
3.A.1	Effluent Characteristics—Conventional and Nonconventional Pollutants and Parameters	Outfalls 001 – 003	Required
3.A.2	Effluent Characteristics—Toxic Priority Pollutants	Outfalls 001 – 003	Required
4. Reasonable Potential Analysis—Individual Parameters			
4.A.1	Reasonable Potential Analysis—Libby Creek	Outfalls 001 and 002	Required
4.A.2	Reasonable Potential Analysis—Libby Creek	Outfall 003	Required
5. WQBELs—Individual Parameters			
5.A.1	WQBELs for Outfalls 001and 002 Discharging to Libby Creek	Outfalls 001 and 002	Required
5.A.2	WQBELs for Outfall 003 Discharging to Libby Creek	Outfall 003	Required
6. Temperature—Libby Creek			

APPENDIX 1 – WATER QUALITY STANDARDS AND NONDEGRADATION CRITERIA

Table 1.A. Water Quality Standards – Libby Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND})
Conventional and Nonconventional Pollutants						
Total Suspended Solids	mg/L	--	--	--	Harmful	--
Ammonia	mg/L	32.6	6.67	--	Toxic	1.5[1]
Temperature, maximum	°F	See ARM 17.30.623(2)(e)			Harmful	--
Temperature, minimum	°F	See ARM 17.30.623(2)(e)			Harmful	--
pH	s.u.	6.5 – 8.5			Harmful	--
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0[1]
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0[1]
Total Nitrogen	mg/L	--	0.275[2]	--	Nutrient	--
Total Phosphorus	mg/L	--	0.025[2]	--	Nutrient	--
Oil & Grease	mg/L	--	--	10	Narrative	--
Total Dissolved Solids	mg/L	--	--	--	Narrative	100[1]
Sulfate (as SO_4)	mg/L	--	--	--	Narrative	--
Metals						
Aluminum, Dissolved	µg/L	750	87	--	Toxic	13
Antimony, Total	µg/L	--	--	5.6	Toxic	0.84
Arsenic, Total	µg/L	340	150	10	Carcinogen	5[1]
Barium, Total	µg/L	--	--	1,000	Toxic	150
Cadmium, Total[3]	µg/L	0.52	0.097	5	Toxic	0.015
Chromium, Total	µg/L	--	--	100	Toxic	5[1]
Copper, Total[3]	µg/L	3.79	2.85	1,300	Toxic	3[1]
Iron, Total	µg/L	--	1,000	--	Harmful	100[1]
Lead, Total[3]	µg/L	14	0.54	15	Toxic	0.081
Manganese, Total	µg/L	--	--	--	Narrative	50[1]
Mercury, Total	µg/L	1.7	0.91	0.05	Toxic w/BCF > 300	0.008
Zinc, Total[3]	µg/L	37	37	2,000	Toxic	25[1]

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30
3. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7

Table 1.B. Water Quality Standards – Ramsey Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND})
Conventional and Nonconventional Pollutants						
Total Suspended Solids	mg/L	--	--	--	Harmful	--
pH	s.u.	6.5 – 8.5			Harmful	--
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0[(1)]
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0[(1)]
Total Nitrogen	mg/L	--	0.275[(2)]	--	Nutrient	--
Oil & Grease	mg/L	--	--	10	Narrative	--
Metals						
Iron, Total	µg/L	--	1,000	--	Harmful	100[(1)]
Manganese, Total	µg/L	--	--	--	Narrative	50[(1)]
Zinc, Total[(3)]	µg/L	37	37	2,000	Toxic	25[(1)]

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30
3. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7

Table 1.C. Water Quality Standards – Poorman Creek

Parameter	Units	Acute Water Quality Standard (S_a)	Chronic Water Quality Standard (S_c)	Human Health Water Quality Standard (S_{hh})	Nondegradation Category	Nondegradation Criterion (S_{ND})
Conventional and Nonconventional Pollutants						
Total Suspended Solids	mg/L	--	--	--	Harmful	--
pH	s.u.	6.5 – 8.5			Harmful	--
Nitrate + Nitrite	mg/L	--	--	10	Toxic	1.0[(1)]
Total Inorganic Nitrogen	mg/L	--	--	--	Nutrient	1.0[(1)]
Total Nitrogen	mg/L	--	0.275[(2)]	--	Nutrient	--
Oil & Grease	mg/L	--	--	10	Narrative	--
Metals						
Iron, Total	µg/L	--	1,000	--	Harmful	100[(1)]
Manganese, Total	µg/L	--	--	--	Narrative	50[(1)]
Zinc, Total[(3)]	µg/L	37	37	2,000	Toxic	25[(1)]

Footnotes:
1. Based on BHES Order authorizing degradation
2. Nutrient standard applies July 1 through September 30
3. Hardness-based standard; based on 25 mg/L hardness per 2012 Department Circular DEQ-7

APPENDIX 2 – RECEIVING WATER CHARACTERISTICS

Where receiving water quality data is available it may be used in the development of WQBELs for the parameters of concern (POC). For new or increased sources subject to nondegradation review, existing water quality, as defined in ARM 17.30.702, is necessary for all POC present in the discharge. Criteria for establishing POC is discussed in Section 2.2.5 of this fact sheet. Appendix 2 describes the process used to determine the receiving water concentrations or values for the purpose of developing WQBELs.

Receiving water quality should be based on samples collected during the period of critical stream flow (Q_s) as described in Section 2.2.8. Since Q_s is an infrequent event and data is not typically available, the background concentration (C_s) must be estimated based on water quality data that is collected outside of this flow condition. To account for the uncertainties in estimating background data, DEQ uses the upper and lower quartiles of the sample data. The upper quartile is defined as the 75th percentile of the measured or observed data and the lower quartile is the 25th percentile of the same data set. A minimum of 10 data points or measurements must be available and representative of the range of hydrologic conditions in the receiving water. Data used in this analysis must be collected upstream of the point of discharge for flowing water bodies or outside of the influent of the discharge for non-flowing water bodies.

For most constituents, the critical background concentration is defined to be the upper quartile of the sample data for purposes of a reasonable potential analysis and determining assimilative capacity. In some cases, including application of the nondegradation criteria in ARM 17.30.715(1), changes in existing water quality or the water quality standard in expressed relative to the background concentration in the receiving water. In these situations the WQBEL is based on the lower bound estimate of the interquartile range (25th percentile value) to maintain the existing water quality of the receiving water. Additional details on developing WQBELs based on these estimates are presented in Appendix 5.

