Water Quality Division
Montana Pollutant Discharge Elimination System (MPDES) ▪ Fact Sheet
August 2025

Permittee: Montana Department of Environmental Quality – Waste Management and Remediation Division

Permit No.: MT0032247

Receiving Waters: Belt Creek

Facility Information

Name:	Belt Water Treatment Plant
Contact:	Bob Flesher, Senior Environmental Project Manager

County: Cascade

Fee Information

Major/Minor:	Minor
Type:	Public Minor
Number of Outfalls:	1 (for fee determination only) 001 – Treated abandoned mine water discharge to surface water

TABLE OF CONTENTS

1 BACKGROUND

This fact sheet identifies the principal facts, and significant factual, legal, methodological, and policy issues considered in preparing a draft permit as required by the Administrative Rules of Montana

The Montana Department of Environmental Quality Waste Management and Remediation Division ("MDEQ-WMR") (Permittee) is the owner and operator of the Belt Water Treatment Plant (Facility), which is a facility for the treatment of acid mine drainage from abandoned coal mines.

1.1 Permit and Application Information

The application is for a new Montana Pollutant Discharge Elimination System (MPDES) and is assigned permit number MT0032247. The application is for a proposed discharge from a new source, as described below. DEQ Water Protection Bureau (WPB) received the initial application via email in August 2023. WPB issued a Notice of Deficiency on January 30, 2024. DEQ Remediation submitted additional information and the DEQ determined the application was complete on August 7, 2024.

1.2 Description of Facility and Discharges

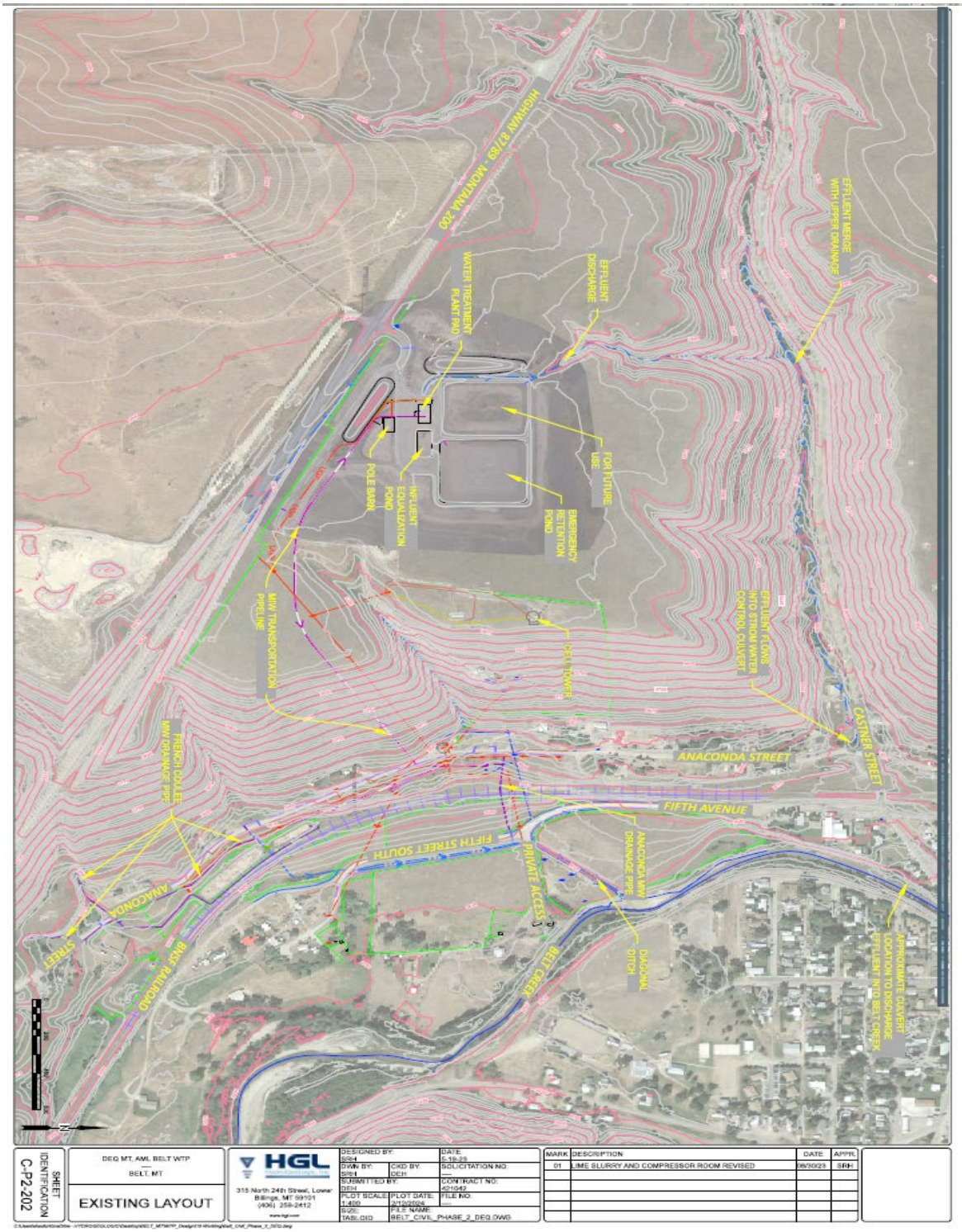
A facility, activity, or outfall is any point source, including land or appurtenances thereto, that are subject to regulation under the MPDES program. The discharge of pollutants to state waters is limited to outfalls authorized in the Facility's discharge permit. DEQ Remediation owns the Belt Water Treatment Plant, which will treat mine impacted water (MIW) from past coal mining activities and discharge the treated water to Belt Creek.

