Revised Fact Sheet

Public Comment Start Date: March 17, 2016
Public Comment Expiration Date: April 18, 2016

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Proposed Reissuance of a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

Hecla Mining Company
Grouse Creek Unit

EPA Proposes To Reissue NPDES Permit
EPA proposes to reissue an NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the mine site to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

401 Certification
EPA is requesting that the Idaho Department of Environmental Quality certify the NPDES permit for this facility, under section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Regional Administrator
Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, ID 83402
(208) 528-2650

(800) 232-4635

Public Comment
Pursuant to 40 CFR 124.14(c), at this time, the EPA is only accepting comments on aspects of the draft permit that are different from those in the draft permit that was issued for public comment on June 11, 2015. These are as follows:

- The latitude and longitude of outfalls 002 and 003 have been corrected.
- Effluent limits for flow and whole effluent toxicity (WET) have been changed for outfall 002.
- Effluent limits for outfall 002, for Jordan Creek flows greater than or equal to 30 CFS, have been changed for cadmium, copper, cyanide, lead, mercury, and zinc.
- The permit now proposes effluent limits for WET for outfall 003.
- The effluent monitoring frequencies for outfall 002, for copper, weak acid dissociable cyanide and zinc have been changed to monthly.
- The effluent monitoring frequencies for outfall 003, for copper, mercury, TSS, and zinc have been changed to monthly.
- The effluent monitoring frequency for aluminum has been changed to four times per year for outfalls 002 and 003.
- The effluent monitoring frequency for temperature has been changed to continuous for outfalls 002 and 003.
- The effluent monitoring frequency for chronic WET has been changed to four times per year for outfalls 002 and 003.
- Footnote #1 to Table 1, regarding flow monitoring in Jordan Creek, has been rewritten as follows: "The reported flow in Jordan Creek must be representative of flow directly upstream of outfall 002."
- Monitoring of effluents and receiving waters for hardness now specifies "hardness, total as $CaCO_3$" in units of mg/L.
- The permit now requires effluent and receiving water monitoring for conductivity and dissolved organic carbon.
- The permit now states that, if screening for the most sensitive species for chronic WET testing is inconclusive, the permittee must use *Pimephales promelas* for subsequent tests.
- The permit now states that receiving water monitoring shall begin on the first scheduled sampling event after the effective date of the permit.
- The receiving water sampling schedule for parameters other than temperature has been changed to require sampling four times per year, in April, June, August and October.
- The draft permit now proposes continuous monitoring of the receiving waters for temperature, from May 1st through October 31st each year.
- Downstream receiving water monitoring requirements are now contingent upon a discharge from the corresponding outfall.
- The due date for the annual water quality monitoring report has been changed from January 31st to March 31st.
- The deadline for revising the Quality Assurance Plan (QAP) has been changed from 90 days to 120 days after the effective date of the final permit.
- The due date for the annual review of the BMP plan has been changed from January 20th

to March 31st.

- The permit now requires DMRs and other reports to be submitted electronically using NetDMR by December 21, 2016.
- The definition of "grab sample" has been changed to be identical to the definition in the instructions for EPA Form 3510-2C (revised August 1990).
- The definition of "minimum level" has been changed to be identical to the definition in the sufficiently sensitive methods final rule (79 FR 49001).
- The EPA has added a definition of "composite sample" to the permit.
- The permit now includes requirements for biological monitoring of Jordan Creek and Yankee Fork Creek.
- The permit no longer includes requirements to monitor for methylmercury in fish tissue in Yankee Fork Creek.

Persons wishing to comment on the tentative determinations contained in the draft permit may do so in writing to the above address or by e-mail to "Nickel.Brian@epa.gov" within 30 days of the date of this public notice. Comments must be received within the 30 day period to be considered in the formulation of final determinations regarding the applications. All comments should include the name, address and telephone number of the commenter and a concise statement of the exact basis of any comment and the relevant facts upon which it is based. All written comments and requests should be submitted to the EPA at the above address to the attention of the Director, Office of Water and Watersheds.