Critical Background Receiving Water Pollutant Concentration (C_s)

To estimate the value of C_s, for the purposes of the Reasonable Potential Analysis (RPA) in Appendix 4 and Development of Waste Load Allocations (WLAs) and WQBELs in Appendix 5, the final critical background receiving water pollutant concentration (C_s) is determined as follows:

1. The reported data must use an approved method of analysis (40 CFR Part 136 unless otherwise specified) and achieve the required reporting value (RRV) in DEQ Circular DEQ-7, or achieve a level of analysis that is at least 1/10 of the lowest applicable water quality standard
2. Reject data which has not achieved the applicable RRV, ML, or other QA/QC objectives
3. Determine if there is sufficient data to characterize the receiving water. This data must represent the actual range of variation, generally 10 or more data points
4. Determine the 25th percentile value (C_{25}) of the data set
5. Determine the 75th percentile value (C_{75}) of the data set

Where there is insufficient data for a parameter, generally less than 10 data points, C_s is undetermined and reported as "Undetermined." In this case, the RPA and WLA/WQBEL for the POC are based on meeting the applicable water quality standard or nondegradation criteria at the end-of-pipe (i.e. no receiving water dilution).

Where there are 10 or more data points, for pollutants with a numeric water quality standard or non-significance criterion expressed as an *absolute value* (e.g. numeric criterion or standard), C_s is determined as follows:

1. If C_{75} is a quantified value (i.e. not reported as less than detect), the background concentration (C_s) is estimated by C_{75}
2. If C_{75} is a non-quantified value (i.e. reported as less than detect), and if the water quality standard or applicable nondegradation criterion is less than the non-quantified value, then DEQ will set C_s = water quality standard (no assimilative capacity).
3. If C_{75} is a non-quantified value and if RRV is less than the water quality standard, DEQ will set C_s = non-quantified value.

For pollutants with a water quality standard or non-significance criterion expressed as a *relative value* (e.g. increase above background) based on background concentration and where $\geq$10 data points are available, C_s is determined as follows:

1. If C_{25} is a quantified value, then $C_s = C_{25}$
2. If C_{25} is a non-quantified value, then C_s = non-quantified value.

For parameters with nondegradation criterion expressed as a relative value and a numeric water quality standard expressed as an absolute value, this method may only be applied if the value determined by C_{25} is less than the applicable water quality standard. For parameters for which the background concentration or value is undetermined ("Undetermined"), the waste load allocation will be based on 1/10 the lowest applicable water quality standard.

The receiving water data evaluated in the fact sheet is sourced from Montana's EQuIS database and EPA's National STORET Data Warehouse unless otherwise noted; the water quality data for Libby Creek is described in Tables 2.A.1 and 2.A.2.

Table 2.A.1. Receiving Water Characteristics – Libby Creek

Parameter	Units	Required Reporting Value (RRV)	Lower Quartile (C_{25})	Upper Quartile (C_{75})	Number of Samples[1]	Comment
Conventional and Nonconventional Pollutants						
Total Suspended Solids	mg/L	4	1	2	72	(2)
Ammonia	mg/L	0.7	0.06	0.1	72	(2)
Temperature, summer	°F	0.1	--	--	--	Undetermined
Temperature, winter	°F	0.1	--	--	--	Undetermined
pH	s.u.	0.1	--	--	--	Undetermined
Nitrate + Nitrite	mg/L	0.2	0.1	0.2	73	(2)
Total Inorganic Nitrogen	mg/L	0.1	0.1	0.2	73	(2)
Total Kjeldahl Nitrogen	mg/L	0.15	0.22	0.31	71	(2)
Total Nitrogen	mg/L	0.1	0.31	0.47	19	(2)
Total Phosphorus	mg/L	0.001	0.005	0.01	71	(2)
Oil & Grease	mg/L	5	--	--	--	Undetermined
Total Dissolved Solids	mg/L	10	33.3	91.9	8	(3)
Hardness, Total (as $CaCO_3$)	mg/L	1	6	19	39	--
Sulfate (as SO_4)	mg/L	1	2	3	71	(2)

Footnotes:
1. Total number of samples reported including those samples reported with unquantified (i.e. “less than”) values.
2. Analysis did not include unquantified samples from sample set.
3. Historic sampling data 1973-1991.

Table 2.A.2. Receiving Water Characteristics – Libby Creek

Parameter	Units	Required Reporting Value (RRV)	Lower Quartile (C_{25})	Upper Quartile (C_{75})	Number of Samples[1]	Comment
Metals						
Aluminum, Dissolved	µg/L	9	37	79	72	(2)
Antimony, Total	µg/L	0.5	3	5	2	(3)
Arsenic, Total	µg/L	1	5	5	72	(3)
Barium, Total	µg/L	3	NA	NA	1	(2)
Cadmium, Total	µg/L	0.03	0.10	0.50	72	--
Chromium, Total	µg/L	10	4	4	72	(2)
Copper, Total	µg/L	2	1	2	74	--
Iron, Total	µg/L	20	50	50	72	--
Lead, Total	µg/L	0.3	1	1	72	--
Manganese, Total	µg/L	1	20	20	72	--
Mercury, Total	µg/L	0.005	0.2	0.2	72	--
Zinc, Total	µg/L	8	20	20	72	--

Footnotes:
1. Total number of samples reported including those samples reported with unquantified (i.e. “less than”) values.
2. Analysis did not include unquantified samples from sample set.
3. Analysis did not meet DEQ’s RRV.

APPENDIX 3 – EFFLUENT CHARACTERISTICS

Effluent monitoring and characterization is based on the daily discharge of pollutants and summarized as monthly average and daily maximum values as defined in ARM 17.30.1304. The 30-day average maximum daily values and samples size reported by the permittee are given in Tables 3.A.1 and 3.A.2. This data must be based on the previous 3-5 years and represent the current operation of the facility or must be estimated by the permittee.

