STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C. L. "Butch" Otter, Governor
John H. Tippets, Director

December 4, 2017

Mr. Michael Lidgard
US EPA Region 10
Attn: OWW-191
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

RE: FINAL Water Quality Certification Hecla Grouse Creek Mine, NPDES Permit No. ID0026468

Dear Mr. Lidgard:

On September 8, 2017 the Idaho Department of Environmental Quality received the proposed final National Pollutant Discharge Elimination System (NPDES) permit # ID-0026468 for the Hecla Limited's Grouse Creek Unit, located in Custer County, Idaho. The request identified revisions to the NPDES permit based on previous public comments and discussions with US Fish and Wildlife Services and NOAA Fisheries.

Accompanying the revised draft final permit was the request from the Environmental Protection Agency to prepare and issue a final §401 water quality certification (WQC) for the facility. Enclosed, please find the Idaho Department of Environmental Quality's final WQC for the facility.

Please do not hesitate to contact Troy Saffle at 208.528.2650 or troy.saffle@deq.idaho.gov with questions or concerns about this water quality certification.

Thank you.

Sincerely,

Erick Neher
Regional Administrator
Idaho Fall Regional Office

enclosure

c: Loren Moore, DEQ, TRIM reference
Brian Nickel, EPA Region 10 w/enclosure

2017AKF156

Idaho Department of Environmental Quality

Final §401 Water Quality Certification

December 4, 2017

NPDES Permit Number(s): ID-002646-8 Hecla Mining Company, Grouse Creek Unit

Receiving Water Body: Yankee Fork Salmon River and Jordan Creek (T13N, R15E, Sec. 2)

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheets[1], as well as the following list of technical documents:

- Administrative Order on Consent between the US Forest Service, US Environmental Protection Agency (EPA) and Hecla Limited, October 24, 2000;
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Administrative Order on Consent Work Plan Approval with Modifications, May 22, 2003;
- Annual Biomonitoring Reports for Jordan Creek (2005-2016);
- Annual Biomonitoring Reports for Yankee Fork (2005-2016);
- Annual Mercury and Selenium Bioaccumulation Report for the Yankee Fork of the Salmon River (2013-2016);
- Annual Aquatic Biomonitoring Reports for Jordan Creek (2013-2016);
- Monthly Discharge Monitoring Reports for 002 and 003 outfalls, 2002-2017; and
- Technical Memorandum – Comments on Draft NPDES Permit ID0026488 for Hecla Mining Company, Grouse Creek Unit July 10, 2015

DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

[1] The U.S. Environmental Protection Agency (EPA) has issued two Fact Sheets for this permit. The first was issued in June of 2015, and a second, revised Fact Sheet was issued in March of 2016. DEQ has considered both Fact Sheets in connection with this water quality certification, giving precedence to the second, revised Fact Sheet in the event of conflict.

Discharge History

EPA first issued a National Pollutant Discharge Elimination System (NPDES) permit for the Hecla Limited Grouse Creek Unit effective on November 5, 1992, authorizing outfall 002. The 1992 permit was administratively extended and a new permit was issued in 2002, expiring in 2007. The 2007 permit was also administratively extended and contains the current effluent limits for Outfall 002.

Outfall 003 was authorized 2000, by an Administrative Order on Consent. Effluent limits were modified by EPA and DEQ in 2003 and discharge began on May 27, 2003. The limits were modified again in 2006 due to changes in the quality of water to be treated. The 2006 modifications are the current limits for Outfall 003.

Flow Tier Effluent Limits

The NPDES permit allows for different discharge rates of pollutants from each outfall based on the flows in the respective receiving waters. For the Jordan Creek outfall (Outfall 002), two flow tiers are identified, based on historic flow data: 1) Jordan Creek flows less than 30 cubic feet per second (cfs); and, 2) Jordan Creek flows greater than or equal to 30 cfs. Both flow tiers were evaluated at an 8:1 dilution ratio of Jordan Creek to effluent flow. For the Yankee Fork discharge (Outfall 003), three flow tiers are authorized: 1) Yankee Fork flows less than 15 cfs; 2) Yankee Fork flows greater than 15 cfs but less than 45 cfs; and, 3) Yankee Fork flows equal to or greater than 45 cfs, with the exception of WET effluent limits which changes the break point between second and third flow tiers to 80 cfs instead of 45 cfs. These flow tiers allow the facility greater control over water treatment and discharges based on actual in-stream flow conditions, reducing the opportunity of upset or overflow conditions inside the water treatment facility.

Change in Treatment and Technology

In 2012, the Hecla Limited – Grouse Creek Unit (Hecla) rebuilt the existing water treatment plant; modifying the clarification process to a mechanical process inside the plant building. This compares to the clarifying step occurring in external ponds under the old plant designs. Hecla did not change the design capacity of the plant and it remains at 2500 gallons per minute (gpm) - (5.57 cubic feet per second, cfs), the same capacity as originally permitted. The NPDES permit authorizes flows of 2500 gpm (5.57 cfs) at Outfall 002 and from 300 gpm (0.668) up to 900 gpm (2.01 cfs) at Outfall 003.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier I Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).

- Tier II Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier III Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

Hecla discharges the following pollutants of concern, which have proposed effluent limits in the permit, from two separate outfalls located on two different water bodies and assessment units:

Jordan Creek: cadmium, copper, lead, mercury, pH, total suspended solids (TSS), zinc and Whole Effluent Toxicity (WET) (chronic).

Yankee Fork: cadmium, copper, lead, mercury, pH, TSS, zinc, and WET (chronic).