Documents are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101
(206) 553-6251 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, ID 83402
(208) 528-2650
(800) 232-4635

U.S. Environmental Protection Agency
Idaho Operations Office
950 West Bannock Street Suite 900
Boise, ID 83702
208-378-5746

Stanley Community Library
240 Niece Avenue
Stanley, ID 83278
208-774-2470

Challis Public Library
501 6th Street
Challis, ID 83226
208-879-4267

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
GCU	Grouse Creek Unit
IDEQ	Idaho Department of Environmental Quality
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OW	Office of Water
O&M	Operations and maintenance
QAP	Quality assurance plan

RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

I. Applicant

This fact sheet provides information on the draft NPDES permit for the following entity:

Hecla Mining Company, Grouse Creek Unit (GCU)
NPDES Permit No.: ID0026468

Mailing Address:
P.O. Box 647
Challis, Idaho 83226

Physical Location:
See Appendix A

Contact:
Brant Tritthart, Site Manager

II. Scope of Reopened Public Comment Period

Federal regulations state that comments filed during a reopened comment period shall be limited to the substantial new questions that caused its reopening, and that the public notice under 40 CFR 124.10 shall define the scope of the reopening (40 CFR 124.14). As stated in the public notice, the EPA is only accepting comments on permit conditions that are different from those proposed in the draft permit that was issued for public review and comment on June 11, 2015.

The EPA is making significant changes to the draft permit as it was proposed in June 2015. These changes result from comments made during the initial public comment period and a revised draft Clean Water Act (CWA) Section 401 certification prepared by the Idaho Department of Environmental Quality (IDEQ). To allow the public an opportunity to comment on all of these changes, the EPA has decided to reopen the public comment period to accept comments on these specific changes. The changed conditions are as follows:

- The latitude and longitude of outfalls 002 and 003 have been corrected.
- Effluent limits for flow and whole effluent toxicity (WET) have been changed for outfall 002.
- Effluent limits for outfall 002, for Jordan Creek flows greater than or equal to 30 CFS, have been changed for cadmium, copper, cyanide, lead, mercury, and zinc.
- The permit now proposes effluent limits for WET for outfall 003.
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- The effluent monitoring frequency for temperature has been changed to continuous for outfalls 002 and 003.

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- The draft permit now proposes continuous monitoring of the receiving waters for temperature, from May 1st through September 30th each year.
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- The deadline for revising the Quality Assurance Plan (QAP) has been changed from 90 days to 120 days.
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- The definition of "minimum level" has been changed to be identical to the definition in the sufficiently sensitive methods final rule (79 FR 49001).
- The EPA has added a definition of "composite sample" to the permit.
- The permit now includes requirements for biological monitoring of Jordan Creek and Yankee Fork Creek.
- The permit no longer includes requirements to monitor for methylmercury in fish tissue in Yankee Fork Creek.

III. Facility Information

In general, facility information is provided in the fact sheet for the initial public comment period dated June 11, 2015. A map of the treatment plant and discharge location is provided in Appendix A.

IV. Outfall Description

Until 2008, discharges from outfall 002 had been authorized under the previous NPDES permit, and discharges from outfall 003 had been authorized under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as "Superfund"), in order to dewater the tailings impoundment.

Since 2008, treatment has been required to meet effluent limits established for outfall 003 under the CERCLA discharge authorization. Due to the inability to separate the tailings impoundment water from other site waters in the site's single treatment plant, the EPA authorized discharges from both outfall 002 and 003 under CERCLA, and the sources and treatment of wastewater for outfalls 002 and 003 have been the same.

A. Outfall 002

The facility is permitted under the previous NPDES permit to discharge wastewater through outfall 002, which is the dewatered Pinyon Creek channel, to Jordan Creek. Outfall 002 discharges at a point in Jordan Creek approximately 3.2 miles upstream of its confluence with Yankee Fork Creek. A map of the outfall location is provided in Appendix A.

B. Outfall 003

The most recent permit application requests an authorization to discharge from Outfall 003, to Yankee Fork Creek. The outfall is located near the Yankee Fork Gold Dredge and downstream from Jordan Creek's confluence with Yankee Fork Creek. A map of the outfall location is provided in Appendix A.

V. Facility Background

A. Permit Background

EPA first issued a National Pollutant Discharge Elimination System (NPDES) permit for the GCU effective on November 5, 1992. That permit expired on November 5, 1997. Because Hecla submitted a timely application for renewal, the 1992 permit was administratively extended and remained fully effective and enforceable until the permit was reissued in 2002. The 2002 permit expired on February 12, 2007 but was administratively extended because Hecla submitted a timely and complete application for renewal, which EPA received on August 14, 2006. The EPA issued a draft permit for public comment on June 11, 2015, and the public comment period closed on July 13, 2015.

Stormwater run-off from most areas of the mine site (e.g., run-off from on-site roads, mined areas, and other disturbed areas) flow over or around the reclaimed impoundment and are permitted under the Multi-Sector Stormwater General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP). Stormwater is controlled through the use of best management practices (BMPs). Stormwater run-off that is not routed through Outfalls 002 or 003 is permitted under the Multi-Sector Stormwater General Permit (tracking number IDR05C429).

