Response to Comments
Tintina Montana, Inc.
MPDES Permit MT0031909

On March 29, 2019, the Montana Department of Environmental Quality (DEQ) issued Public Notice MT-19-08, stating DEQ's intent to issue a Montana Pollutant Discharge Elimination System (MPDES) permit to Tintina Montana, Inc. for discharges from the Black Butte Copper Project. On April 9, 2019, the public comment period was extended and required that all substantive comments be received or postmarked by May 28, 2019, in order to be considered in formulation of the final determination and issuance of the permit.

This Response to Comments document includes a summary of all significant comments on the draft permit and fact sheet received during the public comment period and DEQ's responses to those comments. The Response to Comments document is an addendum to and supersedes relevant portions of the Fact Sheet to the extent specific clarifications or changes are described herein.

The table below identifies those individuals who submitted comments.

Persons Submitting Significant Comments on the Fact Sheet and Draft MPDES Permit MT0031909	
Number	**Commenter**
1	Colleen R. L. Rathbone, Wastewater Section Manager, United States Environmental Protection Agency Region 8
2	Jerry Zieg, Senior Vice President, Tintina Montana, Inc.
3	Josh Purtle, EarthJustice
4	Ann Maest, Buka Environmental
5	Tom Meyers
6	Linda Semones
7	Nancy Traner

Responses to Comments on the Fact Sheet and Draft MPDES Permit MT0031909

Commenter 1. Colleen R. L. Rathbone, U.S. EPA

Comment 1: The final effluent limits for cadmium (0.8 µg/L AML and MDL) appear to be based on the human health criteria (Fact Sheet, page 78). However, the aquatic life calculated criteria are significantly more stringent than the human health criteria. The final effluent limits for cadmium should be lowered to reflect the aquatic life based values (0.11 µg/L AML and 0.23 µg/L MDL).

Response: DEQ agrees with the comment. Cadmium limitations in the final permit are revised as noted in the comment.

Comment 2: The Fact Sheet considers temperature to be a "pollutant of concern" (Table 9) and there is an applicable temperature standard (Table I. A). Due to the flow rate of the facility discharge compared to the flow rate in Sheep Creek at critical low flows, potentially high temperatures in the facility's storage pond, and cold temperatures throughout the year in Sheep Creek, reasonable potential exists for temperature. A temperature effluent limit at Outfall 001 should be included in the final permit. This could be calculated using a simple mixing equation between mine discharge at Outfall 001 and stream flows, using ambient stream temperatures and flows. The EPA recommends adding this analysis to the Fact Sheet and including temperature effluent limits in the final permit that will be protective of the instream temperature standard throughout the year.

Response: DEQ agrees with the comment in part. The estimated effluent temperature on the permit application is 25° C (77° F). Tintina provided a clarification of this estimate in response to comments received on the draft EIS (*Technical Memorandum, SSTEMP Modeling of Sheep Creek Temperature Changes, Hydrometrics, Inc., August 16, 2019*). The temperature of the combined discharge from the water treatment plant and the treated water storage pond is expected to range from 45.1°F to 50.5° F. Surface water temperatures reported in the permit application ranged from 32°F to 55°F and groundwater temperatures ranged from 40°F to 47°F. Surface and ground water temperature monitoring results are shown in Attachment A.

The temperature standard for surface waters classified B-1 allows a one degree Fahrenheit increase in naturally occurring temperature in the range of 32°F to 66°F. Within the naturally occurring range of 66°F to 66.5°F, the discharge may not cause stream temperature to exceed 67°F. Naturally occurring temperature above 66.5°F may be increased no more than 0.5°F. A 2°F per-hour decrease below naturally occurring temperature is allowed when the temperature is above 55°F. A 2°F maximum decrease below naturally occurring water temperature is allowed within the range of 55°F to 32°F (ARM 17.30.623).

The surface water quality standard for temperature is relative to background surface water temperature over the course of an hour. Sheep Creek is gaining in the area of the underground infiltration gallery (UIG) system so background surface water temperature is influenced by groundwater temperature. Since the discharge is to alluvial groundwater prior to reaching surface water, the discharge would have to cause an increase or decrease in groundwater temperature for there to be a change in surface water temperature. Therefore, the best way to ensure that the allowable range in surface water temperature is met is to require that the difference between groundwater and discharge temperature are within the same allowable range. Groundwater temperatures in the location range from 40°F to 47°F so the discharge has to be within 1°F above to 2°F below groundwater temperature. The final permit will require temperature at the end of pipe, prior to the UIG trenches, be within 1°F above to 2°F below the temperature of groundwater in a monitoring well upgradient the UIG trenches. The permit will require that ambient groundwater be monitored from a well located upgradient and screened in the same alluvial layer as the UIG trenches. The permit will also require Tintina continue to collect baseline surface and ground water temperature data prior to the construction and during operation of the mine.

The limit in the permit will prevent degradation of surface water as the effects of the discharge temperature will be insignificant. Unlike many chemical pollutants, the temperature standard does not

apply until the water has passed through the alluvial to the surface water. Also, the temperature standard is a net change measured over time and distance as one moves up or downstream. Because of the limit being set in groundwater, any heating or cooling would be buffered by groundwater before reaching surface water. Furthermore, the small discharge flow relative to the surface water flow is spread over such a large distance that any temperature affect is also spread over hundreds of feet of stream length and further diminished. Any organism within the stream would not encounter a temperature change that is more than a mere fraction of degree as it moves through the stream so there would be no measurable affect from temperature on uses, aquatic life or ecological integrity.

See also response to comment 33.

See Part 2 Effluent Limitations and Monitoring Requirements and Part 3 Special Conditions of the final permit.

Comment 3: Permit- Page 6: The permit states that Outfall 001 will be "at the end of pipe, after all treatment processes *prior to discharge into the underground infiltration galleries and shall be representative of the volume and nature of the monitored discharge."* However, Figure 5 in the Fact Sheet shows Outfall 001 downstream of several of the underground infiltration galleries (UIGs). Furthermore, the coordinates in Table 1 of the Permit (Page 3) place Outfall 001 in the same location - downstream of several of the proposed UIGs. At this location the water is likely mixing with alluvial groundwater from Sheep Creek and Coon Creek. Please clearly define Outfall 001 as being upstream of any influence of Sheep Creek or Coon Creek and representative of the monitored discharge only (this may mean moving Outfall 001 upstream nearer to where the pipe crosses Sheep Creek Road on Figure 5).

Response: Outfall 001 consists of discharge to any of the underground infiltration gallery trenches (UIG) because they might not all be in use at the same time. The Outfall 001 location shown in Figure 5, and the coordinates in Table 1, are the approximate center of the infiltration galleries, not the representative monitoring location. Effluent limitations in the permit apply to the last point of control prior to discharge into any portion of the UIG and before coming under the influence of Sheep Creek, Coon Creek, or ground water. This ensures the effluent is monitored at a location to be protective of water quality and allow for enforceability of limits.

This clarification does not result in a change to the permit.

Comment 4: Permit-Page 8: Surface water monitoring at site SW-1 is required for instream temperature monitoring on Sheep Creek, but this location is not defined in the Permit or the Fact Sheet. Please clearly define the location of site SW-1 (e.g. map, coordinates, and/or description) in both documents.

Response: The downstream monitoring location is changed in the final permit from site SW-1 to a site on Sheep Creek downstream of and within 100 feet of the confluence with Coon Creek.

For reference, Site SW-1 is shown in Appendix 7, Figure 1 of the Fact Sheet.

See response to comment 22.

Comment 5: Fact Sheet - Page 5: Please define the "probable maximum flood storm event". It is unclear if this is the same as the 10-year, 24-hour event mentioned throughout the document.

Response: The probable maximum flood event is not the same as the 10-year, 24-hour event mentioned throughout the Fact Sheet.

From the BBC Operating Permit, Revision 3, *The probable maximum flood (PMF) is defined as the largest flood that could conceivably occur at a particular location. The PMF is usually estimated from probable maximum precipitation…, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. The PMF for the Project area is therefore calculated by adding together the PMP (22 inches or 560 mm) and the 1 in 100 year snow accumulation (11.4 inches or 290 mm) which results in a PMF of 33.46 inches (850 mm) or 1.5 times the total annual precipitation in the Project area.*

Also from the BBC Operating permit, PMP in the above description is probable maximum precipitation, defined as*: the greatest depth of precipitation for a given duration that is physically possible. The PMP event for the Project is estimated to be 22 inches (560 mm). This is equivalent to the average annual precipitation (21.7 inches) (550 mm) at the Project site.*

This clarification does not result in a change to the permit.

Commenter 2: Jerry Zieg, Tintina Montana, Inc.

Comment 6: Page 6 of 92 of the Fact Sheet, Section 1.2.1. Should read RO reject, not RO 'refect'.

Response: The comment is correct this is a typographical error.

This correction does not result in a change to the permit.

Comment 7: Page 14 of 92 of the Fact Sheet, first paragraph. Best Professional Judgement (BPJ) requirements are found in ARM 17.30.1203(5) and development criteria are in ARM 17.30.1203(6); MDEQ cannot arbitrarily apply BPJ without conducting a thorough process as described in those sections. Additionally, the provisions of 40 C.F.R. 440 were developed under section 304(b) of the Clean Water Act and apply to the Black Butte Copper Project; therefore, there is no need for BPJ requirements.

Response: The language referenced in the comment was intended as an introductory overview of the process for establishing technology-based effluent limitations. DEQ applied in the Permit the applicable Effluent Limitation Guidelines (ELGs) found in 40 CFR 440, and described the legal and technical rationale for Technology-based Effluent Limit in the Fact Sheet. Please see additional discussion of BPJ effluent limitations in the response to Comment 20.

No change is made to the permit in response to this comment.

Comment 8: Page 15 of 92 of the Fact Sheet, Section 2.1.3 *Applicable Federal Effluent Limitation Guidelines,* Process Wastewater. The fourth full paragraph asserts that "[i]n MPDES permits, 'state waters' stands in place of 'navigable waters' in the federal regulations. ARM 17.30.1301." However, ARM 17.30.1301 only provides that the purpose of subchapter 13 is "to administer a pollutant discharge

permit system which is compatible with the national pollutant discharge elimination system." Nowhere does the rule allow MDEQ to arbitrarily define terms used in the federal Clean Water Act with different terms, unsupported by the provisions of Montana's Water Quality Act. The defined term "state waters" and the defined term "navigable waters" have different, separate meanings and cannot be assumed to be one in the same. To do so, impermissible [sic] expands Montana's Water Quality Act's requirements for groundwater beyond that envisioned by the Montana Legislature.

Response: State waters means a body of water, irrigations system, or drainage system, either surface or underground. MCA 75-5-103(a). The Montana Pollutant Discharge Elimination System (MPDES) means the system developed by the BER and DEQ for issuing permits for the discharge of pollutants from point sources to state waters. The MPDES program is specifically designed to be compatible with the federal NPDES program established and administered by the EPA (ARM 17.30.1304). In Montana MPDES permits regulate discharges to "state waters" (ARM 17.30.1301). Technology-based treatment requirements represent the minimum level of control that must be imposed in MPDES permits [ARM 17.30.1203(1)]. MPDES permits frequently regulate discharges to surface waters that first pass through ground water (both ground water and surface water are state waters). In situations as here where the receiving water is ground water hydrologically connected to surface water, the Montana program responsible for issuance of a discharge permit is the MPDES program. In such cases the MPDES protection of state waters is compatible with the federal NPDES. Thus, for the purpose of applying the federal effluent limitations guidelines in Montana permits DEQ must abide by the Montana Water Quality Act and the minimum requirements of the Federal Clean Water Act.