In addition to the pollutants with effluent limits, additional pollutants of concern require monitoring and reporting as part of the permit conditions:

Jordan Creek: aluminum, total ammonia, arsenic, cyanide (as WAD), nitrate + nitrite, selenium, silver, temperature, and WET (acute).

Yankee Fork: aluminum, total ammonia, arsenic, cyanide, nitrate + nitrite, selenium, silver, temperature, and WET (acute).

Receiving Water Body Level of Protection

The Hecla Grouse Creek Unit discharges to two waterbodies: Jordan Creek (a tributary of the Yankee Fork) and the Yankee Fork Salmon River. Each stream and its level of protection are discussed below.

Jordan Creek

The Grouse Creek Project was approved via a US Forest Service Record of Decision (ROD) in 1992. The ROD authorized the diversion of the streams found within the project area, where the tailings impoundment would later be constructed. The authorized diversions included Pinyon Creek. Pinyon Creek was the natural stream flowing out of Pinyon Basin, which contained Pinyon Lake. Subsequent construction permanently dewatered Pinyon Lake and Pinyon Creek. With the construction and operation of the water treatment plant and the use of Outfall 002 beginning in May 1994, Jordan Creek became the receiving water because it was the first stream

encountered by the treated water that ran a short distance down a modified version of the old Pinyon Creek channel. DEQ considers Outfall 002 to discharge into Jordan Creek, rather than Pinyon Creek because of this previously approved construction activity early in the mine's history. Outfall 002 therefore is approved to discharge via a concrete and boulder channel, within the Upper Salmon Subbasin assessment unit (AU) ID17060201SL042_03 (Jordan Creek – source to Unnamed Tributary).

Jordan Creek is undesignated. DEQ presumes undesignated waters in the state will support cold water aquatic life and primary or secondary contact recreation beneficial uses; therefore, undesignated waters are protected for these uses (IDAPA 58.01.02.101.01.a). In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2014 Integrated Report, Jordan Creek is fully supporting its cold water aquatic life and salmonid spawning uses (IDAPA 58.01.02.052.05.a). The recreational use for Jordan Creek is unassessed. The permittee has agreed to assume that Jordan Creek is high quality with respects to contact recreation. As such, DEQ will provide Tier II protection in addition to Tier I protection for the aquatic life uses and contact recreation (IDAPA 58.01.02.051.01; 58.01.02.051.01).

Yankee Fork

The Hecla Grouse Creek Unit also discharges into the Yankee Fork of the Salmon River through Outfall 003, into AU ID17060201SL032_04 (Yankee Fork – source to Jordan Creek) via a multi-port diffuser. The Yankee Fork is designated for cold water aquatic life, salmonid spawning, primary contact recreation, and domestic water supply. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2014 Integrated Report, Yankee Fork is fully supporting its cold water aquatic life, salmonid spawning, primary contact recreation, and domestic water supply uses (IDAPA 58.01.02.052.05.a). As such, DEQ will provide Tier II protection in addition to Tier I for the aquatic life and the contact recreation uses (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier I Protection)

As noted above, a Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the Hecla Grouse Creek Unit permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

High-Quality Waters (Tier II Protection)

Both Jordan Creek and the Yankee Fork are considered high quality waters. As such, the water quality relevant to those uses for which the water is considered high quality must be maintained and protected. Lowering of water quality may be allowed if degradation is reasonably minimized and the lowering of water quality is deemed necessary to accommodate important social or economic development.

For a reissued permit, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the current permit and the water quality that would result from the activity or discharge as proposed in the reissued permit (IDAPA 58.01.02.052.06.a). For a new permit, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit (IDAPA 58.01.02.052.06.a).

Jordan Creek

Outfall 002 discharges to Jordan Creek, which is considered high quality water for cold water aquatic life, salmonid spawning, and contact recreation. Therefore, to determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to the aquatic life and recreational uses of Jordan Creek (IDAPA 58.01.02.052.05). For aquatic life and contact recreation uses the following pollutants are evaluated: aluminum, total ammonia, arsenic, cadmium, copper, cyanide (weak acid dissociable, WAD), lead, mercury, nitrate+nitrite, pH, selenium, silver, TSS, zinc, and WET, acute and chronic.

Effluent limits are set in the draft and existing permit for cadmium, copper, lead, mercury, pH, TSS, zinc, and chronic WET.

Pollutants with no limit, but require monitoring and reporting are aluminum, total ammonia arsenic, cyanide (WAD), nitrate+nitrite, selenium, silver, temperature, and acute WET.

The draft permit for the discharge to Jordan Creek is a reissued permit. For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), while future discharge quality will be based on the draft permit limits (IDAPA 58.01.02.052.06.a.ii).

To determine the draft permit's effect on water quality, comparison is made between the limits proposed in the draft permit and the limits identified in the current permit. Table 1 and Table 2 provide a summary of the current permit limits, the proposed or reissued permit limits, and whether the proposed limits are increased (less stringent), decreased (more stringent) or will not change from the current permit.

For pollutants with no limits in both the 2002 and draft permit which are identified as monitor and report, DEQ considered it more stringent if the monitoring frequency was increased from the current permit to the proposed.