VI. Receiving Water

In general, the receiving waters, including their low flow conditions, water quality standards, and beneficial use support status, are described in the fact sheet dated June 11, 2015.

A. Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. The antidegradation review addresses discharges from outfalls 002 and 003. See Appendix C for the State's draft 401 water quality certification.

During the initial public comment period, the EPA received comments questioning whether outfall 003 should be considered an existing discharge under Idaho's antidegradation policy. In its revised draft 401 certification, the State of Idaho has explained its finding that outfall 003 is an existing discharge.

The EPA has reviewed this antidegradation review, including the State's finding that outfall 003 is an existing discharge, and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review can be submitted to the IDEQ as set forth above (see State Certification).

VII. Effluent Limitations

A. Basis for Effluent Limitations

In general, the Clean Water Act (Act) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits.

Technology-based Effluent Limitations

Technology-based limits are set according to the level of treatment that is achievable using available technology. Technology-based effluent limits represent the minimum level of control that must be imposed in an NPDES permit (40 CFR 125.3(a)).

EPA sets technology-based limits for different types of sources based on the effluent quality that is achievable using available technology. In the context of an individual permit action, the Agency evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the technology-based effluent limits are not adequate to meet water quality standards, EPA must develop more stringent water quality-based limits (Clean Water Act Section 301(b)(1)(C), 40 CFR 122.44(d)). Water quality-based limits are derived from and ensure compliance with the Idaho water quality standards in the receiving waters.

The proposed permit includes technology-based limits for total suspended solids (TSS). No changes are proposed to the technology-based effluent limits that were proposed in the June 2015 draft permit. The basis for the technology-based effluent limits is explained in Appendix B to the Fact Sheet dated June 11, 2015.

Water Quality-based Effluent Limitations

The draft permit proposes water quality-based effluent limits for cadmium, copper, lead, mercury, pH, zinc, and whole effluent toxicity for both outfalls. The permit also proposes water quality-based effluent limits for cyanide for outfall 002. The bases for the proposed water quality-based effluent limits in the revised draft permit are provided in Appendix B to this fact sheet.

For both outfalls, tiered limits were developed because of the variability of the effluent and receiving water flows. Two sets of limits were developed for outfall 002, and three sets of limits were developed for outfall 003.

Limits were established for WET based on state water quality standards that require surface waters to be free from toxic substances in concentrations that impair designated or existing beneficial uses of the receiving water (IDAPA 58.01.02.200.02). This narrative criterion was interpreted using recommendations in the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD), section 2.3.3.

The conditions in the draft permit are based on non-operating conditions. If Hecla decides to reopen the mine, they will need to apply for a new permit. The effluent limits in the draft permit are summarized in Tables 1 and 2, below.

Effluent limits that are different from those proposed in the June 2015 draft permit are shown in bold, italic type. The EPA is specifically requesting comments on the changed effluent limits.

Hecla stated in comments on the June 2015 draft permit that the design capacity of the water treatment plant is 2,500 GPM (5.57 CFS), not 900 GPM (2.01 CFS) as stated in the June 2015 fact sheet at Page 10. The maximum daily flow limit for outfall 002 has been changed to be consistent with the correct design capacity of the treatment plant. This change to the effluent flow limit resulted in several changes to the water quality-based effluent limits for outfall 002.

Table 1: Effluent Limits for Outfall 002

Parameter and Units	Revised Draft Permit				2002 Permit			
	Jordan Creek Flow < 30 CFS		Jordan Creek Flow ≥ 30 CFS		Jordan Creek Flow < 30 CFS		Jordan Creek Flow ≥ 30 CFS	
	Average Monthly Limit	Max. Daily Limit	Average Monthly Limit	Max. Daily Limit	Average Monthly Limit	Max. Daily Limit	Average Monthly Limit	Max. Daily Limit
Effluent Flow, CFS	—	***5.57***	—	***5.57***	No limits. Monitor and report only.			
Cadmium, total recoverable (TR), µg/L	1.44	2.72	***1.32***	***2.50***	3.7	7.5	2.2	4.4
Copper, TR, µg/L	18.6	41.9	***14.9***	***33.5***	14	35	5.6	14
Cyanide, weak acid dissociable (WAD), µg/L	7.47	21.3	***7.47***	***21.3***	21	47	21	47
Dilution Ratio	8:1 (minimum)				8:1 (minimum)			
Lead, TR, µg/L	1.80	4.84	***0.84***	***2.28***	9.5	19	4.0	8.1
Mercury, Total, µg/L	0.022	0.057	***0.022***	***0.057***	0.088	0.18	0.088	0.18
pH, standard units	6.5 – 9.0				6.5 – 9.0			
Selenium, µg/L	No limits. Monitor and report only.				No limits. Monitor and report only.			
Silver, TR	No limits. Monitor and report only.				1.8	3.6	0.60	1.1
TSS, mg/L	20	30	20	30	20	30	20	30
Zinc, TR, µg/L	141	304	***107***	***230***	110	250	50	110
WET, chronic, TUc	***3.3***	***9.2***	***3.3***	***9.2***	9.8	16	9.8	16