1.2.1 Description and Location of Facility

Coal mining around the community of Belt, Montana began in 1877 and operated as late as 1963. The coal was typically mined using the underground room and pillar method. The various underground mine workings were accessed by adits located on either side of Belt Creek. The coal mines have since been abandoned. Over time, the adit portals were reclaimed by a combination of collapsing roofs, backfill, and regrade work. While reclamation work was being conducted, drain systems were installed to continually remove water being produced from inside the mine workings. A total of four mine drain systems have been identified that produce MIW: Anaconda Mine, French Coulee, Millard Mine, and Lewis Coulee. These drain systems and a coal waste dump (Coke Oven Flats) located next to Belt Creek, discharge approximately 250 acre-feet of MIW into Belt Creek each year. The Anaconda Mine discharges MIW at 140 gallons per minute (gpm), French Coulee discharges MIW at 13 gpm, Millard Mine discharges MIW at less than 1 gpm, Lewis Coulee discharges MIW at less than 5 gpm, and Coke Oven Flats discharges MIW at 1 gpm. From the basis of design, it was determined that collecting the Anaconda Mine and French Coulee discharge was economically feasible and will treat over 95% of the MIW being discharged. This MIW is acidic and contains metals that exceed Montana surface water quality standards. On average, approximately 700 pounds of iron and 500 pounds of aluminum are discharged into Belt Creek each day. This contaminated water accounts for much of the flow in Belt Creek during base flow conditions from the late summer through early spring each year. Lower Belt Creek has been identified as an impaired body of water not fully supporting its beneficial uses.

The Facility location is in Section 26 in Township 19N, Range 6E, in Belt, Montana, Cascade County. A site map is shown in Figure 1 below.

Figure 1. Site Map



Wastewater Sources, Treatment and Controls

The water treatment plant (WTP) will use hydrated lime to increase the MIW pH, causing dissolved metals to precipitate. Suspended precipitated metals/solids will then settle through gravity clarification. The WTP will have a single treatment train, sized to treat an average flow of 165 gpm.

Major components of the WTP include:

- MIW collection and conveyance system
- Influent equalization pond (IEP)
- Emergency retention pond (ERP)
- Influent sump (IS)
- Densification/Reaction/Flocculation/Thickener system
- Effluent conveyance system
- Sludge management

Both the Anaconda Mine and French Coulee have their own existing collection systems. Both systems currently discharge to Belt Creek. These two systems will have a collection sump (Anaconda Sump and French Soulee Sump) plumbed into their existing piping. MIW collection in the French Coulee Sump will be pumped to the Anaconda Sump. From the Anaconda Sump, MIW will be pumped to the IEP. The IEP water will flow into the influent sump withing the WTP via gravity. Both the IEP and influent sump have overflow lines to the emergency retention pond (ERP).