Tintina Montana applied for an MPDES permit and therefore DEQ is required to include applicable technology-based effluent limits into the MPDES permit. Montana's subchapter titled Montana Ground Water Pollution Control System exclusion, ARM 17.30.1022(1)(b), states sources that obtain an MPDES permit pursuant to ARM 17, chapter 30, subchapter 13 are excluded from the need for a ground water discharge permit. DEQ's administrative rules governing mixing zones also provide direction regarding how to address discharges that first pass through the ground water prior to entering a surface water body, see 17.30.507(3) and 17.30.506(h). While both of these administrative rules are not directly applicable to the MPDES permit issued to Tintina, because Tintina is not authorized a surface water or ground water mixing zone, these citations demonstrate that Montana rules and law contemplated discharges that pass through the ground water prior to entering surface water body.

No change is made to the permit in response to this comment.

Comment 9: Page 16 of 92 of the Fact Sheet, Section 2.1.3 *Applicable Federal Effluent Limitation Guidelines,* Net Precipitation (also Page 5 of 37, Section 2.1, Effluent Limitations and Monitoring Requirements - Outfall 001, of the Permit). The fact sheet does not correctly represent the net precipitation evaluation from the site specific analysis provided in the application. As noted in Section 3.3.1 of the permit application and response to comment 4. Form 2D Part III.B - Line Drawing/Water Balance, both the Process Water Pond and Cemented Tailings Facility are "treatment facilities" for purposes of the NSPS effluent limitations provided in 40 CFR 440.104(b)(2)(i). Precipitation must include both direct precipitation to a facility and any runoff collected by the facility (see 47 FR 54598, 54602, and 61 FR 5664-01, 5366). The process water pond has a total of 13 gpm that is collected from precipitation, 5 gpm of direct precipitation and 8 gpm collected from runoff. The Evaporation from the facility is 8 gpm; therefore there is a net precipitation of 5 gpm from the process water pond. The cemented tailings facility removes water

as it falls on the facility; therefore the evaporation is assumed to be zero. The precipitation that will be collected by the facility will be 42.2 gpm. The net precipitation from the Process Water Pond and Cemented Tailings Facility is equal to 47.2 gpm. The fact sheet and permit should be revised to allow for 47.2 gpm of process wastewater to be discharged per 40 CFR 440.104(b)(2)(i).

Response: DEQ finds annual precipitation does not exceed evaporation and the relief is not available for Tintina Montana (40 CFR 440.104(2)(i)). In determining whether the facility was eligible for the net precipitation relief allowed by the federal ELGs, DEQ referred to the *Development Document for Effluent Limitations Guidelines and Standards for the Ore Mining and Dressing Point Source Category* (EPA, 1982), hereafter "the development document". The development document provides an example on page 505 of how to apply the net precipitation relief. The example describes a two-step process. The first step is to determine whether a facility is located in a net precipitation area and if so, the second step describes how to calculate the net precipitation relief. DEQ used multiple sources of annual precipitation and evaporation data to complete the first step and determine if Tintina Montana eligibility for this exception. All data sources showed evaporation exceeding precipitation. For example, within the Tintina Montana Mine Operating Permit Application, Tintina Montana showed annual precipitation of 16.4 inches and the annual evaporation is 20.2 inches, see Section 2.1.4.

The comment and the site-specific analysis in the permit application skip the first step. Before calculating drainage areas and volumes, as done in the comment, DEQ must first determine if the facility is located in a geographic area that has net precipitation. The development document example compares the annual precipitation for a site's geographic area with the annual lake evaporation in the same area. The development document states that "if precipitation does not exceed evaporation", the relief is not available. As stated in the Fact Sheet, page 16, DEQ determined the Facility is not located in a net precipitation area and the relief is not available.

No change is made to the permit in response to this comment.

Comment 10: Page 17 of 92 of the Fact Sheet, Section 2.1.4 *Combined Waste Streams* (also Page 5 of 37, Section 2.1, Effluent Limitations and Monitoring Requirements - Outfall 001, of the Permit). As correctly noted in the Fact Sheet, "The general provision of 40 CFR 440.131(a) allows the discharge of waste streams from various subparts or segments of subparts of Part 440 when they are combined for treatment and discharge (referred to as the commingling provision)." However, MDEQ incorrectly concludes that this provision does not apply to the Permittee (Sandfire). Sandfire requests that the Fact Sheet is revised to clarify that this provision is available and applicable to the Permittee and that discharge of mine drainage combined with mill water is allowed, subject to the limitations of the mine drainage. MDEQ mistakenly notes that "Froth flotation mills in this subcategory subject to the no discharge requirement cannot produce a 'waste stream' for treatment and discharge" without noting the discharge exceptions applicable here. The exceptions themselves provide waste streams that may be subject to commingling. The following text is out of the Final EPA 1982 Development Document for Ore Mining and Dressing Point Source Category (page 507). Based on the clear language in the development document, "combined waste streams are not subject to the zero discharge requirement and may be discharged subject to the limitations for mine drainage"..

...segments. We stated in the provision that the quantity and quality of each pollutant or pollutant property in the combined discharge shall not exceed the quality and quantity of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately.

Further, the flow from the combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately. An example that industry wished clarified is whether mine drainage commingled with the discharge from a mine or mill process subject to the zero discharge requirements is also subject to no discharge. Such combined waste streams are not subject to the zero discharge requirement and may be discharged subject to the limitations for mine drainage but the volume cannot exceed the volume of mine drainage that would have been discharged had the mine drainage been treated separately. It is immaterial whether the mine drainage is introduced to the treatment system simultaneously with the discharge from the mill, i.e., two separate pipes leading to the tailings pond, or whether the mine drainage is introduced as part of the feed water and intake to the mill itself. The volume of the discharge cannot exceed the volume of the mine drainage and the discharge is subject to the numerical concentrations for pollutants included in the effluent limitations guidelines for mine drainage from ore mines covered in the subcategory.

Response: DEQ relied on the development document to implement the New Source Performance Standards (NSPS), which are applicable to the Facility. The language from the development document quoted in the comment is found in the discussion of BAT limitations. The BAT limitations applied to existing facilities (in 1982) and allowed discharge for some facilities and required no discharge from others, but allowed the commingling provision, as quoted in the comment.

However, Tintina Montana is a new source and is subject to the NSPS limitations, which are intended, in some cases, to be more stringent than BAT. The NSPS discussion in the development document, under "General Provisions", describes available relief from certain requirements under two headings: "Relief From No Discharge Requirement" and "Relief From Effluent Limitations for Those Facilities Permitted to Discharge". Under NSPS, the commingling provision is not listed as available relief for facilities in the first category, which are subject to the no discharge of process wastewater requirement. Commingling is listed as available relief in the second category, for those facilities permitted to discharge. As a result, under NSPS, unlike BAT, commingling is not allowed for facilities, like Tintina Montana, who are subject to the no discharge of process wastewater requirement. The development document further describes two options considered for NSPS requirements:

> *Option One. Require achievement of performance standards in each subcategory based on the same technology as BAT (NSPS = BAT)*
> *Option Two. Require standards based on a complete water recycle system (NSPS = zero discharge)*

For NSPS, the development document states: "EPA has selected performance standards based on the same technology as BAT for all facilities in the ore mining and dressing point source category, **except those facilities using froth flotation in the copper**, lead, zinc, gold, silver, and molybdenum subcategory…" The Black Butte Copper Project's mill is proposed as a froth flotation mill in the copper, lead, zinc, gold, silver, and molybdenum subcategory and is subject to the NSPS under Option Two (NSPS = zero discharge), which states:

"For froth flotation mills in the Copper and Zinc, Gold, Silver, and Molybdenum Subcategory, **EPA requires that new source froth flotation mills achieve zero discharge of process wastewater**. EPA considered zero discharge based on recycle for existing copper, lead, zinc, gold, silver and molybdenum mills using froth flotation, but rejected it because of the effect of the retrofit required at some existing facilities... **this concern does not apply to new sources."**

The development document explains why zero discharge is achievable for new sources (see pages 531 through 537) and how the available means of relief, rainfall/snowmelt greater than the 10-year 24-hour event, net precipitation, ground water infiltration, and interference/bleed provision, are sufficient to allow for zero discharge of process wastewater requirement. The commingling provision is not discussed because it is not available to new sources in this subcategory. While the commingling provision is a general provision listed under subpart L of the ELGs at § 440.131, the specific provisions in 40 CFR 440.104 apply to new froth flotation mills in the Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory and require zero discharge based on complete recycle.

In summary, the commingling provision provided under BAT for existing (in 1982) froth flotation mills in the copper, lead, zinc, gold, silver, and molybdenum subcategory is not available under the NSPS. It is clear that, for new sources, EPA intended the commingling provision to apply only to those facilities permitted to discharge. Under BAT, the commingling provision also applied to existing facilities (in 1982) that were subject to the no discharge requirement. Thus, mine drainage may not be introduced into the mill process and that volume of process water discharged under the permit's effluent limitations for mine drainage.

Additionally, the project was analyzed in the MEPA Environmental Impact Statement (EIS) as including complete recycle of all water in the mill circuit, without any discharge under the commingling provision. Even if DEQ agreed that comingling and discharging was appropriate, which DEQ does not, the project could require a major modification to the MPDES permit and additional MEPA analysis.

No change is made to the permit in response to this comment.

Comment 11: Page 20 of 92 of the Fact Sheet, Section 2.2.2 Applicable Water Quality Standards (the comment may also impact the calculation of effluent limitations provided in the Permit). Please revise the permit to accurately state the text of relevant rules. The Fact Sheet states the purpose of the nondegradation policy is for the"...protection of existing water quality." ARM 17.30.701(1) states the purpose " . ..is to prohibit degradation of high quality state waters... " Degradation is defined in ARM 17.30.702(3) and 75-5-103(7) MCA and excludes: " ... those changes in water quality determined to be nonsignificant pursuant to 75-5-301(5)(c)."

Response: The comment quotes language out of context from the Fact Sheet. The Fact Sheet does not say the purpose of the nondegradation policy is for the "…protection of existing water quality". The complete sentence says "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". The text of the relevant rule, Criteria for Determining Nonsignificant Changes in Water Quality ARM 17.30.715(1), is as follows:

"The following criteria will be used to determine whether certain activities will result in nonsignificant changes in **existing water quality** due to their low potential to affect human health or the environment. These criteria consider the quantity and strength of the pollutant, the length of time the changes will occur, and the character of the pollutant. Except as provided in (2), changes in **existing water quality** resulting from activities that meet all the criteria listed below are nonsignificant, and are not required to undergo review under 75-5.303, MCA."

ARM 17.30.701 says "the purpose of the nondegradation rules is to prohibit degradation of high quality state waters, except in limited circumstances, by implementing the nondegradation policy set forth in 75-5-303, MCA…"

To fully understand the intent of the rule, one must look more closely at the defined terms. Degradation is defined at 75-5-103(7) as, *a change in water quality that lowers the quality of high quality waters for a parameter…* A "change in water quality" relates to existing water quality.

Finally, 75-5-303(1 and 2), MCA, states: "Existing uses of state waters and the level of water quality necessary to protect those uses must be maintained and protected. Unless authorized under subsection (3) or exempted from review under 75-5-317, the quality of high quality waters must be maintained".