Table 1: Effluent Limits for Outfall 002; Jordan Creek Flows Less than 30 cfs and Dilution Ration Greater than or Equal to 8:1

		Draft Permit		2002 Permit (Current)		Change[1]	
Parameters	**Units**	**AML[2]**	**MDL[3]**	**AML**	**MDL**	**AML**	**MDL**
Pollutants with limits in both the current and draft permit							
Cadmium, total recoverable (TR)	µg/L	1.44	2.72	3.7	7.5	D	D
Copper, TR	µg/L	18.6	41.9	14	35	I	I
Dilution Ratio		8:1 minimum		8:1 minimum		NC	
Lead, TR	µg/L	1.8	4.84	9.5	19	D	D
Mercury, Total	µg/L	0.022	0.057	0.088	0.18	D	D
pH	Standard units	6.5 – 9.0		6.5 – 9.0		NC	
Total Suspended Solids	mg/L	20	30	20	30	NC	NC
Zinc, TR	µg/L	141	304	110	250	I	I
WET, chronic	TUc	3.3	9.2	9.8	16	D	D
Pollutants with no limits in both the 2002 and draft permit							
Aluminum	µg/L	No limits. Monitor and report only		No limits. No monitoring required		D	
Ammonia (total)	mg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Arsenic	µg/L	No limits. Monitor and report only		No limits. No monitoring required		D	
Nitrate + Nitrite	mg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Selenium,	µg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Temperature	°C	No limits. Monitor and report only		No limits. Monitor and report only		D	
Wet, acute	TU_a	No limits. Monitor and report only		No limits. Monitor and report only		NC	
Pollutants with no RPTE[4] in draft permit and limits in 2002 permit							
Cyanide, weak acid dissociable (WAD)	µg/L	No limits. Monitor and report only		21	47	D	
Silver, TR	µg/L	No limits. Monitor and report only		1.8	3.6	D	

[1] Change defined as: I-increased limit (less stringent), D-decreased limit (more stringent), NC-no change from current permit
[2]AML is Average Monthly Limit
[3]MDL is Maximum Daily Limit
[4]RPTE is Reasonable Potential to Exceed

Table 2: Effluent Limits for Outfall 002; Jordan Creek Flows Greater than or Equal 30 cfs and Dilution Ration Greater than or Equal to 8:1

		Draft Permit		2002 Permit (Current)		Change	
Parameters	**Units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
Pollutants with limits in both the 2000 and draft permit							
Cadmium, total recoverable (TR)	µg/L	1.32	2.5	2.2	4.4	D	D
Copper, TR	µg/L	14.9	33.5	5.6	14	I	I
Dilution Ratio		8:1 minimum		8:1 minimum		NC	
Lead, TR	µg/L	0.84	2.28	4.0	8.1	D	D
Mercury, Total	µg/L	0.022	0.057	0.088	0.18	D	D
pH	Standard units	6.5 – 9.0		6.5 – 9.0		NC	
Total Suspended Solids	mg/L	20	30	20	30	NC	NC
Zinc, TR	µg/L	107	230	50	110	I	I
WET, chronic	TUc	3.3	9.2	9.8	16	D	D
Pollutants with no limits in both the 2002 and draft permit							
Aluminum	µg/L	No limits. Monitor and report only		No limits. No monitoring required		D	
Ammonia (total)	mg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Arsenic	µg/L	No limits. Monitor and report only		No limits. No monitoring required		D	
Nitrate + Nitrite	mg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Selenium,	µg/L	No limits. Monitor and report only		No limits. Monitor and report only		D	
Temperature	°C	No limits. Monitor and report only		No limits. Monitor and report only		D	
Wet, acute	TU_a	No limits. Monitor and report only		No limits. Monitor and report only		NC	
Pollutants with no RPTE in draft permit and limits in 2002 permit							
Cyanide, weak acid dissociable (WAD)	µg/L	No limits. Monitor and report only		21	47	D	
Silver, TR	µg/L	No limits. Monitor and report only		0.6	1.1	D	

Pollutants with Limits in the Current and Proposed Permit: cadmium, copper, lead, mercury, pH, TSS, Zinc, WET chronic

Eight permitted pollutants for the Jordan Creek outfall (Outfall 002) had effluent limits in the 2002 permit and have draft limits currently proposed. The draft permit limits in Table 1 and Table 2 for cadmium, lead, mercury, pH, TSS, and chronic WET are the same as or more stringent than, those in the current permit ("NC" or "D" in change column). Therefore, no

adverse change in water quality and no degradation will result from the discharge of these pollutants.

For cadmium, lead, mercury and chronic WET effluent limits have decreased thus there is an expected improvement in water quality, no degradation. For pH and TSS the effluent limits are unchanged, thus no degradation of water quality is expected.

To analyze any potential impacts of the increased limits on water quality, DEQ must first determine whether the resulting degradation of water quality is insignificant (IDAPA 58.01.02.052.08.a). DEQ considers a cumulative decrease in assimilative capacity of more than 10% to be significant, whereas a cumulative decrease that is equal to or less than 10% may be considered insignificant depending upon the size and character of the discharge and the magnitude of its effect on the receiving stream (IDAPA 58.01.02.052.08.a.i).

Calculating Changes in Assimilative Capacity

Changing effluent limits, flow volumes, varying receiving water and effluent hardness and concentration of pollutants all result in changes in assimilative capacity. DEQ used a spreadsheet tool to calculate the decrease in assimilative capacity resulting from the proposed increase in the copper and zinc limits at Outfall 002. This tool accounts for the changes in assimilative capacity under the old limits compared to the proposed increased limits.

The three formulas used to calculate change in assimilative capacity and examples of a loss and gain of assimilative capacity are found in Appendix A.