MIW will be pumped, inside the WTP, from the influent sump to the first of two reaction tanks in series, where the pH is raised by adding hydrated lime slurry that is mixed with recycled precipitated solids (from the densification tank). Partially treated MIW water will flow via gravity from the first reaction tank to the second. Both reaction tanks will mix and aerate the water to promote oxidation, precipitation, and floc formation. From the second reaction tank, treated MIW will flow via gravity to the thickener (polymer will be added to this line to aid in floc formation and solids settling).

In the thickener, precipitated solids will settle and concentrate in the base of the thickener, creating sludge. A portion of the thickener sludge will be continuously pumped as underflow by sludge recycle pumps to the densification tank. Periodically, sludge will be pumped out of the thickener underflow to the sludge drying/disposal area. The sludge disposal area will consist of a series of 7 to 10-foot-deep trenches east of the WTP. Each trench will have an approximate life of 2-4 years before the next trench needs to be built. The new trench cut material will cover the old sludge. Because the soils around the site are pH-neutral, metals will not become soluble and leach back into the system.

Treated effluent will flow out of the thickener weir into the effluent discharge system. From the discharge weir the effluent will gravity flow into the effluent tank. From the effluent tank, effluent will be pumped through the effluent pipeline which ties into the existing Anaconda MIW discharge pipeline, which discharges to Belt Creek.

Effluent can also be used as washdown water to periodically clean the WTP's process area. Treated effluent that does not meet standards or effluent limitations for turbidity or pH, will be directed back to the influent sump via an overflow and/or drain on the effluent tank.

1.2.2 Discharge Points

Discharge is to Belt Creek via an unnamed natural dry drainage at the location listed below. The discharge location is labeled "Anaconda MW Drainage Pipe" in Figure 1.

Table 1 - Discharge Locations

Outfall	Latitude	Longitude	Receiving Water	Receiving Water Classification
001	47.3811097° N	110.939324° W	Belt Creek	B-2

Effluent monitoring shall occur at the last point of control either at the point of discharge to the unnamed dry drainage or where the effluent is pumped from the WTP into the discharge pipe.

1.2.3 Effluent Characteristics

Projected effluent characteristics for wastewater are shown in Table 2.

Table 2 – Projected Effluent Quality from DEQ Form 2E

Parameter	Units	Permit Application		No. Samples	Analytical Method	ML or MDL
		Maximum Daily	Average Daily			
pH	S.U.	7.5	8.5 [1]	1	meter	--
Flow rate	gpm	165	165	--	Est.	--
Total Suspended Solids	mg/L	13	13	1	2540D	--
Total Dissolved Solids	mg/L	3600	3600	1	2540C	--
Aluminum, dissolved	mg/L	0.65	0.65	1	E200.8	
Beryllium, Total	mg/L	<0.002	<0.002	1	E200.8	0.0008
Cadmium, Total	mg/L	<0.0005	<0.0005	1	E200.8	0.00003
Copper, Total	mg/L	<0.003	<0.003	1	E200.8	0.002
Iron, Total	mg/L	0.11	0.11	1	--	0.02
Nickel, Total	mg/L	0.0156	0.0156	1	E200.8	0.002
Zinc, Total	mg/L	0.0256	0.0256	1	E200.8	0.008

Footnotes:
1. Maximum

2 EFFLUENT LIMITATIONS

Discharged pollutants are controlled through effluent limitations and other requirements. There are two principal bases for effluent limitations: technology-based effluent limitations (TBELs), which represent the minimum treatment requirements implemented in MPDES permits, and water quality-based effluent limitations (WQBELs) that attain and maintain applicable numeric and narrative water quality standards.

2.1 Technology-based Effluent Limitations

Section 402(a)(1) of the federal Clean Water Act (CWA), the federal regulations at 40 CFR 125.3(a), and Montana regulations at ARM 17.30.1207 require that permits 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 EPA, or, in some cases, standards established by the permit writer on a case-by-case basis using best professional judgement (BPJ). ARM 17.30.1203.