The basis of the nondegradation policy and implementing rules is to protect existing beneficial uses and water quality. The comment's emphasis on the nonsignificance criteria implies that allowing nonsignificant changes in water quality is an allowable lowering of water quality. The comment misinterprets the intent of ARM 17.30.715, which is simply to say that those allowed changes are so small as to be insignificant to existing water quality and will not cause degradation.

No change is made to the permit in response to this comment.

Comment 12: The Fact Sheet estimates critical background receiving water pollutant concentration (Cs) based on an incorrect statistical estimates (25^{th} and 75^{th} percentile or quartile values) which are not based on any statute or rule in the Montana Water Quality Act and conflict with DEQ policy and EPA guidance. This incorrect estimate results in incorrect estimation of instream hardness concentration, incorrect calculated metal standards, incorrect estimation of assimilative capacity, incorrect determination of the appropriateness of mixing zones for Total Nitrogen, and incorrect effluent limits for metals and Total Nitrogen. Sandfire requests that critical background receiving water pollutant concentration and hardness concentration be based on average or mean concentration as prescribed by DEQ policy and EPA guidance.

The Fact Sheet correctly states "The critical [receiving water] pollutant concentration is the average or mean concentration [emphasis added] expected in the receiving water during the flow period corresponding to the critical stream flow (7Ql0 or 14Q5) (See Handbook: 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, September 1984)." The Fact Sheet's use of two values (25^{th} and 75^{th} percentile or quartile values) is inconsistent with this guidance.

Response: The commenter quotes from the Fact Sheet but omits additional information or relevant context provided in the Fact Sheet. The full discussion provided following the comment's quotation, taken from page 21 of the Fact Sheet adds clarifying information. The comment also misinterprets DEQ policy and EPA guidance, which are discussed further here.

There is no regulatory requirement that specifies a method for determining the critical receiving water pollutant concentration. In Montana, the water quality standards require that dischargers issued MPDES permits must comply with the Nondegradation Policy and may not cause the receiving water

concentrations to exceed the water quality standards when stream flows equal or exceed the design flows specified in ARM 17.30.635(2).

When studying statistics of small datasets, analysis of the range, or variation, of the data can be more informative than the mean. The range illustrates how the quality of the waterbodies varies throughout the year. In order to account for the waterbody variations, the measurements DEQ enters into its analyses reflect worse-case scenarios to ensure the limits generated protect the receiving waterbody's beneficial uses. Depending on the question being asked, the high end of the range is the worse-case situation or the low end of the range is the worse-case situation. For example, a high concentration of a toxic pollutant at a low flow condition is a large threat to aquatic life. This why DEQ did not use the mean of this small dataset, and why DEQ may apply a high measurement in one part of the analyses and a low in another.

The MPDES program has long used the interquartile range (IQR) of data to characterize receiving waters, determine critical concentrations, calculate standards, assess reasonable potential, and develop effluent limits. The upper bound estimate of the IQR provides an estimate of critical background concentration for determining reasonable potential, calculating assimilative capacity, and calculating some standards relative to instream characteristics, such as pH for ammonia standards. The lower bound estimate of the IQR provides an estimate of receiving water quality for determining incremental changes in water quality for nondegradation purposes and for calculating water quality criteria relative to certain characteristics of the receiving water, such as hardness for metals. The use of the interquartile range represents DEQ's policy to ensure compliance with the water quality criteria. The use of average concentrations from data collected, as suggested by the comment, could unacceptably increase the likelihood of more frequent exceedances of the water quality criteria than is allowed by the water quality standards and permitting rules.

No change is made to the permit in response to this comment.

Comment 13: …the Fact Sheet used the 75th percentile background concentration to determine assimilative capacity for Total Nitrogen, not the 25th percentile as claimed, and used the 75th percentile as the basis for the denial of the requested source specific mixing zone. As stated in the Fact Sheet "The 75th percentile (background concentration for determining assimilative capacity) of the receiving water is equivalent to the nonsignificance criteria. Thus, the receiving water does not have enough assimilative capacity for the discharge to be considered a nonsignificant change in existing water quality. A mixing zone to achieve the total nitrogen nonsignificance criterion is not appropriate". By using the 25th percentile to calculate total nitrogen nonsignificance criterion and then comparing that value to the 75th percentile to evaluate assimilative capacity, MDEQ is evaluating water of the same source from two different time periods. These waters will never interact as they occur at different time, and therefore a single value (average) should be used for the background concentrations.

If the background were to be equal to the 25th percentile (0.06), then the concentration would be lower than the nonsignificance criterion.

As commented above, Sandfire requests that critical background receiving water pollutant concentration and hardness concentration be based on average or mean concentration as prescribed by DEQ policy and EPA guidance.

Response: The Fact Sheet clearly states, *DEQ uses the 75th percentile of the receiving water data for the purpose of determining assimilative capacity and to develop any necessary water quality-based effluent limitations*. The Fact Sheet does not state anywhere that the 25th percentile was used to determine assimilative capacity. The comment confuses the way DEQ uses the 75th and 25th percentiles in permit development.

While the 75th percentile tells DEQ the receiving stream's assimilative capacity, DEQ used the 25th percentile to calculate the nonsignificance criterion for setting protective, nonsignificant effluent limits. For new sources, the calculated nonsignificance criterion replaces the water quality standards when developing water quality-based effluent limits. Nonsignificance criteria are generally calculated relative to the ambient background concentration for any given parameter. DEQ's goal is to ensure the calculated nonsignificance criteria are protective of existing water quality the majority of the time. For data collected at non-critical flow rates (as discussed in the previous comment) DEQ selects the 25th percentile as the basis for calculating the nonsignificance criteria. Doing so ensures the discharge does not cause a significant change in TN concentrations. Using the average concentration, as suggested by the comment, potentially results in a discharge significantly changing the receiving water half the time.

The data used to calculate IQR of the receiving water's total nitrogen concentration was all collected during the season in which the water quality standards apply, July through September. So, it does not represent "water of the same source from two different time periods" that will "never interact." It represents the variation in total nitrogen concentrations over the relevant season.

As with water quality-based effluent limits in all MPDES permits, once the water quality standard, or in this case the nonsignificance criterion, is established, any mixing calculation is conducted using the 75th percentile of the ambient data to determine assimilative capacity. In this permit and for Sheep Creek, the nitrogen standards are very low and the nonsignificance criterion is so low that the stream is already at or above this level a significant portion of the time. There is not assimilative capacity to allow a mixing zone.

The calculations performed by DEQ will protect the stream by creating a margin of safety in the limits to account for all of the variability in the creeks, ground water, and the discharge. The commenter's method leaves little to no margin of safety.

See also the response to comment 12.

No change is made to the permit in response to this comment.

Comment 14: Page 26 of 92 of the Fact Sheet, Section 2.2.7, Mixing Zone Determination. Please revise the sentence "The Permittee has elected not to pursue an authorization to degrade" to read "The Permittee may, but has not at this time, elected to pursue an authorization to degrade."

Response: The statement in the Fact Sheet and the permit limits reflect the project as proposed to DEQ, i.e., that all discharges will cause only nonsignificant changes to water quality. The MEPA Environmental Impact Statement for the Black Butte Copper Project analyzed the project, as proposed, without an authorization to degrade state waters. The permittee may request an authorization to degrade. However, such a request, if granted, could allow significant changes in existing water quality and require a new MEPA analysis and a major modification to the MPDES permit.

This clarification does not result in a change to the permit.

Comment 15: The Fact Sheet incorrectly calculates the total nitrogen nonsignificance criterion. Sandfire requests that the nonsignificance criterion is calculated as prescribed by ARM 17.30.715(1)(f) and based on a single value for background concentration (average) as required by ARM 17.30.702(4) and as provided in EPA and DEQ policy, not a combination of background concentrations. Based on the corrected criterion, DEQ must then either determine:

a) that background concentration is lower than the criterion, there is assimilative capacity for total nitrogen, and that the requested source specific mixing zone is appropriate; or

b) determine that the nonsignificance criterion is 0.012 mg/L and re-calculate effluent limits based on this corrected waste load allocation.

ARM 17.30.715(1)(f) states as follows:

"(f) changes in the quality of water for any harmful parameter, nutrients listed at ARM 17.30.631, and parameters listed in Department Circular DEQ-12A, except as specified in (l)(g), for which water quality standards have been adopted other than carcinogenic, bioconcentrating, or toxic parameters, in either surface or ground water, if the changes outside of a mixing zone designated by the department are less than ten percent of the applicable standard and the existing water quality level is less than 40 percent of the standard;"

Therefore, the nonsignificance criterion is equal to background concentration plus 0.03 mg/L (i.e., 10 percent of the total nitrogen standard of 0.3 mg/L), as long as the concentration does not exceed 0.12 mg/L (i.e., 40 percent of total nitrogen standard of 0.3 mg/L).

1. If DEQ assumes the 25th percentile to represent background concentration then Sheep Creek and Coon Creek background is 0.06 mg/Land the nonsignificance criterion is 0.09 mg/L, which does not exceed the limit of 0.12 mg/L. Therefore, there is assimilative capacity and a mixing zone is appropriate. Further, as the groundwater concentration is 0.06 mg/L, additional dilution by groundwater will occur prior to the discharge reaching the stream. The reasonable potential analysis and effluent limit calculations must consider this dilution as described in the Source Specific Mixing Zone Application.

2. If DEQ assumes the 75th percentile to represent background concentration then Sheep Creek background is 0.09 mg/L and Coon Creek background is 0.12 mg/L and the nonsignificance criterion is 0.12 mg/L (no change) and the waste load allocation is the instream background as "it is not necessary to treat purer than natural" in accordance with MCA 75-5-306.

In summary, DEQ must pick a single statistic for establishment of background concentration. By doing so, it follows that DEQ must consider a mixing zone to be appropriate or raise the waste load allocation to the established background concentration. Either choice results in an increase in effluent limit for total nitrogen.

Response: The comment misinterprets the nondegradation rules and calculation of nonsignificance criteria. As previously stated, the purpose of nondegradation is to prevent significant changes in water quality in any of the receiving waters. The calculation of the nonsignificance criterion for total nitrogen

requires two steps to determine the criterion. First, the existing water quality level must be less than 40 percent of the water quality standard. If so, the second step allows that the change outside a mixing zone designated by the department may be no more than the background concentrations plus ten percent of the water quality standard.

When background water quality is well below 40 percent of the water quality standard, the comment incorrectly calculates an nonsignificance criteria and then grants additional receiving water dilution (assimilative capacity) so that the resulting instream concentration is 40 percent of the standard. If this were the correct application, the rule would not include language regarding changes no more than background plus ten percent of the standard. It would simply say any discharge which results in receiving water concentrations less than or equal to 40 percent of the water quality standard are nonsignificant.

Please see the responses to comments 12 and 13 for DEQ's rationale in choosing the 25th percentile for calculating the nonsignificance criteria and the 75th percentile for determining assimilative capacity.

No change is made to the permit in response to this comment.

Comment 16: Page 37 of 92 of the Fact Sheet, Section 3.4 *Monitoring Determination Table 15* (this comment impacts the monitoring provisions in the Permit). The required reporting values (RRV) for Total Nitrogen and Phosphorus appear to be incorrect or use the incorrect units. The correct RRVs are 0.07 mg/L for total nitrogen and 0.03 mg/L for phosphorous.