For purposes for determining reasonable potential and assessing the need for a WQBEL, DEQ calculates a reasonable measure of the critical (maximum) daily effluent concentration (C_d) accounting for the variability of the effluent as determined by the coefficient of variation (CV) and sample size. Due to the non-normal distribution of most effluents and low sample frequency (small sample size), DEQ estimates C_d based on the 95th percentile of the expected effluent concentration following procedure described in Chapter 3 of EPA's *Technical Support Document for Water Quality Based Toxic Control* (TSD) (EPA/505/2-90-001, March 1991). C_d is based on the estimated 95th percentile value and is calculated as follows:

$$C_d = C_{d(max)} * RPMF$$

Where:

$C_{d(max)}$ = Effluent Maximum Daily value; Appendix 3 Tables 3.A.1 and 3.A.2
RPMF = Reasonable Potential Multiplying Factor; TSD Table 3-2

Estimating the CV requires that the standard deviation is calculated using the actual measured daily discharge values. In most cases, individual daily discharge values are not reported on the discharge monitoring reports (DMRs). When daily discharge values are not available, DEQ assumes a CV of 0.6.

The effluent characteristics of the facility are presented below in Tables 3.A.1 and 3.A.2. The effluent characteristics presented are based on the MPDES permit application and/or any supplemental materials submitted by the permittee unless otherwise noted. Identical effluent characteristics are reported for Outfalls 001-003 since no discharges have occurred at either Outfalls 002 or 003 and the source of the effluent and the wastewater treatment systems are identical according to the MPDES permit application.

Table 3.A.1. Effluent Characteristics – Conventional and Nonconventional Pollutants

Parameter	Units	Maximum Monthly Average or Long Term Average	Maximum Daily Value	Number of Samples (n)	Coefficient of Variation (CV)	Multiplying Factor 95% Confidence Level	Critical Effluent Concentration (C_d)
Biochemical Oxygen Demand	mg/L	--	<3	1	0.6	6.2	<18.6
Chemical Oxygen Demand	mg/L	--	<25	1	0.6	6.2	<155
Total Organic Carbon	mg/L	--	2.1	1	0.6	6.2	13.0
Total Suspended Solids	mg/L	1	24	32	0.6	1.2	28.8
Ammonia (as N)	mg/L	<0.01	1	38	0.6	1.2	1.2
Flow	gpm	365	500	--	--	--	--
Temperature, winter	°C	13	13	17	--	--	--
Temperature, summer	°C	16	16	17	--	--	--
pH, maximum	s.u.	--	8.7	32	--	--	--
pH, minimum	s.u.	--	7.6	32	--	--	--
Chlorine, Total Residual	mg/L	Believed Absent		--	--	--	--
E. coli bacteria, summer	CFU/100 ml	Believed Absent		--	--	--	--
E. coli bacteria, winter	CFU/100 ml	Believed Absent		--	--	--	--
Nitrate + Nitrite (as N)	mg/L	0.1	3	29	0.6	1.2	3.6
Total Inorganic Nitrogen (as N)	mg/L	--	--	--	--	--	--
Total Organic Nitrogen (as N)	mg/L	0.1	0.3	23	0.6	1.3	0.39
Total Phosphorus	mg/L	0.01	0.02	18	0.6	1.4	0.028
Oil & Grease	mg/L	1	15	21	0.6	1.4	21
Dissolved Oxygen, maximum	mg/L	--	--	--	--	--	--
Dissolved Oxygen, minimum	mg/L	--	--	--	--	--	--
Turbidity	NTU	--	--	--	--	--	--
Total Dissolved Solids	mg/L	--	--	--	--	--	--
Hardness, Total (as $CaCO_3$)	mg/L	--	--	--	--	--	--
Sulfate (as SO_4)	mg/L	25	100	33	0.6	1.2	120
Total Kjeldahl Nitrogen (as N)	mg/L	--	--	--	--	--	--

Table 3.A.2. Effluent Characteristics – Toxic Priority Pollutants

Parameter	Units	Maximum Monthly Average or Long Term Average	Maximum Daily Value	Number of Samples (n)	Coefficient of Variation (CV)	Multiplying Factor 95% Confidence Level	Critical Effluent Concentration (C_d)
Aluminum, Total Recoverable	µg/L	0.05	0.5	18	0.6	1.4	0.7
Antimony, Total Recoverable	µg/L	0.3	0.7	19	0.6	1.4	0.98
Arsenic, Total Recoverable[1]	µg/L	1.5	1.9	43	0.185	1.0	1.9
Barium, Total Recoverable	mg/L	0.01	0.02	18	0.6	1.4	0.028
Beryllium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Cadmium, Total Recoverable	µg/L	<0.01	0.01	33	0.6	1.2	0.012
Chromium, Total Recoverable	µg/L	0.2	10	33	0.6	1.2	12
Chromium, Hexavalent	µg/L	--	--	--	--	--	--
Chromium, Trivalent	µg/L	--	--	--	--	--	--
Copper, Total Recoverable	µg/L	0.5	2	33	0.6	1.2	2.4
Iron, Total Recoverable	µg/L	500	1,000	33	0.6	1.2	1,200
Lead, Total Recoverable	µg/L	0.5	2	33	0.6	1.2	2.4
Magnesium, Total Recoverable	µg/L	5,000	6,000	31	0.6	1.2	7,200
Manganese, Total Recoverable	µg/L	10	50	33	0.6	1.2	60
Mercury, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Nickel, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Selenium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Silver, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Thallium, Total Recoverable	µg/L	Believed Absent		--	--	--	--
Zinc, Total Recoverable	µg/L	30	50	33	0.6	1.2	60
Cyanide, Total	µg/L	Believed Absent		--	--	--	--
Phenol, Total	µg/L	Believed Absent		--	--	--	--
Dioxin (2,3,7,8-TCDD)	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Volatile	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Acid	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Base/Neutral	µg/L	Believed Absent		--	--	--	--
GC/MS Fraction-Pesticides	µg/L	Believed Absent		--	--	--	--

Footnotes:
1. Based on supplemental information requested by DEQ.

APPENDIX 4 – REASONABLE POTENTIAL ANALYSIS

Following 40 CFR 122.44(d), an effluent limit must be established in the permit if there is reasonable potential (RP) that any parameter of concern (POC) in the discharge causes or contributes to an excursion of a numeric or narrative water quality standard. POCs are identified in Section 2.2.5 of this fact sheet. The applicability of the nondegradation criteria to the discharge(s) is discussed in Section 2.2.6 of this fact sheet. The resultant receiving water concentration (C_r) for the POC is calculated from the modified steady state mass-balance equation (Equation 1) expressed in terms of the dilution ratio (D) provided by a mixing zone:

$$C_r = \frac{C_d + (D * C_s)}{(1 + D)} \quad \text{(Equation 2)}$$

Where:

$D_{a/c}$	=	acute dilution ratio (D_a) or chronic dilution ratio (D_c), Sections 2.2.7 and 2.2.8
C_s	=	critical receiving water pollutant concentration, Appendix 2
C_d	=	critical effluent pollutant concentration, Appendix 3
C_r	=	resultant receiving water pollutant concentration

Where the calculated value of C_r exceeds any applicable water quality standard (S) or nondegradation criterion (S_{ND}), there is a finding of RP and a WQBEL is required for that parameter. WQBELs are discussed in Section 2.2.9 and calculated for these pollutant(s) in Appendix 5 of this fact sheet.