2.1.1 Scope and Authority

The DEQ Belt WTP will discharge treated MIW to Belt Creek. EPA has not promulgated Effluent Limitations Guidelines (ELGs) for this type of remediation activity. When EPA has not promulgated ELGs and TBELs for a discharger, DEQ must develop TBELs based on best professional judgment (BPJ).

The Montana Board of Environmental Review has adopted by reference 40 CFR 434 Subpart C for Acid or Ferruginous Mine Drainage from active coal mining areas. DEQ-WPB finds these TBELs are appropriate to apply as BPJ limitations. Because these are abandoned coal mines the New Source Performance Standards for acid mine drainage are not appropriate. DEQ will apply the TBELs from 40 CFR 434.32 (best practicable control technology currently available) as BPJ TBELs.

2.1.2 Proposed Technology-based Effluent Limitations

Table 3 - Technology-Based Effluent Limits for Outfall 001

Parameter	Units	Average Monthly Limit	Maximum Daily Limit
Iron, Total	mg/L	3.5	7.0
Manganese, Total	mg/L	2.0	4.0
Total Suspended Solids (TSS)	mg/L	35	70
pH	s.u.	Within the range of 6.0 and 9.0	

2.2 Water Quality-based Effluent Limitations

Permits must include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

2.2.1 Scope and Authority

The Montana Water Quality Act 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. Montana water quality standards require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard.

2.2.2 Applicable Water Quality Standards

Outfall 001 will discharge to Belt Creek in USGS Hydrological Unit Code (HUC) 10030105. The segment of Belt Creek is identified as Montana Assessment Unit ID 41U0001_012; Belt Creek from Big Otter Creek to the Missouri River. The designated water-use classification for the three receiving waters is B-2.

Table 4 - Water Use Classification and Beneficial Uses— Belt Creek from Big Otter Creek to Missouri River

Classification	Beneficial Uses
Surface Waters B-2	Drinking, culinary and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply

The water quality standards for B-2 waters include both numeric and narrative standards that protect the beneficial uses set forth in the water use classifications. The specific standards for B-2 waters are given in ARM 17.30.624 and incorporate by reference Circular DEQ-7 which contains numeric water quality standards for protection of aquatic life and human health.

All 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. ARM 17.30.637(1).

For new sources, effluent limitations for numeric and narrative standards are modified by the criteria in ARM 17.30.715, which are based on the protection of existing water quality.

2.2.3 Impaired Waters

The Montana Water Quality Act requires DEQ to monitor state waters and to identify surface water bodies or segments of water bodies whose designated uses are threatened or impaired. DEQ must complete a TMDL for those water bodies that are identified as threatened or impaired.

Upon approval of the TMDL, the wasteload allocation (WLA) developed for a point source must be incorporated into the Facility's discharge permit. A WLA is defined as the portion of the receiving water's loading capacity that is allocated to one of its existing or future point sources.

2020 303(d) List

This segment of Belt Creek is listed as impaired on the 2020 303(d) list as not fully supporting aquatic life, agricultural, and drinking uses for the following causes and sources:

- Alteration in stream-side vegetative covers (aquatic life)
- Salinity- acid mine drainage (aquatic life, drinking water)
- Alteration in streamside or littoral vegetative covers (aquatic life)

- Physical substrate habitat alterations (aquatic life)
- Sedimentation/siltation
    - Probable sources for all above are channelization, grazing, infrastructure construction (roads, bridges), abandoned mine lands
- Aluminum, Cadmium, Iron, Lead, Zinc, (aquatic life)
    - All of the above from abandoned mine lands

Approved TMDL

The Missouri Cascade and Belt TMDL Planning Area Metals Total Maximum Daily Loads and Framework Water Quality Improvement Plan (2011 TMDL) was developed by DEQ and approved by EPA in 2011. This TMDL addressed the pollutants for which Belt Creek was a listed as impaired at the time. The TMDL includes a composite WLA for all unpermitted acid mine drainage point sources and WLAs for permitted discharges from the Town of Belt and the Town of Stockett. The TMDL also provides a formula for the calculation of TMDL WLAs for any discharge covered under an MPDES permit.