Response: DEQ partially agrees with the comment. The RRVs in the Fact Sheet should be 0.07 mg/L for TN and 0.003 mg/L for TP. RRVs in the permit are specified with a footnote.

Footnote 1 in permit Table 3 is amended to read, *All analyses must meet the applicable RRV in the latest version of Department Circular DEQ-7 or DEQ-12A*.

Comment 17: Page 54 of 92 of the Fact Sheet, Section 7, Nonsignificance Determination. In the discussion of the storm water outfalls, MDEQ notes that "DEQ is also prohibiting the discharge of any process wastewater or mine drainage and requiring turbidity monitoring." The sentence would be clearer if it was limited to the storm water outfalls. Please revise it to read "DEQ is also prohibiting the discharge of any process wastewater or mine drainage [from these storm water outfalls]."

Response: Within the nonsignificance discussion, the sentence in question is found under the heading "Outfalls 002-114", which is specific to the storm water outfalls. The commenter's understanding of the intent of the comment appears to be correct. DEQ finds the conditions are appropriate in the permit.

No change is made to the permit in response to this comment.

Comment 18: Page 6 of 37 (of the Permit), Section 2.1 Effluent Limitations and Monitoring Requirements - Outfall 001. The requirement to reroute discharge water to the Treated Water Storage Pond during the growing season should only apply if the "total nitrogen exceeds the effluent limitation." The requirement to also reroute the water "if daily sample results are sufficiently high that compliance with the limitation will be difficult" is vague and arbitrary and does not lend itself to discernable compliance.

Response: The permittee must use operational judgment to determine when the monthly average effluent limit will be difficult to achieve, based on daily sampling data. The intent of the specified language, and the requirement to monitor the discharge daily, is to eliminate the discharge to state waters before an exceedance of the monthly average effluent limitation occurs. The permittee must keep track of the daily monitoring and reroute the discharge to the treated water storage pond when it becomes either mathematically impossible, or as the permit says, difficult for the discharge to achieve compliance with the average monthly limitation. The treated water storage pond was added to the project because it was determined, both by the permittee and DEQ, that achieving the effluent limitation will be practically infeasible with the proposed treatment technology. The permittee should therefore be confident in the ability to achieve the limit if the TWSP is bypassed at all.

To clarify the language, DEQ will amend the permit language as follows, *If total nitrogen exceeds the effluent limitation or if daily sample results indicate the effluent limit will be exceeded, the discharge must be rerouted to the Treated Water Storage Pond for the remainder of the growing season.*

Comment 19: The permit requires that the "Permittee must receive DEQ written approval of the SWPPP prior to construction of Outfalls 002-014." This requirement is a departure from previous Department policy and places new burdens on the Permittee with no corresponding burdens placed on the Department to provide timely and reasonable approval of the SWPPP. Please delete the requirement or revise it appropriately to ensure that the approval will be timely and will not be unreasonably withheld. If this requirement is not deleted, Tintina requests the language be revised as follows [revisions are underlined]: "Permittee must receive DEQ written approval of the SWPPP prior to construction of Outfalls 002-014 or conversion of outfalls under the construction permit (MTR107129) to industrial outfalls under this permit. DEQ will provide written deficiencies or approval within 30 days of receiving the SWPPP, if DEQ does not provide deficiencies or approval within 30 days the SWPPP will be administratively approved." The proposed 30 day approval is based on the general application procedures under ARM 17.30.1110(3). Additionally, in the fourth and fifth paragraphs on this page, the word "time" seems to have been omitted from the phrases " ...the Permittee may request additional [time] from DEQ."

Response: DEQ agrees to amend the storm water SWPPP language in the final permit as follows:

The permittee must submit the SWPPP at least 90 days prior to the planned construction of Outfalls 002-014 or conversion of the outfalls under the construction permit (MTR107129) to industrial outfalls under this permit. The permittee must receive DEQ written approval of the SWPPP prior to construction or conversion of Outfalls 002-014.

Please see Part 3 Special Conditions of the final permit.

Commenter 3: Josh Purtle, Earthjustice

Comment 20: The Draft Permit does not Provide Required TBELs for Identified Pollutants of Concern

DEQ failed to impose TBELs for all the pollutants the Black Butte Mine is expected to produce. For discharges from Outfall 001, DEQ applied EPA's effluent limitation guidelines for copper mines, which include TBELs for copper, zinc, lead, mercury, cadmium, pH, and total suspended solids, but the agency stopped there. DEQ thus did not establish additional TBELs for the other pollutants and parameters of concern it expects the mine will produce or influence and that are not included in EPA's copper mine

ELGs, including flow, total nitrogen, total phosphorous, ammonia, temperature, aluminum, antimony, arsenic, barium, beryllium, chromium, iron, nickel, selenium, silver, strontium, thallium, uranium, and cyanide. Compare Fact Sheet 18 with id. at 23. Unless DEQ can demonstrate that all of these pollutants will be controlled by virtue of compliance with the applicable ELGs, DEQ must promulgate a case-by-case TBEL for each one. See EPA Permit Writers' Manual § 5.2.3.2 (attached as Exhibit 2) (stating TBELs must be established on a case-by-case basis "[w]hen effluent guidelines are available for the industry category, but no effluent guidelines requirements are available for the pollutant of concern"). A temperature TBEL is especially important, given the risk that the effluent will cause an exceedance of the temperature water quality standard for Sheep Creek, and DEQ's failure to establish any water-quality based effluent limitation for temperature. See discussion below.

In developing the necessary case-by-case TBELs, DEQ must evaluate the effluent limitations achievable with the treatment technologies Tintina has proposed or considered as part of its plan of operations, including but not limited to reverse osmosis technology, as well as any more stringent technologies demonstrated for similar sources. EPA Permit Writers' Manual § 5.2.3; 40 C.F.R. § 125.3(a). DEQ's failure to perform this analysis for all pollutants expected to be present in the mine's effluent violates applicable legal requirements and renders the Draft Permit unlawful. 33 U.S.C. §§ 1311, 1342(b)(1); 40 C.F.R. § 125.3; ARM 17.30.1203.

Response: MPDES permit typically include two types of wastewater control, Technology-based Effluent Limits and Water Quality-based Effluent limits. EPA promulgated Technology-based Effluent Limitations (TBELs) in the Effluent Limit Guidelines (ELG) for the Ore Mining and Dressing Point Source Category, including the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory. The ELG addresses three types of wastewater generated from this industry: process wastewater, mine drainage, and industrial storm water. ARM 17.30.1203(5)(a) directs DEQ to include TBELs as was done here. The comment focuses on Outfall 001. Tintina is authorized to discharge mine drainage from Outfall 001 that complies with the Final Effluent Limits found in Part 2.1 of the Final Permit. The permittee is prohibited from discharging process wastewater from Outfall 001 except under two limited exceptions found in the permit. If the permittee discharges process wastewater under one of these limited exceptions the discharge still must comply with the Final Effluent Limits found in Table 2 of the final permit. When implemented the zero discharge of process wastewater prohibition controls all pollutants present in the wastestream. None of the mine drainage TBELs, except pH, are implemented as final limits in the permit because they are all significantly less stringent than the water quality-based effluent limits (WQBELs) also developed in the Fact Sheet.

The purposes of technology-based effluent limits, particularly for new sources subject to New Source Performance Standards (NSPS), is for permittees to choose and install state of the art, most efficient production processes during the planning and construction of the new facility. The TBEL selection is typically set through a EPA developed national, uniform effluent limitation guideline or ELG. ELGs are based on technological and economic ability of discharges in the same category of industry to control the discharge of pollutants in the wastewater generated form the production processes. This uniform industry-wide approach maximizes pollutant reductions achievable based on affordability and availability of technology across an entire industry. NSPS include where practicable a requirement of no discharge of pollutants.

In this permit, DEQ disagrees that additional TBELs are required. Tintina Montana 1) proposes the waste stream receive Reverse Osmosis treatment, twice and 2) is held to the most stringent TBEL available, typically referred to as zero discharge of process wastewater or 100% recycle (excluding two limited

exceptions). Both of these technologies represent state of the art technology-based effluent limits implemented in MPDES permits. When EPA has re-examined the issued ELG, EPA also found additional TBELs are not required for the Ore Mining and Dressing Point Source Category ELG in the September 2011 Ore Mining and Dressing Preliminary Study Report and again in 2018. On May 2, 2018, EPA published the Final 2016 Effluent Guidelines Program Plan. The 2016 Plan identified any new or existing industrial categories selected for updating or development. The Ore Mining and Dressing Point Source Category ELG was not identified as needing any updates or changes (Federal Register Vol. 83, No. 85, Wednesday, May 2, 2018, Notices).

During development of the TBELs, EPA evaluated thousands of pollutants for possible TBELs and dismissed all except 129 priority pollutants plus conventional and non-conventional pollutants that EPA felt warranted further study. EPA ultimately determined many of the remaining pollutants did not warrant TBELs for the ore mining and dressing point source category. Of the specific parameters listed in the comment, EPA specifically noted ammonia, antimony, arsenic, beryllium, chromium, iron, nickel, selenium, silver, thallium, and cyanide in its development document. The development of BPJ TBELs is unnecessary because doing so would result in no additional control of the pollutants listed in the comment. Regarding flow, there is no numeric water quality standard for flow. MPDES permits regulated point source discharges of pollutants to state waters. Flow is not a pollutant.

The comment also misunderstands the purpose of identifying parameters of concern. The list of the parameters of concern is a list of pollutants that might be present within the discharge. The possible occurrence of a pollutant does not necessarily mean there is a risk to public health and the environment. As a result, a pollutant merely being recognized as a possibility does not mandate limit development, but simply suggests further consideration. Analyses behind WQBELs identify which parameters of concern may pose a risk if left untreated in the discharge. Assuming for the sake of argument that there is a requirement to do case-by-case technology-based effluent limits for the additional parameters listed in the comment the possible occurrence of a pollutants, DEQ concludes the zero-discharge requirements, combined with the water storage, double-reverse osmosis and groundwater infiltration technology proposed to reach nearly nondetectable nonsignificant WQBELs, is equal to or better than any technology demonstrated for similar sources.

Additionally, 40 CFR 122.44(d) requires DEQ to implement effluent limitations (WQBELs) in addition to or more stringent than promulgated ELGs (TBELs) to achieve water quality standards, including narrative standards, and must control all pollutants with reasonable potential to cause or contribute to an exceedance of state water quality standards. In this permit, there is no mixing zone or dilution allowance. Thus, when assessing the need for WQBELs, DEQ must impose effluent limits at the end of pipe that will comply with the water quality standard. DEQ developed water quality based effluent limits for all parameters of concern. The promulgated TBELs for cadmium, copper, lead, mercury, and zinc were compared to the WQBELs and the more stringent limit implemented in the permit. The WQBELs ranged from 125 to 4,000 times more stringent than the TBELs for those parameters. Additionally, the WQBELs in this permit are so stringent that they will require double reverse osmosis treatment, which is generally considered the limits of technology. In the case of total nitrogen, the WQBEL is so stringent that it is not achievable with technology and will require the permittee to hold wastewater during the period when the total nitrogen standard applies.

Further, the permit requires the permittee to monitor the discharge, complete and submit monitoring results for all parameters listed (Parts V and VI) in EPA Form 2C within 6 months of beginning

discharge. DEQ may, based on these monitoring results, reopen the permit if necessary to additional limits, monitoring or other requirements.

Regarding commenters concerns that the temperature water quality standard will be exceeded, please see response to comment 2.