Two values of C_r are calculated since the resulting receiving water concentration is a function of the dilution ratio:

- $C_{r\text{-}a}$ is the receiving water concentration based on the acute dilution ratio (D_a) and
- $C_{r\text{-}c}$ is the receiving water concentration based on numeric chronic dilution ratio (D_c) granted for chronic aquatic life, human health or other narrative criterion.

RP is demonstrated for any applicable acute aquatic life standard (S_a) if:

$$C_{r\text{-}a} \geq S_a$$

Where $C_{r\text{-}a}$ is calculated as follows:

$$C_{r\text{-}a} = \frac{C_d + (D_a * C_s)}{(1 + D_a)}$$

For a chronic aquatic life (S_c), human health (S_{hh}), or Board (S_{BHES}) standard, RP is demonstrated if:

$$C_{r\text{-}c} \geq [S_c, S_{hh}, \text{ or } S_{BHES}]$$

Where $C_{r\text{-}c}$ is calculated as follows:

$$C_{r\text{-}c} = \frac{C_d + (D_c * C_s)}{(1 + D_c)}$$

With respect to new sources for purposes of conducting the reasonable potential analysis (RPA), all nondegradation criteria are considered to be chronic criteria and apply outside of any applicable

mixing zone (ARM 17.30.505(1)(b)); any applicable nondegradation criterion (S_{ND}) is given in Appendix 1. When performing a RPA for new sources, RP for acute aquatic life standards are calculated as described in this appendix above. For new sources subject to the nondegradation criteria of ARM 17.30.715, RP is demonstrated as follows:

$$C_{r-c} \geq S_{ND}$$

Where C_{r-c} is calculated as follows:

$$C_{r-c} = \frac{C_d + (D_c * C_s)}{(1 + D_c)}$$

Tables 4.A.1 and 4.A.2 summarize the acute and chronic RPA. Input values for the RPA are given in previous sections of this fact sheet for this discharger, and summarized as follows:

Parameter	Description	Source of Information
S_a, S_c, S_{hh}	Applicable Water Quality Standards	Section 2.2.2; Appendix 1
S_{ND}	Applicable Nondegradation Criterion	Section 2.2.6; Appendix 1
S_{BHES}	Authorization to Degrade	Section 1.2.6; Appendix 1
C_s	Critical Receiving Water Pollutant Concentration	Section 2.2.8; Appendix 2
C_d	Critical Effluent Pollutant Concentration	Section 2.2.8; Appendix 3
D_a, D_c	Applicable Dilution Ratio	Section 2.2.7; Section 2.2.8

Table 4.A.1. RPA, Outfalls 001-002 Discharging to Libby Creek via Alluvial Ground Water

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order or Nondeg Criterion	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}/S_{ND}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Aluminum, Dissolved	µg/L	750	87	--	13	0.70	79	0	0	0.70	0.70	No
Antimony, Total	µg/L	--	--	5.6	0.84	0.98	--	NA	0	NA	0.98	Yes
Arsenic, Total	µg/L	340	150	10	5	1.9	5	0	0	1.9	1.9	No
Barium, Total	µg/L	--	--	1,000	150	0.028	--	NA	0	NA	0.028	No
Cadmium, Total	µg/L	0.52	0.097	5	0.015	0.012	0.50	0	0	0.0138	0.0138	No
Chromium, Total	µg/L	--	--	100	5	12	4	NA	25	NA	8.82	Yes
Copper, Total	µg/L	3.79	2.85	1,300	3	2.4	2	0	0	2.33	2.33	No
Iron, Total	µg/L	--	1,000	--	100	1,200	50	NA	25	NA	753	Yes
Lead, Total	µg/L	14	0.54	15	0.081	2.4	1	0	25	2.33	1.84	Yes
Manganese, Total	µg/L	--	--	--	50	60	20	NA	25	NA	44.1	No(1)
Mercury, Total	µg/L	1.7	0.91	0.05	0.0008	0.0021(2)	0.2	0	0	0.0021	0.0021	Yes(2)
Sulfate	mg/L	--	--	250(3)	--	120	3	NA	0	NA	116	No
Zinc, Total	µg/L	37	37	2,000	25	60	20	0	25	58.2	44.1	Yes
Oil & Grease	mg/L	--	--	10	--	19.5	--	NA	0	NA	21	Yes
Total Nitrogen, as N	mg/L	--	0.275	--	--	0.39	0.465(4)	NA	100	NA	1.57	Yes(5)
Total Inorganic Nitrogen, as N	mg/L	--	--	--	1.0	0.53(2)	0.2	NA	0	NA	0.65	No(2)
Total Ammonia, as N	mg/L	32.6	6.67	--	1.5	1.2	0.1	0	0	1.12	1.12	No
Nitrate + Nitrite, as N	mg/L	--	--	10	1.0	3.6	0.2	NA	25	NA	2.06	Yes
Total Phosphorus, as P	mg/L	--	0.025	--	--	0.028	0.01	NA	100	NA	0.016	No

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order or Nondeg Criterion	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}/S_{ND}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Total Suspended Solids	mg/L	--	--	--	--	28.8	2	NA	--	NA	--	No(6)
Total Dissolved Solids	mg/L	--	--	--	100	(7)	91.9	NA	--	NA	--	No(6)

Footnotes:
NA = Not Applicable
1. Requires mixing to demonstrate no RP.
2. Analysis is based on DMR data.
3. Sulfate is subject to a narrative water quality standard. For the purposes of this RPA only, DEQ used the secondary MCL. Research on the levels where sulfate has an impact on the beneficial uses or on the biology/ecology of state surface waters are well above the reported effluent concentrations (see Sulfate Translation Guidance, WQPBWQSTD-009).
4. Value used is based on paired ambient data for Total Kjeldahl Nitrogen and Nitrate + Nitrite.
5. Libby Creek is a Tier 1 water with respect to Total Nitrogen; see Section 2.2.6 of this fact sheet.
6. See Section 2.2.8 of this fact sheet.
7. No effluent data available.