Table 3 displays the results of the spreadsheet calculations in percent assimilative capacity of Jordan Creek for copper and zinc. The same flow calculations were used in this review as were used to calculate the dilution ratio for the effluent limits. Flows of 16 and 30 cfs and effluent rates which comply with an 8:1 Jordan Creek to effluent dilution ratio were used to calculate the reduction in assimilative capacity.

Table 3: Jordan Creek Reduction in Assimilative Capacity for Copper and Zinc

Jordan Creek flow less than 30 cfs								
		Draft Permit		2002 Permit (Current)		% Change in Assimilative Capacity		Mixing Zone
Parameters	**Units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**	**Assigned**
Copper	µg/L	18.6	41.9	14	35	6.5	6.1	**25%**
Zinc	µg/L	141	304	110	250	3.5	6.2	**25%**
Jordan Creek flow greater than or equal to 30 cfs								
Copper	µg/L	14.9	33.5	5.6	14	7.9	10	**5%**
Zinc	µg/L	107	230	50	110	4.7	10	**8%**
Positive % Change = loss of assimilative capacity								

IDAPA 58.01.02.052.08.a.i. allows a finding of insignificant degradation when the reduction in assimilative capacity is equal to or less than 10%, depending on the size and character of the discharge and the magnitude of its effect on the receiving stream. Based on the results in Table 3, DEQ finds the increased zinc and copper effluent limits will result in insignificant degradation of Jordan Creek. Because the permitted outfall is the only point source in the Jordan Creek watershed, DEQ believes assigning 10% of the assimilative capacity for copper and zinc in

Jordan Creek remains sufficiently protective of Jordan Creek. This use of all the assimilative capacity is supported by historic and on-going biologic monitoring. Starting in 1997, monitoring of the macroinvertebrate and fish communities in Jordan Creek occurs annually. Since 1997, there has been no statistically significant differences in trout biomass. Further, macroinvertebrate taxa diversity, defined as mean number of taxa found in high quality water, between upstream and downstream locations of Outfall 002 continually demonstrated healthy communities. Fish and macroinvertebrate sampling, as well as water chemistry sampling, will continue throughout the permit cycle. This data will be periodically evaluated to ensure aquatic communities remain indicative of a high quality water.

Pollutants with No Limits: aluminum, ammonia, arsenic, cyanide (WAD), nitrate + nitrite, selenium, silver, temperature, WET Acute

Aluminum, ammonia, arsenic, nitrate + nitrite, selenium, temperature, WET (acute) are pollutants of concern which had monitor and report limits from the 2002 permit and have the same requirement proposed in the new permit. When aluminum, ammonia, arsenic, selenium and WET data were analyzed, EPA did not find a Reasonable Potential to Exceed (RPTE) Idaho aquatic life criteria. In the case of arsenic and selenium, the recreation criteria also had no RPTE. Nitrate + Nitrite does not have any aquatic life criteria. Even though those pollutants were found to not have RPTE, they are not excluded from antidegradation review. Grouse Creek is a closed facility and there are no changes proposed in the management and operation of the facility. This continued status at the Grouse Creek Unit suggests there will be no increase in the level of these pollutants. Therefore DEQ concludes there is no change in degradation from the old permit to the new.

The effluent limit for WAD cyanide was removed from the draft permit from both flow tiers compared to the 2002 permit because EPA did not find RPTE for the aquatic life criteria for WAD cyanide. Even though cyanide was found to not have RPTE, it is not excluded from antidegradation review. For pollutants without limits in the draft permit, the potential for degradation is determined by reviewing whether there are any changes in production, treatment, or operation that would cause an increase in the level discharged. From 2009 through 2016, below the outfall, a total of 221 samples results produced a maximum observed cyanide concentration of 6 µg/L. This compares with the chronic water quality criterion of 5.2 µg/L and a concentration of 5.9 µg/L at the end of the authorized mixing zone which is significantly lower than the acute water quality criterion of 22 µg/L. As noted, there is no change in the operation of the facility that would suggest the level of cyanide is likely to increase over the next permit cycle. Therefore, DEQ finds that removing the WAD cyanide limit will not result in degradation. Cyanide monitoring is still required and if found to have a RPTE, limits would be included in future permits.

The effluent limit for silver was removed from both flow tiers compared to the 2002 permit because EPA did not find a RPTE for the aquatic life criteria for silver. According to EPA's RPTE calculation, silver does not require effluent limits because, after dilution, the maximum concentrations at the edge of the mixing zone are less than the acute criterion at the edge of the zone of initial dilution (acute mixing zone); there is no chronic criterion for silver. Even though silver was found to not have RPTE, it is not excluded from antidegradation review. For pollutants without limits in the draft permit, the potential for degradation is determined by reviewing whether there are any changes in production, treatment, or operation that would cause

an increase in the level discharged. The Discharge Monitoring Reports (DMRs) for the last permit cycle demonstrate that silver was detected only once at a concentration of 0.08 µg/L. The criterion for silver is 0.3µg/L. The silver concentration detected is only 27% of the criterion. This single detection represents 0.22% (1/448) of the samples analyzed at both flow tiers. There are no changes in operation at the Grouse Creek Unit that would suggest there will be an increase in the level of silver. Therefore, DEQ finds that removing the silver limit will not result in degradation. In addition, silver will continue to be monitored and if a RPTE is found, limits will be included in future permits.

Yankee Fork

The Yankee Fork is considered high quality for cold water aquatic life, salmonid spawning, and primary contact recreation. As such, the water quality relevant to aquatic life, salmonid spawning, and primary contact recreation uses of the Yankee Fork must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to those uses for which the water is considered high quality (IDAPA 58.01.02.052.05).