No change is made to the permit in response to this comment.

Comment 21: The Draft Permit Must Ensure Compliance with the Zero-Discharge ELG for Process Wastewater

The Draft Permit further fails to ensure compliance with EPA's zero-discharge ELG for process wastewater. As DEQ recognizes, the copper mine ELGs promulgated by EPA and applicable to the Black Butte Mine prohibit any discharge of process wastewater from the facility subject to two narrow exceptions. Fact Sheet 15; 40 C.F.R. § 440.104(b)(1)-(2). Under governing federal regulations, "process waste water" includes "any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product." 40 C.F.R. § 401.11(q) (emphasis added); see also Fact Sheet 15. The Draft Permit appears to consider only "water introduced into the mill process" to be process wastewater subject to the discharge prohibition, Fact Sheet 15, but that narrow treatment is not consistent with the broad definition of such wastewater stated in the regulations. At the very least, water produced by the CTF and waste rock storage facility drains also qualifies as water that has "come[] into direct contact with … raw material, … by-product, or waste product." 40 C.F.R. § 401.11(q). The MPDES permit must provide for compliance with the zero effluent discharge standard with respect to these wastewater sources as well.

Response: The NSPS allow the discharge of mine drainage. Table 1-1 titled Categories of Discharges from Mining Operations found in the *Ore Mining and Dressing Preliminary Study Report, EPA, 2011,* states, *mine drainage includes water drainage from refuse, storage piles, wastes, rock dumps, and mill tailings derived from the mining, cleaning, or concentration of metal ores. Mine drainage may include process water still contained in the mine. Stormwater runoff and infiltration can contribute to mine drainage.*

The permit properly regulates the water produced by the CTF and waste rock storage facility drains as mine drainage.

No change is made to the permit in response to this comment.

Comment 22: DEQ Must Ensure Compliance with Temperature Water Quality Standards

DEQ must perform a rational analysis of whether Tintina's discharges have a reasonable potential to violate temperature standards applicable to Sheep Creek, particularly where such potential is evident based on available information. DEQ regulations prohibit a greater than 1°F "increase above naturally occurring water temperature," and no increase above 67°F in waters that, like Sheep Creek, are classified "B-1." ARM 17.30.623(2)(e). DEQ concluded in the Draft Permit Fact Sheet that there is no reasonable potential for effluent "to exceed the temperature standard because the Outfall 001 discharge is via the [underground infiltration gallery] and it will be transported through a buried pipeline for a significant distance before reaching the UIG. It is assumed the effluent temperature will equilibrate with ground

water temperature before reaching surface water." Fact Sheet 28. On this basis, DEQ decided not to impose any effluent limitations for temperature. See id. at 31-34.

DEQ's decision in this regard was arbitrary, because DEQ has provided no analysis or evidence to support its assumption that effluent temperature will equilibrate with groundwater temperature in the UIG, particularly where certain discharges (including stormwater discharges) will not be made through Outfall 001 and the UIG. To the contrary, the available evidence indicates that Tintina's mine operating plan creates a significant threat that the effluent will increase the temperature of Sheep Creek. In order to meet surface water nitrate standards, Tintina plans to store all effluent produced by the mine in a reservoir at the surface during the summer months. See Fact Sheet 35. It is likely that this water, like a shallow stagnant pond, will become much warmer than groundwater or surface water in the project area. Tintina will then release this warm water to the UIG beginning October 1. Id. at 6.

Indeed, the Fact Sheet reports that the temperature of the effluent could be as high as 25°C (77°F), Fact Sheet 66, much higher than the baseline temperature in Sheep Creek, see id. at 60 (baseline data indicating that upper quartile of background temperature in Sheep Creek is 8.8°C or 48°F). There would therefore seem to be a reasonable potential, at minimum, that effluent discharges could cause an exceedance of the one-degree-change temperature standard in Sheep Creek. Given these facts, DEQ must revisit its assumption that the effluent will not cause temperature impacts in Sheep Creek and perform a rational reasonable potential analysis for this parameter. DEQ must further impose water quality-based effluent limitations as necessary to prevent potential violations of the temperature standards.

The Draft Permit further compounds the threat of a temperature standard violation by failing to provide for adequate temperature monitoring in two key respects. First, the Draft Permit does not set a mandatory reporting value for temperature. Fact Sheet 37. Such a reporting requirement is necessary to ensure that DEQ and Tintina will remedy any exceedance of the temperature standard immediately, and thus prevent severe impacts to water quality and fish in Sheep Creek. Second, the only surface water monitoring site on Sheep Creek downstream from the mine site is inadequate to detect prohibited changes in temperature near the mine site, because it is about two river miles away from Outfall 001. Draft EIS at 3.5-7. An additional monitoring station close to the mine is required to ensure that Tintina does not violate the temperature standards. DEQ should therefore revise the Draft Permit's monitoring requirements to address these two shortcomings.

Response: Please see the response to comment 2. DEQ is imposing additional requirements to protect the temperature standard of B-1 waters including a temperature effluent limit. DEQ will continue to require ambient monitoring in Sheep Creek and will change the downstream temperature monitoring location to be downstream of and within 100 feet of the confluence of Sheep Creek and Coon Creek. An additional temperature monitoring location in Coon Creek, upstream of Outfall 001 is also added. There is not a required reporting value for temperature specified in the water quality standards. The temperature monitoring method must demonstrate compliance with the water quality standard and must therefore be capable of reporting temperature to at least the nearest 0.5 degrees Fahrenheit.

Please see Part 2 Effluent Limitations and Motioning Requirements of the Final Permit.

Comment 23: The Draft Permit further fails to perform a rational reasonable potential analysis for flow standards applicable to Sheep Creek, and thus fails to ensure compliance with those standards.

Under DEQ's water quality regulations, "activities that would increase or decrease the mean monthly flow of a surface water" by more than fifteen percent cause unlawful degradation. ARM 17.30.715(1)(a). Despite Tintina's plan to discharge up to 708 gallons per minute into Sheep Creek, DEQ did not analyze whether this substantial discharge could increase flows in Sheep Creek to an extent that would violate DEQ's own flow standard. As a result, the Draft Permit provides no effluent limitation capping the quantity of effluent Tintina is permitted to discharge into Sheep Creek.

DEQ's Fact Sheet apparently ignored this concern because "[c]hanges in flow are addressed in the EIS" for the Black Butte Mine, Fact Sheet 53, but that rationale is an inadequate basis for omitting permit flow standards. At the outset, the Draft EIS does not analyze the potential impact of the maximum effluent flow reported in the Draft Permit, which is 708 gallons per minute. Id. at 6. The Draft EIS instead analyzes the impact of the much lower predicted average flow of 530 gallons per minute. See Draft EIS at 3.5-13. DEQ therefore cannot rely on the Draft EIS's analysis to conclude that there will be no significant flow impacts from UIG discharges up to 708 gallons per minute Further, Tintina and DEQ have likely underestimated the amount of effluent the mine will produce. In developing a hydrology model for the mine, Tintina ignored data indicating that geological fault zones adjacent to the mine site may produce much greater quantities of water than Tintina's model predicts. See Exhibit 1 at 28-29. If the fault zones produce greater-than- anticipated flows, Tintina will be obliged to pump and treat much more mine water than the 500 gallons per minute Tintina forecasts the mine workings will generate. Id. at 29; Fact Sheet 7.Effluent discharges, which are mostly comprised of groundwater pumped from the mine, Fact Sheet 7, would be commensurately greater as well, thus impacting Tintina's ability to meet the flow standard for Sheep Creek. Exhibit 1 at 29. The Draft Permit further fails to evaluate whether such unanticipated flows will exceed the UIG's capacity to receive and emit water into the Sheep Creek alluvium, and whether, in light of that potential capacity shortfall, Tintina should consider alternative UIG systems or locations that may provide additional effluent capacity. See Exhibit 3 at 1. DEQ should therefore revisit its analysis of flow impacts to account for greater-than-anticipated flows and impose appropriate permit limitations on the amount of effluent Tintina will be allowed to discharge.

Conversely, Tintina's mining activity may unlawfully decrease flows in Sheep Creek, because groundwater drawdown may reduce flows in the creek to a greater extent than permitted under DEQ's regulations. Tintina's hydrological model estimates that flow reduction in Sheep Creek due to mine drawdown will be minimal, and discharges from the UIG will sufficiently mitigate any reduced flows. Draft EIS at 3.5-13–3.5-14. However, Tintina's model does not account for the possibility that the connection between Sheep Creek surface flows and bedrock groundwater may be more significant than Tintina anticipates, thus increasing the extent of drawdown in Sheep Creek. Exhibit 1 at 29. The Draft Permit should rationally address the potential for such drawdown impacts and include requirements to guard against any impermissible decrease in Sheep Creek flows as well.

In addition to failing to provide substantive protections for flow, the Draft Permit further provides for a monitoring program that is inadequate to detect flow standard violations. The only surface water monitoring site currently established in Sheep Creek is SW-1, about two river miles away from the mine and the UIG. Draft EIS at 3.5-7. SW-1 is too far from the discharge point to effectively detect any changes in flow caused by discharges from Outfall 001. Further, because DEQ's baseline monitoring data for flows in Sheep Creek is derived solely from SW-1 and monitoring site SW-2, which is several miles upstream from the mine site, see Draft EIS at 3.5-4, DEQ lacks adequate baseline data to assess

whether Tintina's discharges are violating applicable flow standards. DEQ must therefore obtain adequate baseline flow data and establish a monitoring station close to the mine site so that DEQ and Tintina can ensure compliance with the flow standards.

Response: The nonsignificance criteria for flow states that, *activities that would increase or decrease the mean monthly flow of a surface water by less than 15 percent or the seven-day ten-year low flow by less than 10 percent,* are nonsignificant [ARM 17.30.715(1)(a)]. In practice, the nonsignificance review related to decreasing flows is to prevent excessive dewatering. The nonsignificance review related to increased flows is intended to prevent erosion and excess sediment or mobilization of pollutants in surface waters. There is no numeric water quality standard for flow in Montana. MPDES permits regulated point source discharges of pollutants to state waters. Flow is not a pollutant.

The maximum projected flow rate of 708 gpm is not expected to occur frequently and is inappropriate to compare to either the mean monthly flow or the 7Q10 flow of surface waters, since both statistics are based on multiple days. In both cases, it is more appropriate to use the projected average flow rate (future permit renewals will use the highest reported 30-day average). The projected average flow rate is 530 gpm or 1.2 cfs, which once discharged to the UIG will disperse between Sheep Creek, Coon Creek, and back into the mine due to dewatering activities. It is incorrect to assume that all discharge flow goes to Sheep Creek, as stated in the comment. The expected average flow represents 10 percent of a surface water flow equal to 12 cfs and 15 percent of 8 cfs. The discharge will not exceed 15 percent of the mean monthly flows for the months where data are available (see Attachment B). The 7Q10 flow for Sheep Creek is 5.7 cfs. DEQ finds that additional flow to the surface waters from the discharge will not cause erosion or increased sediment mobilization because the discharge seeps through the ground and enters the stream in a diffuse manner.

While the projected discharges are not expected to decrease flows in Sheep Creek, any projected decrease to Sheep Creek flows is analyzed and addressed in the EIS. Mine dewatering impacts are related to general mine operations and are outside the scope of the MPDES permitting action. The MPDES permit does not regulate general mine operations. MPDES permits regulate point source discharges of pollutants to state surface water.

No change is made to the permit in response to this comment.