Table 2: Effluent Limits for Outfall 003						
Parameter and Units	**Yankee Fork Creek Flow < 15 CFS**		**Yankee Fork Creek Flow ≥ 15 and < 45 CFS**		**Yankee Fork Creek Flow ≥ 45 CFS**	
	Average Monthly Limit	Max. Daily Limit	Average Monthly Limit	Max. Daily Limit	Average Monthly Limit	Max. Daily Limit
Flow (CFS)	—	0.668	—	1.11	—	2.01
Cadmium, TR, µg/L	2.22	4.08	2.50	4.59	2.96	5.42
Copper, TR, µg/L	21.6	39.8	21.8	40.3	20.8	38.5
Lead, TR, µg/L	1.40	4.84	0.75	2.60	0.96	3.32
Mercury, total, µg/L	0.026	0.053	0.025	0.050	0.035	0.069
pH, standard units	6.5 – 9.0 at all times					
TSS	20	30	20	30	20	30
Zinc, TR, µg/L	158	344	147	319	167	364
WET, chronic, TUc	***10***	***20***	***9.1***	***18***	***15***	***29***

B. Anti-backsliding

Statutory Prohibitions on Backsliding

Section 402(o) of the Clean Water Act (CWA) generally prohibits "backsliding" in NPDES permits but provides exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)). In this case, the effluent limits being revised are water quality-based effluent limits.

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). In accordance with the *U.S. EPA NPDES Permit Writers' Manual* (EPA-833-K-10-001), EPA generally views the 402(o)(2) exceptions as independent of the requirements of 303(d)(4). Therefore, it may be appropriate to relax effluent limits as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied. EPA believes that the replacement of the fecal coliform effluent limits with E. coli limits is compliant with Section 303(d)(4) of the CWA.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

In general, the effluent limits for outfall 002 in the draft permit are as stringent as or more stringent than those in the 2002 permit. Exceptions are explained below.

The prior permit did not authorize a discharge from outfall 003, therefore, anti-backsliding requirements do not apply to any of the proposed effluent limits for outfall

003. However, IDEQ has determined that the discharge from outfall 003 is consistent with the State of Idaho's antidegradation policy.

Less-Stringent Effluent Limits for Copper and Zinc for Outfall 002

When the EPA re-calculated effluent limits for copper and zinc based on current water quality criteria, mixing zones authorized by the State of Idaho, and recent effluent variability, the resulting limits were less stringent than those in the prior permit.

One of the exceptions to the general prohibition on less-stringent effluent limits is that water quality-based effluent limits may be revised if the revised effluent limits are subject to and consistent with the State's antidegradation policy (CWA Section 303(d)(4)(B)). The State of Idaho has determined that the revised effluent limits for copper and zinc are consistent with its antidegradation policy. Because the revised limits ensure compliance with water quality criteria and with the State's antidegradation policy, the revised limits ensure compliance with Idaho's water quality standards and therefore with Section 402(o)(3) of the CWA.

VIII. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the Act and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits.

Tables 3 and 4, below, present the effluent monitoring requirements for the Grouse Creek Unit in the draft permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Monitoring requirements that are different from those proposed in the June 2015 draft permit are shown in bold, italic type. The EPA is specifically requesting comments on the changed monitoring requirements.