As noted above, a reissued permit for an existing discharge is treated differently under the antidegradation policy and implementation provisions in the WQS than a permit for a new discharge. DEQ has determined that, although the Outfall 003 discharge to Yankee fork is not currently under an NPDES permit, it is an existing, rather than a new, discharge.

The WQS, IDAPA 58.01.02.010, define existing and new activity or discharge as follows:

> **Existing Activity or Discharge**. An activity or discharge that has been previously authorized or did not previously require authorization.
>
> **New Activity or Discharge**. An activity or discharge that has not been previously authorized. Existing activities or discharges not currently permitted or licensed will be presumed to be new unless the Director determines to the contrary based on review of available evidence. An activity or discharge that has previously taken place without need for a license or permit is not a new activity or discharge when first licensed or permitted.

This language explains that in order to be existing, the activity or discharge must have been previously authorized or not need authorization. In addition, the second sentence of the "new activity or discharge" definition creates a rebuttable presumption that an existing activity or discharge that is not currently permitted or licensed is a new activity or discharge. This presumption can be overcome based on a review of available evidence.

The Outfall 003 discharge to Yankee Fork is currently authorized by EPA under CERCLA authorities. CERCLA requires remedial actions attain compliance with applicable or relevant and appropriate standards, including water quality criteria established under the Clean Water Act (42 U.S.C. § 9621(d)). Although it is not an NPDES permit, the CERCLA authorization requires the Outfall 003 discharge to meet effluent limitations consistent with criteria developed under section 304 of the Clean Water Act and the Idaho WQS. In addition, the Grouse Creek Unit is

required to conduct effluent and ambient water quality monitoring and submit discharge monitoring reports. See October 24, 2000 Administrative Order on Consent and Scope of Work attached thereto as Appendix 2; 2003 Removal Action Memorandum Grouse Creek Mine Tailings Impoundment Dewatering and Appendix B to the Memorandum. Therefore, the discharge from Outfall 003 is previously authorized and qualifies as an existing discharge. Alternatively, DEQ finds the CERCLA authorization is sufficient to overcome the presumption that a currently unpermitted discharge constitutes a new discharge. Even if it does not amount to a permit or license, the CERCLA authorization for Outfall 003 requires compliance with the CWA, Idaho WQS, and prescribes effluent limits for the discharge as well as water quality monitoring and reporting. Thus, the CERCLA authorization serves essentially the same purpose as a NPDES permit and supports the conclusion that Outfall 003 is an existing discharge.

Accordingly, DEQ will determine whether degradation will occur by calculating the difference in water quality that would result from the discharge as authorized under CERCLA and the water quality that would result from the discharge as proposed in the draft permit. Table 4, Table 5, and Table 6 compare the current limits, the proposed limits, and indicate changes in each limit for each flow tier. These tables do not list the pollutants that do not have effluent limitations under the CERCLA authorization and for which only monitoring and reporting is required under the draft permit—namely, aluminum, total ammonia, arsenic, nitrate + nitrite, silver, temperature, and WET (acute).

Table 4: Effluent Limits for Outfall 003; Yankee Fork Flows Less than 15 cfs

		Draft NPDES Permit		CERCLA Limits (Current)		Change	
Parameters	**Units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
Pollutants with limits in the draft permit							
Cadmium, total recoverable (TR),	µg/L	2.22	4.08	0.7	1.4	I	I
Copper, TR,	µg/L	21.6	39.8	10.4	20.8	I	I
Lead, TR,	µg/L	1.40	4.84	No Limits. Monitor and report only	7.6	D	D
Mercury, Total,	µg/L	0.026	0.053	0.08	0.17	D	D
pH	Standard units	6.5 – 9.0		6.5 – 9.0		NC	
Total Suspended Solids	mg/L	20	30	20	30	NC	NC
Zinc, TR,	µg/L	158	344	114	229	I	I
WET, chronic	TUc	10	20	No Limits. Monitor and report only			
Pollutants with limits under CERCLA , but no RPTE in draft permit							
		Draft NPDES Permit		**CERCLA Limits (Current)**		**Change**	
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
Cyanide, weak acid dissociable (WAD),	µg/L	No Limits. Monitor and report only		36	72	D	
Selenium,	µg/L	No Limits. Monitor and report only		35	70	D	

Table 5: Effluent Limits for Outfall 003; Yankee Fork Flows 15 to less than 45 cfs							
		Draft NPDES Permit		CERCLA Limits (Current)		Change	
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
Pollutants with limits in the draft permit							
Cadmium, total recoverable (TR),	µg/L	2.5	4.59	1.36	4.28	I	I
Copper, TR,	µg/L	21.8	40.3	19	43	I	I
Lead, TR,	µg/L	0.75	2.60	No Limits. Monitor and report only	17	D	D
Mercury, Total	µg/L	0.025	0.050	0.12	0.38	D	D
pH	Standard units	6.5 – 9.0		6.5 – 9.0		NC	
Total Suspended Solids	mg/L	20	30	20	30	NC	NC
Zinc, TR,	µg/L	147	319	119	303	I	I
Effluent Limits for Outfall 003; Yankee Fork Flows 15 to less than 80 cfs							
		Draft NPDES Permit		CERCLA Limits (Current)		Change	
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
WET, chronic	TUc	9.1	18	No Limits. Monitor and report only		D	D
Pollutants with limits in under CERCLA, but no RPTE in draft permit							
Cyanide, weak acid dissociable (WAD),	µg/L	No Limits. Monitor and report only		No Limits. Monitor and report only	166	D	
Selenium	µg/L	No Limits. Monitor and report only		No Limits. Monitor and report only	160	D	