Comment 24: The Draft Permit also deals irrationally with the reasonable potential for Tintina's discharges to violate applicable standards for whole effluent toxicity. Whole effluent toxicity or "WET" "refers to the fact that effluent can contain many different pollutants" and "[e]ven if no one pollutant is likely to cause harm … the combination of several pollutants may have an adverse result." S. Cal. All. of Publicly Owned Treatment Works v. EPA, 853 F.3d 1076, 1080 n.2 (9th Cir. 2017). DEQ must establish permit standards for whole effluent toxicity when (1) a discharge has the reasonable potential to violate an established numeric criterion for whole effluent toxicity, or (2) a discharge has the reasonable potential to violate a narrative criterion within an applicable state water quality standard and the permitting agency cannot demonstrate that pollutant-specific effluent limitations will ensure compliance. 40 C.F.R. § 122.44(d)(1)(iv)- (v). In this regard, DEQ has established a narrative water quality standard that prohibits discharges that will "create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life." ARM 17.30.637(1)(d); see also Fact Sheet 29 (discussing water quality standard for WET).

DEQ did not perform a rational reasonable potential analysis for WET. As an initial matter, the Fact Sheet states in one place that "[w]hole effluent toxicity has not been assessed for the Facility discharge," suggesting that DEQ did not perform a reasonable potential analysis for this parameter at all. Fact Sheet 35. Yet the Fact Sheet inconsistently purports to conduct that very analysis in another place. Id. at 29-30. DEQ should clarify whether it has, in fact, performed the required reasonable potential analysis for WET. See 40 C.F.R. § 122.44(d)(1)(v). If it has performed such an analysis, DEQ must fully explain that analysis and justify any conclusion that Tintina's discharges will not violate WET standards. See id.

Further, while the Fact Sheet asserts on one page that whole effluent toxicity is not expected in part because the mine's discharges "first pass[] through the ground," Fact Sheet 29, the very next page casts doubt on that rationale, stating, "[a]lthough the discharge will pass through the ground before reaching surface water, the ground water discharge will be in close proximity to Sheep and Coon Creeks and the Permittee has not requested a mixing zone." Id. At 30. It is therefore not clear whether DEQ is relying on dilution in the underground infiltration gallery to conclude that there is no reasonable potential for whole effluent toxicity in Tintina's effluent.

DEQ must rationally perform and disclose a reasonable potential analysis for violations of DEQ's narrative WET standard and ensure that the Draft Permit includes sufficient effluent limitations to ensure compliance with that standard. See 40 C.F.R. 122.44(d)(1)(v); ARM 17.30.637(1)(d) (narrative water quality standard for WET).

Response: Whole Effluent Toxicity (WET) is a measurement of the aggregate toxic effects of effluent on aquatic organisms. This is measured in laboratory methods of exposing aquatic life to the effluent at varying concentrations and recording the effects of survival, reproduction, and growth. Montana does not have a numeric standard so DEQ performed a narrative reasonable potential analysis. DEQ imposed stringent effluent limitations on all significant POCs so that the effluent does not have reasonable potential for WET. The numeric limits on all pollutants of concern are based on the nonsignificance criteria, which are set at a fraction of the lowest applicable water quality standards. DEQ determined that compliance with the nonsignificance criteria will result in no reasonable potential for WET and that the effluent would not be toxic or cause toxic effects in the receiving water. 40 CFR 122.44(d) allows DEQ to determine that limitations on WET are not necessary because these stringent chemical specific limitations are sufficient to attain and maintain the narrative standard at ARM 17.30.637(1)(d).

The permit requires Tintina to collect and pass a chronic pre-discharge WET test to demonstrate no chronic toxicity prior to initiating discharge from Outfall 001 (see page 8 of the final permit). After discharge commences from the facility chronic WET test are required quarterly. If the permittee reports a failed WET test Tintina must resample within 14 days. If the permittee reports the resample as a failed WET test the permit requires the permittee must begin to investigate, identify, and correct the cause of toxicity (Toxicity Identification Evaluation/Toxicity Reduction Evaluation) and report these findings to DEQ (see Part 2 and Part 3 of the Final Permit). Based on the results of the WET testing and any TIE/TRE analysis DEQ may reopen (see final permit Part 3.3.2) the permit and add additional WET requirements, add or adjust effluent limits or any other portion of the permit determined appropriate.

The language in the Fact Sheet regarding the effluent first passing through the ground is reference to the fact that the water quality standard on which WET requirements are based does not apply to ground water. In this case the UIG is in close proximity to surface water and WET monitoring is required as a tool to measure aggregate toxicity of the effluent and will provide additional assurance that the effluent

will not create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life in surface water.

No change is made to the permit in response to this comment.

Comment 25: The Draft Permit further fails to ensure that Tintina's discharges will comply with the total nitrogen standard that is in effect for Sheep Creek during the growing season, July 1 through September 30. The Draft Permit states that Tintina will comply with the stricter summer nitrogen standard by storing effluent in a pond while the standard is in effect. "The treated effluent from the storage pond will be blended with regular treated water discharge during the October to June timeframe when nutrient standards do not apply." Fact Sheet 6.

DEQ's analysis, however, does not account for the fact that there may be a time lag between when water is discharged to the UIG and when it reaches Sheep Creek, such that Tintina could violate the stricter summer nitrate standard. According to the Draft EIS for the Black Butte Mine, water discharged to the UIG would infiltrate through the alluvial aquifer at a median rate of about two feet per day. Draft EIS at 3.4-46. Given the fact that the infiltration gallery would be 1,450 feet long at "a minimum," Draft EIS at 3.4-46, it could take months for effluent to travel from the initial discharge location to Sheep Creek. As a result, water discharged in May, before the stricter nitrate standard goes into effect, may not reach the creek until July, when DEQ's analysis indicates the effluent may exceed the stricter summer nitrate standard. In light of this evidence, DEQ must analyze whether there is a reasonable potential that Tintina's discharges will violate the total nitrogen standard applicable to Sheep Creek and impose additional permit requirements as necessary to meet the standard.

Response: The commenter switches back and forth between nitrate and total nitrogen in the comment. Nitrate has a year-round standard so DEQ assumes the commenter meant total nitrogen instead of nitrate in this comment.

The commenter oversimplifies the UIGs, and fate and transport of total nitrogen. The length of the UIG does not mean total nitrogen could be discharged up to 1,450 feet away from Sheep Creek, but instead the UIG is much closer because it runs alongside the creek. Furthermore, the slow rate of water infiltration is not a good indicator that total nitrogen could take months to reach surface water, but an indicator that total nitrogen will have time to attenuate in the soils and may never reach the creek. Total nitrogen in soils at these low concentrations is rapidly taken up or denitrified to harmless nitrogen gas by microbes. For total nitrogen, DEQ would actually prefer slow infiltration and long detention time. Therefore, DEQ's main concern is where the UIGs are in close proximity to Sheep Creek so the total nitrogen in the discharge might quickly interact with Sheep Creek. This is why the seasonal discharge limits are important.

No change is made to the permit in response to this comment.

Comment 26: The Draft Permit further impermissibly relies on unspecified BMPs to manage stormwater discharges from Outfalls 002 through 014. For these Outfalls, DEQ identifies turbidity, sediment, settleable solids, aluminum, and various other metals as pollutants of concern but imposes no TBELs whatsoever. Instead, the permit provides that Tintina will propose best management practices at some later date to manage stormwater and document those BMPs in a stormwater plan submitted to DEQ after the MPDES permit is finalized. Fact Sheet 17, 41-50.

At the outset, allowing Tintina to submit a stormwater discharge plan after the permit is issued is unlawful because it vitiates public participation in the MEPA and MPDES process. Public participation in DEQ's decision about the mine's stormwater management is a "mere formality" if DEQ does not disclose how stormwater will actually be managed until after the public comment period ends. See Bryan v. Yellowstone Cty. Elementary Sch. Dist. No. 2, 2002 MT 264, ¶¶ 45-46, 312 Mont. 257, 60 P.3d 381 (citizen's participation in government decision was a "mere formality" where citizen "participated under a distorted perspective in light of the [government's] partial disclosure of information").

Response: Please refer to page 17 and pages 41 through 50 of the Fact Sheet and pages 16-26 of the draft permit. Best management practices (BMPs) are technology-based effluent limitations at Outfalls 002 – 014, as allowed by ARM 17.30.1345 and 40 CFR 122.44(k). The Fact Sheet and the Draft Permit specify several TBEL BMP requirements the permittee must design and submit for approval before construction of storm water outfalls may commence. The permit requires the submission and approval of a storm water pollution prevention plan (SWPPP) that must implement at least the minimum BMP requirements outlined in the Permit. The act of a permittee choosing between BMP requirements in an MPDES permit does not constitute a new effluent limit requiring further public participation before the permit can take effect (Upper Missouri Water Keeper vs DEQ, 2019 MT 81, ¶20). The established BMPs for industrial storm water include long-standing practices developed and required by the EPA. The MPDES permit requirements for storm water discharges in the permit are compatible those established by the EPA and incorporated federal regulations.

The Permit and the Fact Sheet disclose the BMP requirements the permittee must address and include in the SWPPP. These minimum requirements were available for public review and comment satisfying all MPDES including any related MPEA requirements.

No change is made to the permit in response to this comment.

Comment 27: Further, DEQ may not rely on unspecified BMPs as a substitute for enforceable effluent limitations. As described above, state and federal regulations expressly require MPDES permits to contain, at a minimum, valid TBELs for all pollutants of concern. 40 C.F.R. §§ 122.44(a)(1), 125.3(a); ARM 17.30.1203(1). Further, an MPDES permit must contain more stringent water quality-based effluent limitations as necessary to "ensure that every discharge of pollutants" authorized under the permit "will comply with all applicable effluent limitations and standards." Waterkeeper Alliance v. EPA, 399 F.3d 486, 498 (2d Cir. 2005) (emphasis in original); see 33 U.S.C. § 1342(b)(1)(A); MCA § 75-5-401(2); ARM 17.30.637(2). As a matter of common sense, DEQ cannot make the requisite determination that compliance with the permit terms will ensure compliance with all applicable effluent limitation requirements and water quality standards where DEQ has failed to identify what limitations or control requirements Tintina will apply to manage stormwater discharges. Moreover, while applicable federal regulations allow for establishment of BMPs as a permit condition, they generally allow permitting agencies to include BMPs only as an additional requirement to supplement numeric TBELs and water quality-based effluent limitations; the regulations allow BMPs in lieu of numeric effluent limitations only if numeric limits for a specific pollutant are demonstrably "infeasible"—a demonstration DEQ has failed to make here. See 40 C.F.R. § 122.44(k).

Response: Please refer to pages 28 through 29 of the Fact Sheet.

DEQ did identify the minimum requirements that must be addressed in the permittees SWPPP (see response to previous comment). DEQ determined that the implementation of BMPs will result in the

storm water discharge compliance with the water quality standards. Further, to ensure no degradation of state waters occurs, DEQ imposed an additional water quality-based requirement that BMPs must be designed to detain all storm water from a 10-year 24-hour event or produce a storm water effluent quality equivalent to storm water discharge after detention of the 10-year 24-hour event.