Table 4.A.2. RPA, Outfall 003 Discharging to Libby Creek

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order or Nondeg Criterion	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}/S_{ND}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Aluminum, Dissolved	µg/L	750	87	--	13	0.70	79	0	0	0.70	0.70	No
Antimony, Total	µg/L	--	--	5.6	0.84	0.98	--	NA	0	NA	0.98	Yes
Arsenic, Total	µg/L	340	150	10	5	1.9	5	0	0	1.9	1.9	No
Barium, Total	µg/L	--	--	1,000	150	0.028	--	NA	0	NA	0.028	No
Cadmium, Total	µg/L	0.52	0.097	5	0.015	0.012	0.50	0	0	0.0138	0.0138	No
Chromium, Total	µg/L	--	--	100	5	12	4	NA	25	NA	9.33	Yes
Copper, Total	µg/L	3.79	2.85	1,300	3	2.4	2	0	0	2.33	2.33	No
Iron, Total	µg/L	--	1,000	--	100	1,200	50	NA	25	NA	828	Yes
Lead, Total	µg/L	14	0.54	15	0.081	2.4	1	0	25	2.33	1.93	Yes
Manganese, Total	µg/L	--	--	--	50	60	20	NA	25	NA	46.7	No(1)
Mercury, Total	µg/L	1.7	0.91	0.05	0.0008	0.0021(2)	0.2	0	0	0.0021	0.0021	Yes(2)
Sulfate	mg/L	--	--	250(3)	--	120	3	NA	0	NA	116	No
Zinc, Total	µg/L	37	37	2,000	25	60	20	0	25	58.2	46.6	Yes
Oil & Grease	mg/L	--	--	10	--	19.5	--	NA	0	NA	21	Yes
Total Nitrogen, as N	mg/L	--	0.275	--	--	0.39	0.465(4)	NA	100	NA	1.57	Yes(5)
Total Inorganic Nitrogen, as N	mg/L	--	--	--	1.0	0.53(2)	0.2	NA	0	NA	0.65	No(2)
Total Ammonia, as N	mg/L	32.6	6.67	--	1.5	1.2	0.1	0	0	1.12	1.12	No
Nitrate + Nitrite, as N	mg/L	--	--	10	1.0	3.6	0.2	NA	25	NA	2.23	Yes
Total Phosphorus, as P	mg/L	--	0.025	--	--	0.028	0.01	NA	100	NA	0.016	No

Parameter	Units	Acute Standard	Chronic Standard	Human Health Standard	BHES Order or Nondeg Criterion	Critical Effluent Conc.	Critical Background Receiving Water Conc.	Acute Dilution Allowance	Chronic Dilution Allowance	Projected Receiving Water Conc., Acute	Projected Receiving Water Conc., Chronic/Human Health/BHES	Reasonable Potential
		S_a	S_c	S_{hh}	S_{BHES}/S_{ND}	C_d	C_s	%	%	C_{r-a}	C_{r-c}	(Yes/No/Undetermined)
Total Suspended Solids	mg/L	--	--	--	--	28.8	2	NA	--	NA	--	No(6)
Total Dissolved Solids	mg/L	--	--	--	100	(7)	91.9	NA	--	NA	--	No(6)

Footnotes:
NA = Not Applicable
1. Requires mixing to demonstrate no RP.
2. Analysis is based on DMR data.
3. Sulfate is subject to a narrative water quality standard. For the purposes of this RPA only, DEQ used the secondary MCL. Research on the levels where sulfate has an impact on the beneficial uses or on the biology/ecology of state surface waters are well above the reported effluent concentrations (see Sulfate Translation Guidance, WQPBWQSTD-009).
4. Value used is based on paired ambient data for Total Kjeldahl Nitrogen and Nitrate + Nitrite.
5. Libby Creek is a Tier 1 water with respect to Total Nitrogen; see Section 2.2.6 of this fact sheet.
6. See Section 2.2.8 of this fact sheet.
7. No effluent data available.

APPENDIX 5 – WLA AND WQBEL DEVELOPMENT

In accordance with 40 CFR 122.44(d) the permit must contain an effluent limit for any parameter which DEQ determines has a reasonable potential to cause or contribute to a violation of water quality standards, including nondegradation-based standards. This determination was completed in Appendix 4 and discussed in Section 2.2.6 of the fact sheet. WQBELs are derived from a wasteload allocation (WLA) which is calculated based on the applicable numeric water quality standard and background pollutant concentration in the receiving water during the critical conditions described in Section 2.2.8. For existing discharges, WLAs are based on acute aquatic life, chronic aquatic life, and human health standards. For new discharges, WLAs are the same as existing discharges with an additional WLA from the applicable nondegradation criteria (see Section 2.2.6). These WLAs are then translated into maximum daily limitations (MDLs) and average monthly limitations (AMLs) to reflect the respective averaging times given in the surface water quality standards (ARM 17.30.635), Department Circular DEQ-7, and MPDES requirements at ARM 17.30.1345.

The background concentration (C_s) affects the determination of the WLA for both new and existing sources. For new sources subject to nondegradation criteria described in Section 2.2.6, WQBELs must to set to protect existing water quality unless an authorization to degrade state waters pursuant ARM 17.30.706 -708 has been issued. As defined in ARM 17.30.702, existing water quality is defined as the quality of the receiving water immediately prior to commencement of the activity or that which may adequately be demonstrated to have existed on or after July 1, 1971, whichever is the highest.

For existing sources where the background concentration (C_s) exceeds the applicable water quality standard (S), the WLA is set at the standard (WLA = S) unless DEQ has determined through a TMDL that the background pollutant is due to natural sources. The WQA at 75-5-306, MCA, does not require treatment of wastes to purer than natural conditions provided all minimum treatment requirements (e.g. any applicable TBELs) have been applied.