Table 6: Effluent Limits for Outfall 003; Yankee Fork Flows Greater than or Equal to 45 cfs							
		Draft NPDES Permit		CERCLA Limits (Current)		Change	
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
Pollutants with limits in the draft permit							
Cadmium, total recoverable (TR)	µg/L	2.96	5.42	3.2	3.1	I	I
Copper, TR	µg/L	20.8	38.5	8.4	23	I	I
Lead, TR	µg/L	0.96	3.32	No Limits. Monitor and report only	7.6	D	D
Mercury, Total	µg/L	0.035	0.069	0.12	0.17	D	D
pH	Standard Units	6.5 – 9.0		6.5 – 9.0		NC	
Total Suspended Solids	mg/L	20	30	20	30	NC	NC
Zinc, TR	µg/L	167	364	140	261	I	I
Effluent Limits for Outfall 003; Yankee Fork Flows Greater than or Equal to 80 cfs							
		Draft NPDES Permit		CERCLA Limits (Current)		Change	
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**
WET, chronic	TUc	25	51	No Limits. Monitor and report only		D	D
Pollutants with limits in under CERCLA, but no RPTE in draft permit							
Cyanide, weak acid dissociable (WAD),	µg/L	No Limits. Monitor and report only	No Limits. Monitor and report only	No Limits. Monitor and report only	72	D	NC
Selenium	µg/L	No Limits. Monitor and report only	No Limits. Monitor and report only	No Limits. Monitor and report only	70	D	D

Pollutants with Limits in the CERCLA Authorization and Proposed Permit: cadmium, copper, lead, mercury, pH, TSS, WET chronic, zinc

As noted above, for pollutants which are currently limited and will have limits under the permit, the current discharge quality is based on the current CERCLA limits and the future discharge quality is based on the proposed permit limits.

For mercury effluent limits have decreased thus there is an expected improvement in water quality, and no degradation. For pH and TSS effluent limits are unchanged, thus no degradation of water quality is expected.

The proposed permit for the Hecla Grouse Creek Unit includes new average monthly limits for lead in all flow tiers; the previous “Monitor and Report” was replaced with a numeric AML. New WET (chronic) limits are proposed in the reissued permit as well. If new limits are proposed in a reissued permit for pollutants in the existing discharge, the effect on water quality is based upon the current discharge quality and the proposed discharge quality resulting from the new limits. Current discharge quality for pollutants that are not currently limited is based upon

available discharge quality data (IDAPA 58.01.02.052.06.a.i). Future discharge quality is based upon proposed permit limits (IDAPA 58.01.02.052.06.a.ii).

The lead limits in the proposed permit reflect a calculated RPTE based on the observed levels of lead in the ambient water quality samples and observed concentrations actually treated and discharged. This numeric limit ensures lead will be discharged into the Yankee Fork at levels which are less than the observed concentrations previously reported by the facility, resulting in improvement in water quality for lead at Outfall 003.

Since no limits on WET were previously required by the permit, this constitutes an increased level of protection with regard to aquatic toxicity. DEQ's conclusion regarding new WET limits is that they will provide for increased protection of aquatic life and therefore do not result in degradation.

The draft permit proposes to increase the effluent limits for cadmium, copper, and zinc at Outfall 003. To analyze whether these increased limits would cause significant degradation, DEQ used the same spreadsheet tool that was used to evaluate the increased copper and zinc limits for Outfall 002 and followed IDAPA 58.01.02.052.08.a.i. The same flow calculations were used in this review as were used to calculate the dilution ratio for the effluent limits. Flows of 10, 15 and 45 cfs and effluent rates of 300, 500 and 900 gpm were used to calculate the assimilative capacity loss estimations. Any outcome from this calculation which results in a more than 10% decrease in assimilative capacity will indicate significant degradation (IDAPA 58.01.02.052.08.a.i). Table 7 exhibits the change in each pollutant limitation and displays the reduction in percent assimilative capacity of Yankee Fork for cadmium, copper and zinc at certain flow tiers, biological indicators remain healthy.

No significant degradation occurs in the Yankee Fork for any increased limit at any flow tier at the authorized mixing zone sizes. Although Outfall 003 uses nearly all the assimilative capacity under the 10% threshold for cadmium, copper and zinc at certain flow tiers, biological indicators remain healthy.

Similar to Outfall 002, DEQ believes assigning all the usable assimilative capacity up to the 10% significance threshold to the proposed limits is consistent with protecting the Yankee Fork and still assigning limits which protect the Yankee Fork's beneficial uses. Aquatic monitoring began in 2001, prior to discharge in May 2003. The data from this monitoring indicate habitat and macroinvertebrate conditions which are evident only in high quality waters. Beginning in 2007, DEQ's River Macroinvertebrate Index (RMI) was calculated up- and downstream of Outfall 003. Both sites always are calculated as "Good" with the RMI, indicating water quality consistent with Idaho's least impacted reference sites.

Fish tissue sampling also began in 2001, prior to discharge in 2003. Multiple species and ages of fish are sampled (whole-body) for mercury and selenium bioaccumulation. For mercury, no long-term trend in whole body mercury concentration was observed below Outfall 003, while an increasing trend was observed above the outfall. For selenium, median concentrations below the outfall were higher than those above; however this condition was observed and reported prior to discharge.