2.2.4 Pollutants of Concern

WQBELs are assessed for pollutants of concern (POC) based on effluent characteristics and the water quality objectives for the affected receiving water(s). DEQ has identified the POCs listed below for purposes of assessing WQBELs. Included in this list is any pollutant for which the stream segment is listed as impaired, has an assigned WLA as part of a TMDL, is identified as present in the effluent, or is subject to a federal ELG.

Table 5 - Pollutants of Concern for WQBELs

Parameter	Basis for Identifying as a Pollutant of Concern for WQBELs
TSS pH	Applicable ELGs/TBELs
Aluminum, dissolved Arsenic, total Cadmium, total Copper, total Iron, total Lead, total Nickel, total Zinc, total Salinity	Permit application review, impairment listing, and/or TMDL WLA

2.2.5 Nondegradation Determination

The MWQA includes a nondegradation policy that applies to any new or increased activity which results in a change in existing water quality. The level of protection provided to the receiving water(s) conforms to three "tiers" of the federal antidegradation policy. 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. 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.

Protection of High Quality Waters (Tier 2): Unless authorized by DEQ (authorization to degrade) or exempted from review, the quality of high-quality waters must be maintained. This rule applies to any activity that may cause degradation of high-quality waters, for any parameter, unless the changes in existing water quality are determined to be nonsignificant. High quality waters include 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 receiving water pollutant concentration is less than the applicable water quality standard 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): 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.

A discharge that meets the nondegradation criteria is in compliance with Montana's nondegradation policy.

DETERMINATION – NEW OR INCREASED SOURCES

The Facility is a new source. DEQ has made the following determinations with respect to the pollutants of concern in the proposed discharges:

Table 6 - New or Increased Source Determination

Outfall(s)	Receiving Water	Source Determination	Nondegradation - Level of Protection Required
001	Belt Creek	New	Tier 1

For the parameters of concern, the discharge to the receiving stream is exempted from review under MCA 75-5-303 because the discharge is a remedial activity designed to protect public health or the environment and is approved, authorized, or required by the department. MCA 75-5-317(2)(d) See Part 7 of this Fact Sheet.

2.2.6 Mixing Zones

The receiving water is listed as impaired for most of the pollutants of concern and as such lacks assimilative capacity necessary to grant a mixing zone. The applicant did not request a mixing zone. All effluent limitations will apply at the last point of control before discharge into the receiving water.

2.2.7 Reasonable Potential Analysis (RPA)

No wastes may be discharged, either alone or in combination with other wastes, or activities, that will violate or can reasonably be expected to violate any of the water quality standards. 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 water quality standard. A "reasonable potential analysis" (RPA) is used to determine whether a discharge, alone or in combination with other sources of pollutants already present in the water body could lead to an excursion above a numeric or narrative water quality standard.

When determining the need for WQBELs for individual pollutants regulated by standards expressed in terms of concentration, DEQ primarily uses a mass-balance equation. The mass-balance equation is a steady state equation used to determine the concentration of a pollutant after accounting for other sources of pollution in the receiving water and any dilution provided by a mixing zone. In general, the mass balance assesses the effect of the discharge on the receiving water at critical conditions (maximum projected effluent concentration, maximum discharge flow, minimum receiving water flow and maximum receiving water concentration). The mass balance equation is an effective and simple model for estimating impacts from discharges into state waters from point sources. Because there is no mixing zone for this discharge reasonable potential is assessed by directly comparing the projected maximum effluent concentration to the water quality standard.

TSS, and pH

TSS lacks a numeric water quality criterion and the pH water quality standard is expressed as a range that must be maintained based on existing water quality. Both are regulated in this permit by TBELs applied prior to discharge. The TBELs are protective of the water quality and beneficial uses of the receiving water bodies.

Salinity

Salinity is listed as a cause of impairment in Belt Creek. High salinity in Belt Creek is in most cases related to high conductivity values as a result of dissolved metals rather than dissolved salts (chloride) typically associated with high salinity, and so is addressed in conjunction with metals (see 2011 TMDL). The TMDL establishes a conductivity level of 1,000 µS/cm as the water quality target for salinity in Belt Creek. However, in this segment of Belt Creek, the TMDL did not establish a salinity target. Metals targets are considered a surrogate for salinity until formal reevaluation is conducted by DEQ. No additional effluent limit is necessary for salinity.