Following selection of the appropriate instream target and background condition, the WLA is calculated from the steady state mass-balanced model following:

$$WLA = S + D(S - C_s) \quad \text{Equation 3}$$

Where:

WLA	=	calculated wasteload allocation
S	=	numeric water quality standard
D	=	dilution ratio (see Sections 2.2.7 and 2.2.8)
C_s	=	critical receiving water pollutant concentration prior to discharge

The following procedure is used to select the appropriate WLAs for new and existing sources:

Receiving Water Condition	Determination of the WLA With Respect to Background Concentration
New Sources Discharging to High Quality Waters	
$C_s < S_{ND} < S$	Available dilution Calculate WLA using Equation 3 substituting S_{ND} for S in the equation
$S_{ND} < C_s < S$	No dilution is available (D = 0) No increase above background allowed Set WLA = C_s
$S_{ND} < S < C_s$	No dilution is available (D = 0) No assimilative capacity; See ARM 17.30.1311(7) Set WLA = S
Existing Sources Discharging to High Quality Waters	
$C_s < S$	Available dilution Calculate WLA using Equation 3
$S < C_s$	No dilution is available (D = 0) No assimilative capacity; See ARM 17.30.505(1)(d) Set WLA = S

Where:
C_s is the critical upstream receiving water pollutant concentration
WLA is the wasteload allocation
S_{ND} is the allowable in-stream concentration based on the applicable nondegradation criterion
S is the allowable in-stream concentration based on the applicable numeric water quality standard

Acute, chronic, human health, and BHES WLAs based on Equation 3 are given in Tables 5.A.1 and 5.A.2 for the parameters of concern.

The applicable WLA are converted to effluent limitations based on the procedures given in EPA's TSD (pp. 93-114) based on the averaging period and frequency given in Montana Surface Water Quality Standards and Procedures (ARM 17.30.601 *et seq*.) and Department Circular DEQ-7.

Aquatic Life Effluent Limitations: In most cases, there are at least two aquatic life WLAs, namely a WLA based on the acute aquatic life standard (WLA_a) and at least one WLA based on the chronic aquatic life standard (WLA_c or $WLA_{30\text{-day c}}$ for ammonia). For each of these WLAs, there is a corresponding long-term average effluent concentration (LTA) calculated by multiplying the WLA by a factor (WLA multiplier). This multiplier is a statistically-based factor derived from the ratio of the WLA, set at a specific percentile value, to the LTA. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set, the percentile value for the WLA (e.g., 99th percentile), and whether the WLA is based on an acute (1-hour average) or chronic (typically, 4-day average), or 30-day chronic (for ammonia) water quality standard. DEQ sets the WLA at the 99th

percentile on the lognormal distribution. The equations for the WLA multipliers (WLA multiplier$_{acute99}$, WLA multiplier$_{chronic99}$, WLA multiplier$_{30\text{-day chronic99}}$ are shown below:

$$\text{WLA multiplier}_{acute99} = e\text{^}(0.5\sigma^2 - z\sigma)$$
$$\text{WLA multiplier}_{chronic99} = e\text{^}(0.5\sigma_4^2 - z\sigma_4)$$
$$\text{WLA multiplier}_{30\text{-day chronic99}} = e\text{^}(0.5\sigma_{30}^2 - z\sigma_{30})$$

Where:

σ	=	$[ln(CV^2 + 1)]^{0.5}$
σ^2	=	$ln(CV^2 + 1)$
σ_4	=	$\{ln[(CV^2/4) + 1]\}^{0.5}$
σ_4^2	=	$ln[(CV^2/4) + 1]$
σ_{30}	=	$\{ln[(CV^2/30) + 1]\}^{0.5}$
σ_{30}^2	=	$ln[(CV^2/30) + 1]$
z	=	2.326 for 99th percentile probability basis

The corresponding LTAs are calculated as follows:

$$LTA_a = WLA_a * \text{WLA multiplier}_{acute99}$$
$$LTA_c = WLA_c * \text{WLA multiplier}_{chronic99}$$
$$LTA_{30\text{-day chronic99}} = WLA_{30\text{-day chronic99}} * \text{WLA multiplier}_{30\text{-day chronic99}}$$

Since the calculated LTAs do not have different averaging periods, they are directly comparable in order to select the most protective aquatic life LTA (i.e., the LTA that ensures that both aquatic life WLAs are met). This WLA is the basis for calculating effluent limitations that protect aquatic life from both acute and chronic effects. The calculated acute and chronic LTAs are given in Tables 5.A.1 and 5.A.2.

The two aquatic life LTAs represent the two performance levels that the facility would need to maintain, one that will protect against acute toxic effects and one that will protect against chronic toxic effects. By comparing the two LTAs and selecting the minimum LTA as the basis for the aquatic life WQBELs applicable to the facility, the procedure ensures that the calculated AML and MDL are based on a single performance level that will protect against both acute and chronic toxic effects.

$$LTA = \text{Minimum of the } LTA_a \text{ and the } LTA_c \text{ (and } LTA_{30\text{--day chronic99}} \text{ for ammonia)}$$

Effluent limitations for protection of aquatic life are calculated by multiplying the most protective aquatic life LTA by multipliers based on the lognormal distribution. Each multiplier is a statistically-based factor that reflects the relationship between the LTA and the effluent limitations. The value of the multiplier for each effluent limitation varies depending on:

- The probability basis of the effluent limitation (i.e., the percentile value on the lognormal distribution of effluent pollutant concentrations where the limitation will be set, such as 95th percentile or 99th percentile);

- The **CV** of the data set; and
- The number of samples (for the AML) averaged in order to measure compliance with the effluent limitation.

The AML and MDL multipliers are based on the following:

- Setting the AML at a 95th percentile occurrence probability and the MDL at a 99th percentile occurrence probability; these probability bases are consistent with EPA's recommendations in the TSD and consistent with the probability bases EPA uses to derive technology-based requirements in the effluent guidelines;
- The CV used in the reasonable potential determination (i.e. a calculated CV if there are at least 10 data points available or a default CV of 0.6 if a CV cannot be calculated); and
- The actual monthly sampling frequency that will be required in the permit, unless the planned sampling frequency is one time per month or less; if the sampling frequency that will be specified in the permit is one time per month or less, DEQ uses a value for sampling frequency (n) in the formula for calculating the AML that is greater than one. This procedure assumes a sampling frequency of two to four times per month in order to ensure that the AML will not exceed any of the calculated WLAs, as recommended in EPA's TSD (pp. 107-108).