Aquatic population monitoring, including selenium and mercury bioaccumulation in fish and water chemistry will continue through the life of the new permit. This data will periodically be

evaluated to ensure fish and macroinvertebrate populations are consistent with those found in other high quality waters.

Table 7: Yankee Fork Reduction in Assimilative Capacity for Cadmium, Copper and Zinc

		Draft Permit		CERCLA Limits (Current)		% Change in Assimilative Capacity		Mixing Zone
Yankee Fork Flow less than 15 cfs								
Parameters	**units**	**AML**	**MDL**	**AML**	**MDL**	**AML**	**MDL**	**Assigned**
Cadmium	µg/L	2.22	4.08	0.7	1.4	9.3	8.5	**9%**
Copper	µg/L	21.6	39.8	10.4	20.8	9.1	9.7	**13%**
Zinc	µg/L	158	344	114	229	3.7	9.6	**23%**
Yankee Fork Flow greater than or equal to 15 and less than 45 cfs								
Cadmium	µg/L	2.5	4.59	1.36	4.28	9.8	1.5	**18%**
Copper	µg/L	21.8	40.3	19	43	3.6	-2.2	**25%**
Zinc	µg/L	147	319	119	303	2.7	1.6	**25%**
Yankee Fork Flow equal to or greater than 45 cfs								
Cadmium	µg/L	2.96	5.42	3.2	3.1	-1.7	9.6	**19%**
Copper	µg/L	20.8	38.5	8.4	23	9.5	7.4	**13%**
Zinc	µg/L	167	364	140	261	2.2	8.3	**25%**
Negative % reduction = gain in assimilative capacity.								

Pollutants with no limits: aluminum, total ammonia, arsenic, cyanide, nitrate + nitrite, selenium, silver, temperature, and WET (acute)

Tables 4, 5 and 6 do not list the pollutants that do not have effluent limitations under the CERCLA authorization and for which only monitoring and reporting is required under the draft permit—namely, aluminum, total ammonia, arsenic, nitrate + nitrite, silver, temperature, and WET (acute). There will be no degradation because the required sampling is considered a "decreased" limit and will provide the baseline water quality for these pollutants of concern for future RPTE and loss of assimilative capacity calculations

The CERCLA effluent limits for WAD cyanide and selenium were removed from all three flow tiers of the draft permit because they did not demonstrate a RPTE aquatic life and recreation criteria. Specifically, EPA's RPTE calculation for WAD cyanide and selenium demonstrates dilution of maximum concentrations which are less than the acute criterion at the edge of the zone of initial dilution (acute mixing zone) and less than the chronic criterion at the edge of the 25% chronic mixing zone. The lack of RPTE does not exclude WAD cyanide or selenium from the antidegradation review. A determination of degradation for pollutants without limits is determined by reviewing whether there are any changes in production, treatment or operation that would cause an increase in the level discharged. Levels of both pollutants will decrease from previous levels as a result of Hecla's reduction of Outfall 003 flow from 1683 gpm maximum to a 900 gpm. This ensures in-stream concentrations of cyanide and selenium will decrease, and thus no degradation is expected. Both pollutants will continue to be monitored and reported monthly.

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes mixing zones for Jordan Creek and the Yankee Fork, as identified in Table 8. Hecla has long monitored the water chemistry, toxicity, fish communities and aquatic populations in Jordan Creek and the Yankee Fork. Existing data demonstrates that the authorized mixing zones are protective of cold water aquatic life and salmonid spawning uses in Jordan Creek and the Yankee Fork. The NPDES permit will contain effluent limits for several metals, each of which will have a mixing zone that is 25% of the low flow volume or less depending on the analysis. Thus, it is anticipated that the discharge plume will have a small region where standards for these metals can be exceeded.

The draft permit also specifies mixing zones at Outfalls 002 and 003 for chronic WET. WET limits are included to assure the receiving waters comply with IDAPA 58.01.02.200.02, which requires surface waters to be free from toxic substances in concentrations that impair beneficial uses of the receiving water. Historical bioassessment studies show a healthy aquatic and biological community in the receiving waters. These studies support the continued use of a 100% mixing zone for WET. However, the WQS also provide that mixing zones should be no larger than necessary and DEQ has determined that WET limits resulting from smaller mixing zones are achievable and are therefore appropriate given the siting, technological, and managerial options available to Hecla. Therefore, DEQ is reducing the size of the previously authorized mixing zone to 50% at Outfall 002 and 75% at Outfall 003 in this permit cycle. DEQ has determined that these mixing zone sizes, albeit larger than 25%, are as small as practicable given siting, technological, and managerial options available to Hecla.

Table 8. Authorized mixing zones for Jordan Creek and Yankee Fork, by parameter and flow tier

Jordan Creek Authorized Mixing Zones		
Parameters	**Jordan Creek Flow less than 30 cfs**	**Jordan Creek Flow greater than or equal to 30 cfs**
Cadmium	25%	25%
Copper	25%	5%
Lead	25%	25%
Silver	25%	25%
Zinc	25%	8%
Ammonia	25%	25%
Arsenic	25%	25%
Cyanide	25%	25%
Mercury	25%	25%
Selenium	25%	25%
WET	50%	50%
Nitrate-Nitrite	25%	25%