Metals

Water quality standards and reported effluent concentrations for metals are shown in the Table 7. Hardness-based metals criteria were calculated based on a calculated hardness value of 287 mg/L reported with the application materials.

Table 7 – Reasonable Potential (RP) Determination for Metals

Parameter	Units	Acute Water Quality Standard	Chronic/Human Health Water Quality Standard	Effluent Concentration from Form 2-E	Belt Creek Listed as Impaired or TMDL?	Effluent Concentration ≥ Lowest Water Quality Criterion	WQBEL Needed Based on RPA?
Aluminum, dissolved	µg/L	750	87	650	No	Yes	Yes

Arsenic, TR	µg/L	340	150/10	Not Reported	No	NA	Undetermined
Cadmium TR	µg/L	5	2/5	Not Reported	Yes	NA	Yes (impairment)
Copper, TR	µg/L	38	23/1300	< 3	yes	No	Yes (impairment)
Iron, TR	µg/L	--	1,000	110	No	No	No
Lead, TR	µg/L	312	12/15	Not Reported	Yes	NA	Yes (impairment)
Nickel, TR	µg/L	1145	127/100	16	No	No	No
Zinc, TR	µg/L	293	293/7400	26	Yes	No	Yes (impairment)

2.2.8 Water Quality-based Effluent Limitations

For pollutants that demonstrate RP, water quality-based effluent limitations (WQBELs) are based on procedures described in EPA's *Technical Support Document for Water Quality-based Toxics Control* EPA/505/2-90-001, March 1991 (TSD) with minor modifications to accommodate the specific requirements of Montana's water quality standards. DEQ typically uses a mass balance equation to develop a waste load allocation (WLA) The WLA is the maximum concentration that the facility may discharge, after consideration for any available dilution in the receiving water and still comply with the water quality standards for a given pollutant. WQBELs are derived from the WLAs, using the statistical methods in the TSD, to account for effluent variability and ensure that there is a low likelihood the WLA will ever be exceeded. In this case, because there is no mixing zone, WQBELs are based on achieving the water quality criteria at the point of discharge.

PROCEDURES FOR TRANSLATING WLA INTO PERMIT LIMITATIONS

Aquatic Life Effluent Limitations: In most cases, there are two aquatic life WLAs, namely a WLA based on the acute aquatic life standard (WLA_a) and a WLA based on the chronic aquatic life standard (WLA_c). 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 (DEQ uses 0.6 as a default CV when the data set is limited, as in this case), the percentile value for the WLA (e.g., 99th percentile), and whether the WLA is based on an acute (1-hour average) or chronic (4-day average) water quality standard. DEQ sets the WLA at the 99th percentile of the lognormal distribution. The equations for the WLA multipliers ($WLA\ multiplier_{acute99}$, $WLA\ multiplier_{chronic99}$) and the corresponding LTAs are shown below:

$WLA\ multiplier_{acute99} = EXP\ (0.5\sigma^2 - z\sigma)$
$WLA\ multiplier_{chronic99} = EXP\ (0.5\sigma_4^2 - z\sigma_4)$

Where
σ = standard deviation
$\sigma = [ln(CV^2 + 1)]^{0.5}$
$\sigma^2 = ln(CV^2 + 1)$
$\sigma_4 = [ln(CV^2/4 + 1)]^{0.5}$
$\sigma_4^2 = ln(CV^2/4 + 1)$

z = 2.326 for 99th percentile probability basis

$LTA_a = WLA_a * WLA\ multiplier_{acute99}$
$LTA_c = WLA_c * WLA\ multiplier_{chronic99}$

The two aquatic life LTAs, acute and chronic, represent two performance levels that the Facility would need to maintain. Because the calculated LTAs do not have different averaging periods, they can be directly compared to select the most protective aquatic life LTA. This LTA is the basis for calculating effluent limitations (AML and MDL) that protect aquatic life from both acute and chronic effects. The corresponding CV used in the RPA is used for calculating the aquatic life LTAs. Calculated acute and chronic LTAs are given in Table 8 below.