The formulae for calculating the AML and the MDL from the most protective aquatic life LTA are shown below:

$$AML_{aquatic\ life} = LTA * AML_{multiplier95}$$
$$MDL_{aquatic\ life} = LTA * MDL_{multiplier99}$$

The AML multiplier is calculated as:

$$AML_{multiplier95} = e\text{^}(z\sigma_n - 0.5\sigma_n^2)$$

Where:

σ_n	=	$\{ln[(CV^2/n) + 1]\}^{0.5}$
σ_n^2	=	$ln[(CV^2/n) + 1]$
z	=	1.645 for 95th percentile probability basis
n	=	number of samples per month that will be required in the permit

The MDL multiplier is calculated as:

$$MDL_{multiplier99} = e\text{^}(z\sigma - 0.5\sigma^2)$$

Where:

σ	=	$[ln(CV^2 + 1)]^{0.5}$
σ^2	=	$ln(CV^2 + 1)$
z	=	2.326 for 99th percentile probability basis

For parameters whose chronic aquatic life water quality standard is expressed as a single numeric value, there will be only a single corresponding WLA. The following procedure applies:

- Consider the single WLA to be WLA_c;
- Using the CV determined in the reasonable potential analysis, calculate an LTA that will allow the effluent to meet WLA_c using the equations for the chronic WLA above; and
- Derive an AML and MDL based on the LTA and CV using the equations above.

Human Health Effluent Limitations*:* Montana's numeric human health numeric standards are expressed as values that may not be exceeded in the receiving water. Because of this requirement, it is necessary to set human health effluent limitations that meet a given WLA on a daily basis. DEQ uses the following approach to establish the effluent limitations for protection of human health:

For parameters where the human health standard is the limiting criteria, the AML is set equal to the WLA_{hh}, as stated in TSD Section 5.4.4. However, in accordance with Circular DEQ-7 Footnote 16, the receiving water "concentrations may not exceed" any human health standard; therefore the MDL is also set equal to the WLA_{hh}.

Nondegradation-based Effluent Limitations: Effluent limitations are calculated from nondegradation criteria using the procedures for aquatic life standards described above, treating the nondegradation criterion in the same manner as a chronic standard for purposes of calculating an LTA. A second LTA is calculated based on the acute water quality standard. The two LTAs represent two performance levels that the facility would need to maintain: one that will protect against acute toxic effects and one that will meet the nondegradation criteria. By comparing the two LTAs and selecting the minimum LTA as the basis for WQBELs for the facility, the procedure ensures that the calculated AML and MDL are based on a single performance level that will protect against acute toxic effects and meet the nondegradation criteria.

$$LTA_m = \text{Minimum of } LTA_a \text{ and } LTA_{ND}$$

The remainder of the procedure for calculating the AML and MDL from the lowest LTA follows the procedures for aquatic life standards described above. These limitations are the final WQBELs for the parameter.

Selection of Final Water Quality-based Effluent Limitations: The final WQBELs for a given parameter are determined as follows:

- For discharges not subject to nondegradation criteria, DEQ compares the AML and MDL calculated from the aquatic life standards to the AML and MDL calculated from human health standards. The lowest AML and the lowest MDL are the final WQBELs because the lowest of each of these limitations will assure attainment of both the aquatic life and human health standards.
- For discharges subject to nondegradation criteria no further comparison is needed to determine the final WQBELs. The procedures outlined above ensure attainment of both the nondegradation criteria and water quality standards.

Stringency and Anti-backsliding: The calculated WQBEL for a parameter at each outfall must be compared to any applicable TBELs for that same parameter in order to determine the final effluent limits in the permit that meets the requirements of Section 301 of the CWA and protect the designated uses of the receiving water as required by Section 302 of the CWA. This stringency analysis is discussed in Section 2.3.2 above. DEQ must also consider the anti-backsliding requirements of Section 402 of the CWA in determining the final effluent limits in the permit (see Section 2.3.1 above).

Table 5.A.1. WQBELs for Outfalls 001-002 Discharging to Libby Creek

Parameter	Units	Acute Wasteload Allocation (WLA_a)	Chronic Wasteload Allocation (WLA_c)	Human Health Wasteload Allocation (WLA_{hh})	BHES or Nondeg Wasteload Allocation (WLA_{BHES} or WLA_{ND})	CV	Acute Long Term Average (LTA_a)	Chronic Long Term Average (LTA_c)	Minimum Long Term Average (LTA_m)(1)	Aquatic Life MDL	Aquatic Life AML	Human Health MDL	Human Health AML	Final WQBELs	
														MDL	AML
Total Dissolved Solids	mg/L	--	--	--	105	0.6	--	--	55.2(2)	172	86	--	--	**172**	**86**
Antimony, Total Recoverable	µg/L	--	--	5.6	0.84	0.6	--	--	0.44	1.38	0.69	5.60	2.79	**1.38**	**0.69**
Cadmium, Total Recoverable	µg/L	0.52	0.097	5	0.015	0.6	0.167	0.051	0.008	0.025	0.012	5	5	**0.025**	**0.012**
Chromium, Total Recoverable	µg/L	--	--	180	5.83	0.6	--	--	3.08(2)	9.58	4.78	180	180	**9.58**	**4.78**
Copper, Total Recoverable	µg/L	3.79	3.56	2,382	3.83	0.6	1.22	1.87	1.22	3.79	1.89	2,382	2,382	**3.79**	**1.89**
Iron, Total Recoverable	µg/L	--	1,792	--	142	0.6	--	945	75(2)	233	116	--	--	**233**	**116**
Lead, Total Recoverable	µg/L	14.00	0.54	23.2	0.081	0.6	4.50	0.29	0.043	0.13	0.07	23.2	23.2	**0.13**	**0.07**
Manganese, Total Recoverable	µg/L	--	--	--	75	0.6	--	--	39.6(2)	123	61	--	--	**123**	**61**
Mercury, Total Recoverable	µg/L	1.70	1.33	0.05	0.008	0.6	0.55	0.48	0.004	0.013	0.007	0.050	0.050	**0.013**	**0.007**
Zinc, Total Recoverable	µg/L	37	51	3,650	29	0.6	11.9	27.9	11.9	37	18	3,650	3,650	**37**	**18**
Total Ammonia	mg/L	32.6	10.6	--	2.32	0.6	10.5	5.5	1.22(2)	3.8	1.9	--	--	**3.8**	**1.9**
Nitrate + Nitrite	mg/L	--	--	18.2	1.67	0.6	--	--	0.88(2)	2.74	1.37	18.2	18.2	**2.74**	**1.37**
Total Inorganic Nitrogen	mg/L	--	--	--	1.67	0.6	--	--	2.88(2)	--	1.37	--	--	**NA**	**1.37**
Total Nitrogen	mg/L	--	--	--	--	0.6	--	1	1(2)	--	1.55	--	--	**NA**	**9.3(3)**

Footnotes:
NA = Not Applicable
1. Minimum of the Acute, Chronic, Human Health, BHES, and/or Nondeg LTAs.
2. Based on BHES Order.
3. AML is in lbs/day and based on the facility's design flow.