Yankee Fork Authorized Mixing Zones			
Parameters	**Yankee Fork Flow less than 15 cfs**	**Yankee Fork Flow greater than or equal to 15 and less than 45 cfs**	**Yankee Fork Flow greater than 45 cfs**
Cadmium	9%	18%	19%
Copper	13%	25%	13%
Lead	25%	25%	25%
Silver	25%	25%	25%
Zinc	23%	25%	25%
Ammonia	25%	25%	25%
Arsenic	25%	25%	25%
Cyanide	25%	25%	25%
Mercury	25%	25%	25%
Selenium	25%	25%	25%
Yankee Fork Authorized Mixing Zones			
Parameters	**Yankee Fork Flow less than 15 cfs**	**Yankee Fork Flow greater than or equal to 15 and less than 80 cfs**	**Yankee Fork Flow greater than 80 cfs**
WET	75%	75%	75%

Other Conditions

1. Silver, WAD cyanide, and selenium shall be monitored monthly, at both outfalls.
2. This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities - including without limitation, any modifications of the permit to reflect new or modified Total Maximum Daily Loads, wasteload allocations, site-specific criteria, variances, or other new information - shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.
3. The permittee shall conduct biologic monitoring in Jordan Creek and Yankee Fork on the following schedule:
    a. Macroinvertebrate monitoring shall be conducted annually, consistent with Idaho's Beneficial Use Reconnaissance Project protocols, as outlined in the current "Beneficial Use Reconnaissance Program Field Manuals for Streams" http://www.deq.idaho.gov/media/60176695/burp-field-manual-streams.pdf
    b. Biomonitoring for fish, and an associated analysis, using electrofishing techniques, must be done once every five years, consistent with the current "Beneficial Use Reconnaissance Program Field Manuals for Streams" found at the link above. Third party data available (e.g. US Forest Service of Idaho Department of Fish and Game), which are less than 5 years old, would meet all of the requirements of the permit and may be substituted for the collection period.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Troy Saffle, Idaho Falls Regional Office, at 208.528.2650 or troy.saffle@deq.idaho.gov.

Erick Neher
Regional Administrator
Idaho Falls Regional Office

Appendix A: Change in Assimilative Capacity Formulas and Examples

Changes in assimilative capacity are calculated by comparing the current quality of the receiving water to the future quality of the receiving water after the change in amount of pollutant is fully mixed into the waterbody. DEQ proposed guidance on calculating this change; the guidance is not yet final. However, the arithmetic related to these calculations remains unchanged. Equations 1, 2 and 3 express effects on water quality, the necessary mixing equation and loading rates:

$$C_p - C_c = \Delta C$$ Equation 1. Effect on water quality.

where

C_p = proposed downstream water quality, after mixing
C_c = current downstream water quality, after mixing
ΔC = change in downstream water quality, after mixing

$$C = \frac{LR_{up} + LR_{dis}}{Q_{up} + Q_{dis}}$$ Equation 2. Mixing equation for effect of discharges.

where

C = concentration in the receiving water body resulting from discharge after full mixing, generally downstream

LR_{up} = loading rate of receiving water body pollutant, upstream of the discharge

LR_{dis} = loading rate of discharge pollutant

Q_{up} = flow of receiving water body, upstream of the discharge

Q_{dis} = flow of discharge

Loading rates are calculated as the product of flow and concentration, as shown in Equation 3.

$LR_{up} = Q_{up}$ x C_{up} and

$LR_{dis} = Q_{dis}$ x C_{dis} Equation 3. Loading rates.

Example of Loss of Assimilative Capacity

The results of equations 1,2 and 3 are further compared to the ambient concentration and the appropriate criterion to calculate the percentage loss of assimilative capacity:

$$\Delta C = \frac{LR_{up} + LR_{dis}}{Q_{up} + Q_{dis}} \textit{ minus- } \frac{LR_{up} + LR_{dis}}{Q_{up} + Q_{dis}}$$

Draft limit *Old limit*

$$\textit{\% Reduction in Assimilative Capacity} = \frac{\Delta C}{\textit{criterion} - \textit{ambient}}$$

Example #1: Jordan Creek (002), <30cfs, Copper AML

$$\Delta C = 0.5 \frac{\mu g}{L} = \frac{\left(16\ cfs \times 2.11 \frac{\mu g}{L}\right) + \left(2.01\ cfs \times 18.6 \frac{\mu g}{L}\right)}{(16\ cfs + 2.01\ cfs)} - \frac{\left(16\ cfs \times 2.11 \frac{\mu g}{L}\right) + \left(2.01\ cfs \times 14 \frac{\mu g}{L}\right)}{(16\ cfs + 2.01\ cfs)}$$

$$\%\ Reduction\ in\ Assimilative\ Capacity = \frac{0.5 \frac{\mu g}{L}}{10.01 \frac{\mu g}{L} - 2.11 \frac{\mu g}{L}} = 6.5\%$$

Example #2: Jordan Creek (002), >30cfs, Copper AML

$$\Delta C = 1.03 \frac{\mu g}{L} = \frac{\left(30\ cfs \times 2.11 \frac{\mu g}{L}\right) + \left(3.75\ cfs \times 14.9 \frac{\mu g}{L}\right)}{(30\ cfs + 3.75\ cfs)} - \frac{\left(30\ cfs \times 2.11 \frac{\mu g}{L}\right) + \left(3.75\ cfs \times 5.6 \frac{\mu g}{L}\right)}{(30\ cfs + 3.75\ cfs)}$$

$$\%\ Reduction\ in\ Assimilative\ Capacity = \frac{1.03 \frac{\mu g}{L}}{15.21 \frac{\mu g}{L} - 2.11 \frac{\mu g}{L}} = 7.9\%$$