LTA_m = Minimum of LTA_a and LTA_c

Effluent limitations for protection of aquatic life are calculated by multiplying the most protective aquatic life LTA by multipliers, which are based on the lognormal distribution. Each multiplier is a statistically-based factor 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) that will be 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 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:

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

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

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

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

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

Some aquatic life water quality standards are expressed as a single numeric value that defines a single acceptable level of effluent quality; consequently there will be only a single corresponding WLA. DEQ uses the recommendations in the TSD and applies the following procedure:

- 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.

All WLA and LTA multipliers used in this permit are taken from Tables 5-1 and 5-2 of the TSD, which capture the above discussion.

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 HHS is the limiting standard, the AML is set equal to the WLA_h, as stated in TSD Section 5.4.4. However, in accordance with Circular DEQ-7 Footnote 16, receiving water "concentrations may not exceed" any HHS, so the MDL is also set at the WLA_h.

The WQBELs for Outfall 001 are shown in Table 8.

Table 8 – Outfall 001 Water Quality-based Effluent Limitations

Parameter	Units	Coefficient of Variation	Acute Wasteload Allocation (WLA_a)	Chronic Wasteload Allocation (WLA_c)	Human Health Wasteload Allocation (WLA_h)	Acute Long Term Average (LTA_a)	Chronic Long Term Average (LTA_c)	Minimum Long Term Average (LTA_m)	Aquatic Life AML	Aquatic Life MDL	Human Health AML	Human Health MDL	Final WQBEL		Basis for WQBEL Calculations
													AML	MDL	
Aluminum, dissolved	µg/L	0.6	750	87	--	241	46	46	71	143	--	--	**71**	**143**	Aquatic Life
Cadmium, TR	µg/L	0.6	5	2	5	2	1	1	1.6	3.1	5	5	**1.6**	**3.1**	Human Health
Copper, TR	µg/L	0.6	38	23	1300	12	12	12	19	37	1,300	1,300	**19**	**37**	Aquatic Life
Lead, TR	µg/L	0.6	312	12	15	100	8	8	12	25	15	15	**12**	**25**	Aquatic Life
Zinc, TR	µg/L	0.6	293	293	7,400	94	154	94	146	292	7,400	7,400	**146**	**292**	Aquatic Life

2.3 Final Effluent Limitations and Conditions

Table 9 – Final Effluent Limitations Outfall 001			
Parameter	**Units**	**Effluent Limitations**	
		Average Monthly	Maximum Daily
pH	s.u.	6.0 to 9.0	
Total Suspended Solids	mg/L	35	70
Iron, Total	mg/L	3.5	7.0
Manganese, Total	mg/L	2.0	4.0
Aluminum, dissolved	µg/L	71	143
Cadmium, Total Recoverable	µg/L	1.6	3.1
Copper, Total Recoverable	µg/L	19	37
Lead, Total Recoverable	µg/L	12	25
Zinc, Total Recoverable	µg/L	146	292

3 MONITORING AND REPORTING REQUIREMENTS

All test procedures must be approved under 40 CFR 136, unless another method is specified in the permit. Analytical methods must achieve the required reporting value (RRV) specified in the latest version of Department Circular DEQ-7. The RRVs specified in the following monitoring tables are included for convenience and are the RRVs at the time of permit development. RRVs are subject to change during water quality standards triennial review.

3.1 Monitoring Location

The authorization to discharge is limited to the following designated outfall. The Permittee must monitor the effluent to demonstrate compliance with the effluent limitations and other requirements of this permit at one of the locations specified in Table 10.

Table 10 – Outfall Monitoring Location		
Outfall Designation	**Monitoring Location Designation**	**Monitoring Description**
001	001-A	Compliance with all effluent limitations shall be conducted at the last point of control after the completion of treatment, either at the facility effluent weir or at the end of the discharge pipe prior to mixing with the receiving water.

3.2 Monitoring Determination

Monitoring for arsenic is required because Belt Creek was previously listed for this pollutant and arsenic concentrations were not reported on the permit application.