Table 5.A.2. WQBELs for Outfall 003 Discharging to Libby Creek

Parameter	Units	Acute Wasteload Allocation (WLA_a)	Chronic Wasteload Allocation (WLA_c)	Human Health Wasteload Allocation (WLA_{hh})	BHES or Nondeg Wasteload Allocation (WLA_{BHES} or WLA_{ND})	CV	Acute Long Term Average (LTA_a)	Chronic Long Term Average (LTA_c)	Minimum Long Term Average (LTA_m)(1)	Aquatic Life MDL	Aquatic Life AML	Human Health MDL	Human Health AML	Final WQBELs	
														MDL	AML
Total Dissolved Solids	mg/L	--	--	--	104	0.6	--	--	54.5(2)	170	85	--	--	**170**	**85**
Antimony, Total Recoverable	µg/L	--	--	5.6	0.84	0.6	--	--	0.44	1.38	0.69	5.60	2.79	**1.38**	**0.69**
Cadmium, Total Recoverable	µg/L	0.52	0.097	5	0.015	0.6	0.167	0.051	0.008	0.025	0.012	5	5	**0.025**	**0.012**
Chromium, Total Recoverable	µg/L	--	--	166	5.68	0.6	--	--	3.00(2)	9.33	4.65	165	165	**9.33**	**4.65**
Copper, Total Recoverable	µg/L	3.79	3.43	2,186	3.68	0.6	1.22	1.81	1.22	3.79	1.89	2,186	2,186	**3.79**	**1.89**
Iron, Total Recoverable	µg/L	--	1,648	--	134	0.6	--	869	71(2)	220	110	--	--	**220**	**110**
Lead, Total Recoverable	µg/L	14.00	0.54	21.0	0.081	0.6	4.50	0.29	0.043	0.13	0.07	21.0	21.0	**0.13**	**0.07**
Manganese, Total Recoverable	µg/L	--	--	--	70	0.6	--	--	37.2	116	58	--	--	**116**	**58**
Mercury, Total Recoverable	µg/L	1.70	1.22	0.05	0.008	0.6	0.55	0.48	0.004	0.013	0.007	0.050	0.050	**0.013**	**0.007**
Zinc, Total Recoverable	µg/L	37	49	3,351	28	0.6	11.9	25.6	11.9	37	18	3,351	3,351	**37**	**18**
Total Ammonia	mg/L	32.6	9.5	--	2.1	0.6	10.5	5.0	1.11(2)	3.5	1.7	--	--	**3.5**	**1.7**
Nitrate + Nitrite	mg/L	--	--	16.7	1.55	0.6	--	--	0.82(2)	2.54	1.27	16.7	16.7	**2.54**	**1.27**
Total Inorganic Nitrogen	mg/L	--	--	--	1.55	0.6	--	--	0.82(2)	--	1.27	--	--	**NA**	**1.27**
Total Nitrogen	mg/L	--	--	--	--	0.6	--	1	1(2)	--	1.55	--	--	**NA**	**9.3(3)**

Footnotes:
NA = Not Applicable
1. Minimum of Acute, Chronic, Human Health, BHES, and/or Nondeg LTAs.
2. Based on BHES Order.
3. AML is in lbs/day and based on the facility's design flow.

APPENDIX 6 – TEMPERATURE

The permittee has provided data summarizing the upstream (LB200) and downstream (LB300) temperatures for Libby Creek as well as the temperature of the effluent at the distribution box (UF-1) in the tables below.

LB200 is located about 2,507 feet upstream of the Libby Adit Site; the temperature in Libby Creek at this monitoring location is not influenced by the discharges from the facility. LB300 is located about 2,536 feet downstream of the Libby Adit and Outfall 003 (a direct discharge to Libby Creek that is not yet constructed). LB300 is at the end of the mixing zone for Outfalls 001-003. The table below represents temperature data collected from 1988-2006.

1988-2006 Temperatures (^{o}C)		
Statistic	**LB200**	**LB300**
Average	6.3	5.3
Minimum	0.5	1.0
Maximum	23	19.5
Number	65	137
Standard Deviation	5.3	4.1

UF-1 is representative of the temperature of the effluent discharged by the wastewater treatment plant as collected at the distribution box. The facility's wastewater treatment plant became operational in 2007, with intermittent discharges beginning during the latter part of that year. Currently, the wastewater treatment plant discharges treated effluent to the infiltration pond where it percolates into groundwater (Outfall 001). The table below represents temperature data collected from 2007-present.

2007-Present Temperatures (^{o}C)			
Statistic	**LB200**	**LB300**	**UF-1**
Average	4.7	5.1	14.2
Minimum	0.1	0.5	12.0
Maximum	12.0	11.3	17.6
Number	112	135	112
Standard Deviation	3.1	2.9	1.3

The permittee also provided additional synoptic temperature data for Libby Creek at monitoring locations LB200 and LB300. Delta is the difference in temperature from LB200 to LB300. This data is summarized in the table below.

Libby Creek Synoptic Data

Sampling Date	Monitoring Location		Temperature Difference	
	LB200 (°C)	LB300 (°C)	Delta (°C)	Delta (°F)
4/29/2015	3.9	4.2	0.3	0.5
3/29/2015	3.4	3.4	0.0	0.0
3/25/2015	2.3	2.8	0.5	0.9
2/24/2015	0.7	1.2	0.5	0.9
1/28/2015	3.6	3.8	0.2	0.4
12/11/2014	5.2	4.7	-0.5	-0.9
11/12/2014	1.7	2.1	0.4	0.7
10/29/2014	5.1	5.4	0.3	0.5
10/10/2014	6.4	7.2	0.8	1.4
9/24/2014	9	8.4	-0.6	-1.0
8/25/2014	8.7	10.2	1.5	2.7
7/28/2014	9	9.5	0.5	0.9
7/15/2014	7.7	8.2	0.5	0.9
6/25/2014	5.2	5.8	0.6	1.0
5/28/2014	4.8	4.1	-0.7	-1.3
5/4/2014	3.3	3.7	0.4	0.7
4/29/2014	3.5	3.8	0.3	0.5
3/26/2014	3.3	3.5	0.2	0.4
2/26/2014	0.4	0.5	0.1	0.2