BMPs are implement in lieu of numeric effluent limitations as allowed by 40 CFR 122.44(k). Storm water discharges are variable and unpredictable, depending on the severity of the storm event. Due to this variability, storm water is typically regulated with BMP requirements because of the difficulty in quantifying the expected pollutant concentration, flow rates and receiving water conditions which make the numeric demonstration of reasonable potential to exceed the water quality standards difficult to perform with accuracy. This permit requires the permittee to monitor storm water discharges and compare those results to background conditions during at least two storm events each year. Background storm water quality is the natural storm water quality that the receiving waters collect in the absence of the mining project. The 10-year, 24-hour requirements prevent pollutants from 90 to 95% storm water events from reaching the receiving waters. Where storm water effluent values exceed background, the permit requires the permittee to make improvements to storm water BMPs, revise the SWPPP, and notify DEQ of the improvement to meet natural, background levels. Because the runoff of the project must meet background water quality, there is no reasonable potential to exceed water quality standards or degrade water quality. The permit requirements are much more stringent than typical storm water requirements, which allows the discharge of pollutants that may be above background concentrations.

No change is made to the permit in response to this comment.

Comment 28: DEQ further compounds its failure to impose specific stormwater effluent limitations by failing to establish reasonable stormwater monitoring requirements. The Draft Permit provides for monitoring on a semi-annual basis for most parameters, including total nitrogen and toxic metals. Fact Sheet 38-39. DEQ does not explain, however, how monitoring for these harmful parameters only twice a year will be sufficient to determine whether Tintina's to-be-determined BMPs will adequately address mine pollution. Given that DEQ is relying on such monitoring to ensure that Tintina's self-imposed BMPs actually work, see id. at 33, DEQ must require more frequent stormwater monitoring.

Response: See response to comment 27. DEQ's 10-year, 24-hour requirements and background water quality requirements ensure storm water discharge is equivalent to natural runoff. The permit requires monitoring for flow, pH, total suspended solids, and turbidity, at each storm water outfall *every time* a storm water discharge occurs. The additional parameters are only required for sampling twice a year because concentrations of these parameters, especially the toxic metals, are closely related to TSS and turbidity in storm water discharges. By monitoring TSS and turbidity in all discharges and total nitrogen (TN) and toxic metals semi-annually for all outfalls, DEQ can estimate the concentrations of TN and toxic metals in all storm water discharges. DEQ has statutorily broad discretion to require monitoring of discharges into state waters (MCA 75-5-602; see also Upper Missouri Water Keeper vs DEQ, 2019 MT 81, ¶38).

No change is made to the permit in response to this comment.

Comment 29: The Draft Permit's procedure for addressing any failure to meet water quality standards detected by monitoring is also insufficient. If monitoring reveals that the BMPs Tintina initially chose are not effective at managing stormwater, the permit would allow Tintina to amend its stormwater management plan to assertedly address the deficiency without DEQ supervision or approval. Fact Sheet

28-29. Tintina is required to notify DEQ of any such changes, but DEQ plays no role in approving the revised stormwater management plan. Id. at 29. The Draft Permit thus unlawfully fails to ensure that Tintina's chosen BMPs will, in fact, prevent significant stormwater pollution, or that any future remedial revision of the plan will adequately address the original plan's shortcomings. See MCA § 75-5-401(2) (MPDES permit may issue "only if the department finds that operation consistent with the limitations of the permit will not result in pollution of any state waters").

Response: DEQ retains authority to review the SWPPP any time. If the updated SWPPP is insufficient to address unacceptable storm water discharge concentrations, DEQ will require additional revisions. DEQ also requires monitoring and conducts inspections to assess SWPPP effectiveness. All monitoring results are not only submitted to DEQ, but are publicly available at echo.epa.gov. If additional storm water controls or limitations are necessary to protect water quality, DEQ may reopen the permit. See also the response to comment 28.

No change is made to the permit in response to this comment.

Comment 30: DEQ also fails to provide specific data and analysis substantiating its estimate of stormwater quality. See Fact Sheet 12, 65-69. DEQ's estimate is particularly suspect because it is based on data collected from an existing surface water monitoring site in the absence of any mine construction. Id. at 12. Once the facilities are built, stormwater will likely contain additional sediment, and possibly toxic metals produced by soil reclamation materials. See Exhibit 1 at 25-26. DEQ must provide the basis for its storm water quality analysis and further account for the changes in storm water quality that are likely to occur once mine facilities are actually constructed.

Response: See response to comment 27. The permit requires storm water quality to be the same as background, or the natural conditions in the absence of the mine. The estimate of storm water quality provided in the permit application is based on storm event samples collected at an existing surface water monitoring site before any mining or construction has taken place so represents the storm water quality that is required to occur once mine facilities are constructed. There is no need to model or analyze storm water quality further because of the permit requirements.

The permit requires storm water monitoring of surface waters flowing onto the site. Permit monitoring must be conducted outside of any area disturbed by mining activity and outside the mine operating boundary or as close to it as possible. Storm water BMPs must protect this level of surface water quality during storm events. The permit monitoring requirements are intended to provide confirmation, or require additional BMPs, to ensure natural storm water quality (upstream of the mine disturbance) is maintained. If any storm water discharge contains additional sediment or toxic metals above background conditions, the permittee is required to make changes to re-evaluate the SWPPP and adjust or add BMPs that will control these pollutants in the discharge.

No change is made to the permit in response to this comment.

Comment 31: …the Draft Permit unlawfully ignores a Montana narrative water quality standard applicable to Sheep Creek that requires that this waterbody be "maintained suitable for … growth and propagation of salmonid fishes and associated aquatic life." ARM 17.30.623(1). As discussed, the Draft Permit fails to provide effluent limitations and permit conditions that will ensure that the effluent does not violate temperature, flow, whole effluent toxicity, and total nitrogen water quality standards in Sheep Creek. The Draft Permit further fails to establish case-by-case TBELs for multiple parameters,

including parameters that are harmful to aquatic life. Such effluent limitations are mandatory for the reasons described above. DEQ must additionally analyze whether these—or even more stringent limitations—are also needed to meet ARM 17.30.623(1)'s requirement that Sheep Creek remain suitable for fish and other aquatic life, and impose such limitations as necessary.

Response: The permit effluent limitations are based on the nonsignificance criteria for ground water and surface waters classified B-1. As such the effluent limitations protect both the beneficial uses of the receiving waters, including growth and propagation of salmonid fishes and associated aquatic life. The effluent limitations in this permit achieve the nonsignificance criteria at the end-of-pipe without consideration for mixing in the receiving waters.

Please see responses to comments 2, 20, 23, 24, 33.

No change is made to the permit in response to this comment.

Comment 32: DEQ cannot authorize aluminum discharges to Sheep Creek from the Black Butte Mine unless and until it finalizes an aluminum TMDL and DEQ determines that discharges may be made consistent with DEQ's wasteload allocation for the mine. See 40 C.F.R. § 122.4(d) (prohibiting the issuance of discharge permits "[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements"). Indeed, the federal district court for Montana has in the past enforced a prohibition against the issuance of MPDES permits affecting impaired waterways for which—like Sheep Creek—a TMDL was required but not complete. Friends of Wild Swan v. EPA, 74 F. App'x 718, 723-24 (9th Cir. 2003). A Ninth Circuit panel affirmed that action by the district court, concluding that the ban was necessary to satisfy the requirements of 40 C.F.R. § 122.4. Id. Consistent with this authority, because the TMDL for aluminum and the associated wasteload allocation for the Black Butte Mine have not yet been determined, DEQ cannot ensure that Tintina will meet these water quality requirements through any conditions in the permit. DEQ may not, therefore, issue the permit.

Response: 75-5-703(10)(b) states, "the issuance of a discharge permit may not be precluded because a TMDL is pending." The prohibition of issuance of MPDES affecting impaired waters was a temporary condition imposed in Friends of the Wild Swan vs. EPA. DEQ satisfied the terms of the Court judgement in this case. The prohibition is no longer applicable.

No change is made to the permit in response to this comment.

Comment 33: DEQ's determination that effluent discharges from the Black Butte Mine will not be significant and are therefore not subject to nondegradation review under MCA § 75-5-303 is arbitrary. Over and above ensuring compliance with applicable water quality standards, MPDES permits also must include any effluent limitations and other conditions that are necessary to comply with the Montana Water Quality Act's nondegradation policy. The nondegradation policy establishes two key mandates to ensure that the State's fundamental clean-water goals are not compromised by discharge authorizations: First, it prohibits any discharge that would render the receiving waters unfit for their designated uses (e.g., fish propagation, swimming, or public water supply). See MCA § 75-5-303(1); see also 40 C.F.R. § 131.12(a)(1) (directing states to adopt policies that ensure protection of existing instream water uses). Second, the nondegradation policy protects Montana's high-quality waters by prohibiting any significant impairment of such waters unless DEQ concludes, following full public participation, that there is a compelling justification for allowing that impairment and issues an "authorization to degrade." See id. § 75-5-303(2)-(3); 40 C.F.R. § 131.12(a)(2).

To ensure compliance with the nondegradation policy in issuing MPDES permits, DEQ must conduct a "nondegradation review" to determine whether proposed discharges that will significantly affect high-quality waters qualify for an authorization to degrade. See MCA § 75- 5-303(3). DEQ may forego nondegradation review only if it rationally determines that the discharges at issue will have only "nonsignificant" impacts on water quality. See MCA §§ 75-5- 301(5)(c), 75-5-303(2); ARM 17.30.715.

With respect to the Draft Permit, DEQ concluded that nondegradation review is not required because the impacts of Tintina's planned discharges will be nonsignificant. That conclusion was arbitrary and not supported by required data and analysis.

First, DEQ concluded that discharges from Outfall 001 will not cause a significant change in water quality because "DEQ set effluent limits and conditions in the permit to comply with the nonsignificance criteria in ARM 17.30.715(1)." Fact Sheet 53. However, as discussed, DEQ did not establish limitations to address possible violations of the water quality standards for temperature and flow applicable to Sheep Creek. DEQ further did not establish permit limitations to address potential violations of the total nitrogen standard in effect during the growing season. Because DEQ has not analyzed these potential water quality impacts and addressed them through effective permit conditions, its conclusion that discharges from Outfall 001 will not cause significant water quality impacts cannot be supported.

As to the remaining Outfalls 002 through 014, DEQ concluded that stormwater discharges will be nonsignificant based largely on the unspecified BMPs that Tintina will develop after DEQ issues the MPDES permit. Fact Sheet 54-55. However, as discussed, it is impossible for DEQ to conclude at this time that BMPs Tintina will choose at a later date will, in fact, prevent a significant change in water quality due to stormwater discharges. DEQ must specify stormwater BMPs before issuing any final permit to ensure that Tintina meets water quality standards and that any stormwater discharges do not unlawfully degrade state waters.

DEQ further relies on the fact that the stormwater BMPs "must be designed to detain storm water from a 10-year 24-hour precipitation event" in concluding that the mine will not cause significant changes in receiving water quality. Fact Sheet 53. However, BMPs designed to handle the 10-year, 24-hour precipitation event may not be adequate in light of the changes in precipitation patterns in southcentral Montana that will likely accompany climate change in the near future. A recent climate report concluded that "precipitation is projected to increase in winter, spring, and fall" across the state, and "[t]he largest increases are expected to occur during spring in the southern part of the state." Draft EIS Comment Letter Exhibit 50 at 10. DEQ's analysis of projected stormwater impacts must account for this increased precipitation pattern before DEQ may rationally conclude that BMPs—which, again, are yet to be determined—will prevent significant changes in surface water quality.