3.3 Reporting Requirements

All monitoring results shall be electronically reported to DEQ on Discharge Monitoring Reports (DMR) via NetDMR. If no discharge occurs during an entire monthly monitoring period, then no discharge shall be reported.

Table 11 - Monitoring Requirements at Outfall 001					
Parameter	**Units**	**Minimum Monitoring Frequency**	**Sample Type**	**Reporting Requirements**	**RRV**
Effluent Flow Rate	mgd	Continuous	Recording Device	Monthly Average and Daily Maximum	--
pH	s.u.	1/Week	Instantaneous	Daily Minimum and Daily Maximum	0.1
Total Suspended Solids	mg/L	1/Week	Composite	Monthly Average and Daily Maximum	10
Iron, Total	mg/L	1/Week	Composite	Monthly Average and Daily Maximum	0.02
Manganese, Total	mg/L	1/Week	Composite	Monthly Average and Daily Maximum	1
Aluminum, Dissolved	µg/L	1/Week	Composite	Monthly Average and Daily Maximum	9
Cadmium, Total Recoverable	µg/L	1/Week	Composite	Monthly Average and Daily Maximum	0.03
Copper, Total Recoverable	µg/L	1/Week	Composite	Monthly Average and Daily Maximum	2
Lead, Total Recoverable	µg/L	1/Week	Composite	Monthly Average and Daily Maximum	0.3
Zinc, Total Recoverable	µg/L	1/Week	Composite	Monthly Average and Daily Maximum	8
Arsenic, Total Recoverable	µg/L	1/Month	Composite	Monthly Average and Daily Maximum	1

4 SPECIAL CONDITIONS

NA

5 STANDARD CONDITIONS

Standard conditions must be included in all MPDES permits and the Permittee must comply with all standard conditions at all times. ARM 17.30.1342. These requirements are expressly incorporated into the permit. In addition to these requirements, ARM 17.30.1343 and 40 CFR 122.42 establishes additional conditions applicable to specific categories of MPDES permits including notification requirements for municipal and non-municipal dischargers

The additional requirements of ARM 17.30.1343(1)(a) are included in the permit. The requirement establishes additional notification requirements for toxic pollutants that exceed a specified level, exceed the level given in the Facility's permit application or are not regulated in the permit.

6 PUBLIC PARTICIPATION

In accordance with ARM 17.30.1372, DEQ issued Public Notice No. MT-25-08 dated August, 25 2025. The public notice states that a tentative decision has been made to issue an MPDES permit for Montana DEQ Remediation Division, and that a draft permit, fact sheet and draft environmental assessment have been prepared. Public comments on the draft MPDES permit and EA impacts related to the permit are invited any time prior to the close of business September 25, 2025. Comments may be directed to:

DEQ Water Quality Division
Water Protection Bureau
PO Box 200901
Helena, MT 59620

or DEQWPBPublicNotices@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 as soon as possible after the close of the public comment period.

All persons, including Permittees, 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 (including any public hearing) under ARM 17.30.1372.

6.1 Notification of Interested Parties

Copies of the public notice were mailed to the Discharger, state and federal agencies and interested persons who have expressed an 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 and applicable 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.

6.2 Public Hearing Written Comments

A public hearing may be held when if there is significant public interest. DEQ has not scheduled a public hearing for this permit action. If a public hearing is requested by the permittee or a significant number of interested persons, one may be scheduled. A public hearing is an opportunity for interested parties to submit comments in person. Public comments received at a public hearing are recorded by a court recorder and are processed in the same manner and at the same time as written comments described in the public notice description in Section 6 above.

6.3 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 Permittee files an appeal pursuant to 75-5-403, MCA.

The Permittee 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 NONSIGNIFICANCE DETERMINATION

The Montana Water Quality Act 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 of this permit fact sheet for the proposed discharges and activities regulated by this permit. Based on this analysis DEQ has made the following determinations:

The discharges from the Facility are a new source. DEQ determined that the activity is exempt from review under the nondegradation policy because it is a remedial activity required by the DEQ to

benefit human health and the environment. DEQ conducted the reasonable potential analysis, set the effluent limits and monitoring requirements, and established special conditions in the permit to comply with the water quality standards and the MPDES permitting regulations.