Response: See the responses to comments 11 and 12 for an explanation of nondegradation and how the nonsignificance criteria were calculated. Regarding flow, please see response to comment 23. Regarding storm water discharges and BMPs please see response to comments 26, 27, and 29.

Temperature is a narrative water quality standard. As a result, ARM 17.30.715(1)(h) is the applicable provision DEQ must use to analyze nonsignificant changes in water quality. Because of the limit being set in groundwater, any heating or cooling would be buffered by groundwater before reaching surface water.

Furthermore, the small discharge flow relative to the surface water flow is spread over such a large distance that any temperature affect is also spread over hundreds of feet of stream length and further diminished. Any organism within the stream would not encounter a temperature change that is more than a mere fraction of degree as it moves through the stream so there would be no measurable affect from temperature on uses, aquatic life or ecological integrity. Please see response to comment 2.

The commenter misuses the term nondegradation review to imply DEQ did not analyze nondegradation or follow state nondegradation policy. DEQ applies nondegradation policy in all permit limits for new or increased sources. The term nondegradation review as used by DEQ and Montana rules and regulations means reviewing or approving an authorization to degrade. A nondegradation review is required *upon a determination by the department that an application to degrade state waters required under this rule is complete…* ARM 17.30.707(1). The permittee did not apply for an authorization to degrade state waters. There is no requirement to conduct an authorization to degrade as part of the MPDES permit.

The permit limits are based on the criteria for determining nonsignificant changes in water quality. Changes in existing surface or ground water quality resulting from the activities that meet these criteria are nonsignificant, and are not required to undergo review under 75-5-303, MCA, the Nondegradation Policy. ARM 17.30.715. Please see the Fact Sheet pages 20 through 24; 27; 52 through 64; and 70-79.

Regarding climate change; this MPDES permit is issued for a five-year term. With each MPDES renewal, permits address changes in existing conditions, rule changes, new legislation, and new information. Any developments due to climate change will therefore be addressed as any such change occurs, in five-year intervals.

No change is made to the permit in response to this comment.

Comment 34: Finally, DEQ cannot issue the Draft Permit without establishing effluent limitations for planned discharges to Coon Creek. Tintina intends to pump water from Sheep Creek during times when flows are high, store that water, and then discharge it to Coon Creek to mitigate for flows depleted by mine drawdown. However, as the Draft EIS acknowledges, Sheep Creek has been categorized by DEQ as " impaired" for aluminum and E. coli, and has exhibited exceedances of iron water quality standards. Draft EIS at 3.5-10 . Thus, discharging impaired Sheep Creek water to Coon Creek may degrade water quality in Coon Creek. The Draft Permit, however, establishes no effluent limitations to prevent such water quality degradation in Coon Creek. DEQ must establish such limitations in order to meet governing legal requirements. See MCA§ 75-5-401(2) (MPDES permit may issue "only if the department finds that operation consistent with the limitations of the permit will not result in pollution of any state waters").

Response: The transfer of water from Sheep Creek to Coon Creek is a water transfer excluded from MPDES permit requirements under ARM 17.30.1310(1)(g), and 40 CFR 122.3(i).

No change is made to the permit in response to this comment.

Commenter 4; Ann Maest, Buka Environmental

The following is taken from the introduction in the commenter's letter, submitted May 28, 2019.

Comment 35: The comments contained in this memorandum address water quality issues associated with the Black Butte Copper Project MPDES application. My comments are submitted on behalf of Montana Trout Unlimited, Montana Environmental Information Center, American Rivers, Earthworks, and Trout Unlimited.

The comments are in response to the following documents: INTEGRATED DISCHARGE PERMIT APPLICATION NARRATIVE, BLACK BUTTE COPPER PROJECT, MEAGHER COUNTY, MONTANA. Revision 2. Dec 2017, revised April 2018 (Montana Resources Inc. 2018a); and the Oct 29 2018 Addendum to MPDES Application (Montana Resources Inc. 2018b). My comments also address MT DEQ's notices of deficiencies and responses from Tintina Resources contained in the application narrative.

Response: On March 29, 2019, DEQ issued Public Notice number MT-19-08, requesting comment on DEQ's tentative determination to issue an MPDES permit; MT0031909. DEQ's decisions concerning completeness of an application and any related notices of deficiencies are preliminary steps in the permit development process and DEQ has broad discretion under its rules to determine when a permit application is completed to DEQs satisfaction [ARM 17.30.1322(5)]. DEQ disagrees with the commenter's assertions that DEQ did not have sufficient information on which to proceed to develop a draft permit and fact sheet. Furthermore, in developing a MPDES draft permit, DEQ is not limited to the data or additional information it receives in a permit application.

The comment refers to the permit application. The application was reviewed by DEQ, as required by the MPDES rules, and deemed complete on May 25, 2018. While the permit application was used to develop the MPDES permit, DEQ processing of that information against applicable rules and statutes meant the permit is not exactly as proposed in the permit application, nor did DEQ incorporate all of the actions proposed in the application into the draft permit. The permit conditions were developed as required by statute and rule. Many of the commenters questions and concerns about the permit application are addressed in the permit Fact Sheet. The MPDES rules require DEQ to public notice the draft permit and the permit Fact Sheet. These were the documents open for public comment. The comments submitted by this commenter are not substantive comments regarding the Fact Sheet or DEQ's tentative determination to issue the permit and are not addressed further.

No change is made to the permit in response to this comment.

Commenter 5; Tom Meyers

Comment 36: The commenter submitted a letter with the subject line: *Review of Integrated Discharge Permit Application Narrative, Black Butte Copper Project Meagher County, Montana, Revision -2*.

The following is from the "conclusion" section of the comment letter:

The MPDES permit application relies on a mixing zone in Sheep Creek and Coon Creek to keep total N concentrations less than 0.12 mg/l. However, it relies on three potentially erroneous assumptions discussed in detail above:

The ambient groundwater flow rate could be grossly overestimated. Conductivity was based on one pump test providing a K equal to 200 ft/d and verified by calibrating a model to a groundwater flux that was based on the 200 ft/d conductivity. If conductivity is substantially lower, there will be less groundwater to dilute the effluent. A lower K would also increase the predicted mounding.

The calculation also ignores the groundwater that would be drawn into the bedrock by dewatering. This would be ambient groundwater drawn from the base of the aquifer, so there would be less to dilute the effluent.

The dewatering discharge could be underestimated. A higher discharge, whether temporary or permanent, would increase the effluent to be diluted and increase the total N concentration in the streams.

Response: This commenter addresses the permit application and not DEQ's Fact Sheet or draft permit. See the response to comment 35.

Also, as can be seen in the conclusion shown above, the majority of the comment letter addresses the mixing zone the permittee applied for in the permit application. DEQ denied this mixing zone.

No change is made to the permit in response to this comment.

Commenter 6; Linda Semones

Comments submitted primarily addressed the draft EIS, which are responded to with that document.

Comment 37: …it appears that the water pumped out of the mine during the mining process will need to be treated at a special reverse osmosis plant and then released. This water will hold too many nitrates to meet the stricter water quality standards during the summer months. So it will be held back until the stricter standards are not in effect. This water would be released through underground tunnels below Sheep Creek, and would eventually end up in Sheep Creek itself. The current surface water monitoring site on Sheep Creek is not where the water exits the tunnels at the mine. It is two miles from the discharge point. If there is ever a problem at the reverse osmosis plant, the pollution will be over 2 miles gone before it is detected. At the very least, there should be a required surface water monitoring system at the exit from the mine. Nitrates and metals should be monitored as well as flow and temperature.

Response: The permit requires effluent monitoring for all parameters listed in the comment. Effluent monitoring to show compliance with the limits is conducted prior to discharge into the UIG, not two miles downstream.

No change is made to the permit in response to this comment.

Commenter 7; Nancy Traner

Comment 38: I am a landowner on the Smith River and am strongly opposed to the Tintina Mine because of the potential disastrous effects on the river should any mishap occur during the mining process.

Response: Thank you for your comment. The comment does not discuss any conditions of the discharge permit.

No change is made to the permit in response to this comment.

Attachment A - Surface and Ground Water Temperature Data

Ground Water (MW-4A)			Surface Water (SW-1)		
3/21/2013	4.4	39.9	3/20/2013	0.03	32.1
3/24/2015	4.3	39.7	3/26/2015	4	39.2
3/25/2014	4.4	39.9	3/24/2014	0.6	33.1
5/31/2012	4.7	40.5	5/30/2012	7.2	45.0
6/3/2013	4.7	40.5	6/4/2013	6.9	44.4
6/10/2014	4.5	40.1	6/11/2014	8.1	46.6
6/21/2016	6.8	44.2	6/23/2016	11.6	52.9
6/23/2015	5.6	42.1	6/25/2015	11.5	52.7
8/22/2012	7.3	45.1	8/21/2012	11	51.8
8/27/2013	8.5	47.3	8/27/2013	12.7	54.9
9/11/2014	7.6	45.7	9/21/2015	9	48.2
9/14/2015	8.1	46.6	9/21/2016	7.5	45.5
9/20/2016	7.9	46.2	11/6/2013	0.08	32.1
11/6/2013	7.6	45.7	11/10/2016	2.79	37.0
11/17/2016	6.4	43.5	11/17/2015	0.1	32.2
11/24/2015	7.4	45.3	11/12/2014	0.01	32.0
11/25/2014	7.3	45.1	11/28/2012	0.03	32.1
11/27/2012	7.1	44.8			
	AVG	43.5			41.9
	MIN	39.7			32.0
	MAX	47.3			54.9

Attachment B – Sheep Creek Flow Data

Month	Flow(cfs)	Month	Flow (cfs)
5/24/2011	613	8/21/2014	25.48
8/26/2011	34.36	10/29/2014	20.8
11/2/2011	20.7	3/26/2015	40.99
3/23/2012	30.24	4/29/2015	103.33
5/30/2012	111	5/13/2015	103.3
8/21/2012	15.24	5/27/2015	90.1
11/28/2012	18	6/10/2015	124.18
5/2/2013	21.05	6/25/2015	47.8
5/9/2013	79.38	7/23/2015	24.14
5/17/2013	79.38	8/26/2015	11.1
5/24/2013	124.9	9/21/2015	20.03
6/4/2013	196	10/8/2015	19.46
6/14/2013	104.5	11/17/2015	8.83
6/21/2013	50.99	4/13/2016	63.76
8/27/2013	10.67	4/27/2016	84.2
11/6/2013	21.92	5/11/2016	102.91
4/17/2014	18.91	5/26/2016	150.48
5/5/2014	131.83	6/8/2016	90.43
5/16/2014	135.02	6/23/2016	32.58
5/22/2014	261.24	7/7/2016	17.29
6/6/2014	184.07	8/22/2016	10.15
6/11/2014	115.29	9/21/2016	19.65
7/8/2014	63.69	10/21/2016	22.16

		11/10/2016	21.19					
March	April	May	June	July	August	Sept	Oct	Nov
30.24	18.91	613	196	63.69	34.36	20.03	20.8	20.7
40.99	103.33	111	104.5	24.14	15.24	19.65	19.46	18
	63.76	21.05	50.99	17.29	10.67		22.16	21.92
	84.2	79.38	184.07		25.48			8.83
		79.38	115.29		11.1			21.19
		124.9	47.8		10.15			
		131.83	124.18					
		135.02	47.8					
		261.24						
		103.3						
		90.1						
		102.91						
		150.48						
35.62	**67.55**	**154.12**	**108.83**	**35.04**	**17.83**	**19.84**	**20.81**	**18.13**