Table 3: Effluent Monitoring Requirements – Outfall 002			
Parameter	**Unit**	**Sample Frequency**	**Sample Type**
Effluent Flow	mgd	Continuous	Recording
Jordan Creek Flow	CFS	Daily	Recording
Acute Whole Effluent Toxicity	TU_a	Annual	24-hour composite
Aluminum	µg/L	***4x/year***	Grab
Ammonia	mg/L	***4x/year***	Grab
Arsenic	µg/L	***4x/year***	Grab
Cadmium, total recoverable (TR)	µg/L	Monthly	Grab
Chronic WET	TU_c	***4x/year***	24-hour composite
Conductivity	***µmhos/cm***	***Monthly***	***Grab***
Copper, TR	µg/L	***Monthly***	Grab
Cyanide, weak acid dissociable (WAD)	µg/L	***Monthly***	Grab
Dissolved organic carbon	***mg/L***	***Monthly***	***Grab***
Floating, suspended or submerged matter	N/A	Monthly	Visual
Hardness, total as $CaCO_3$	mg/L	Monthly	Grab
Lead, TR	µg/L	Monthly	Grab
Mercury, total	µg/L	Monthly	Grab
Nitrate + Nitrite	mg/L	***4x/year***	Grab
pH	s.u.	Daily	Grab
Selenium, TR	µg/L	***4x/year***	Grab
Silver, TR	µg/L	***4x/year***	Grab
Temperature	ºC	***Continuous***	***Recording***
TSS	µg/L	Twice Per Month	Grab
Zinc, TR	µg/L	***Monthly***	Grab

Table 4: Effluent Monitoring Requirements – Outfall 003			
Parameter	**Unit**	**Sample Frequency**	**Sample Type**
Effluent Flow	mgd	Continuous	Recording
Yankee Fork Flow	CFS	Daily	Recording
Acute WET	TU_a	Annual	24-hour composite
Aluminum	µg/L	***4x/year***	Grab
Ammonia	mg/L	***4x/year***	Grab
Arsenic	µg/L	***4x/year***	Grab
Cadmium, total recoverable (TR)	µg/L	Monthly	Grab
Chronic WET	TU_c	***4x/year***	24-hour composite
Conductivity	***µmhos/cm***	***Monthly***	***Grab***
Copper, TR	µg/L	***Monthly***	Grab
Cyanide, weak acid dissociable (WAD)	µg/L	Monthly	Grab
Dissolved organic carbon	***mg/L***	***Monthly***	***Grab***
Floating, suspended or submerged matter	N/A	Monthly	Visual
Hardness, total as $CaCO_3$	mg/L	Monthly	Grab
Lead, TR	µg/L	Monthly	Grab
Mercury, total	µg/L	***Monthly***	Grab
Nitrate + Nitrite	mg/L	***4x/year***	Grab

Table 4: Effluent Monitoring Requirements – Outfall 003			
Parameter	**Unit**	**Sample Frequency**	**Sample Type**
pH	s.u.	Daily	Grab
Selenium, TR	µg/L	***4x/year***	Grab
Silver, TR	µg/L	***4x/year***	Grab
Temperature	ºC	***Continuous***	***Recording***
TSS	µg/L	***Monthly***	Grab
Zinc, TR	µg/L	***Monthly***	Grab
Yankee Fork Flow	CFS	Daily	Recording

Effluent Monitoring Changes from the June 2015 Draft Permit

Monitoring Frequency for Copper, Cyanide, Mercury, Total Suspended Solids, and Zinc

Hecla requested in its comments on the June 2105 draft permit that the monitoring frequencies for copper, cyanide, TSS and zinc be changed to once per month.

To determine if a monitoring frequency of once per month is appropriate for these parameters, the EPA followed the recommendations of the *Interim Guidance for Performance - Based Reductions of NPDES Permit Monitoring Frequencies* (Monitoring Reduction Guidance) (EPA 1996). This guidance makes recommendations for reductions in monitoring frequency based on the baseline monitoring frequency in the prior NPDES permit and the ratio of the average discharge relative to the average monthly limits.

The monitoring frequencies for copper, cyanide, TSS and zinc in the 2002 permit were weekly. The Monitoring Reduction Guidance states that the monitoring frequency could be reduced to be as infrequently as once every two months if the ratio of the long term average discharge to the average monthly limit is less than 25%. If the ratio is between 25% and 50%, the Monitoring Reduction Guidance states that the monitoring frequency could be reduced to twice per month.

The ratios of the long term average discharges to the average monthly limits for copper, cyanide, mercury, TSS and zinc are shown in Table 5, below.

With the exception of TSS at outfall 002, the long term average discharges of copper, cyanide, TSS and zinc have been less than 25% of the average monthly limits. The long term average discharge of mercury has also been less than 25% of the average monthly limits. Therefore, the requested monitoring frequency of once per month is consistent with the Monitoring Reduction Guidance in these cases.

The long term average discharge of TSS from outfall 002 is 28% of the average monthly limit. Therefore, the EPA proposes twice per month monitoring of TSS, for outfall 002, consistent with the Monitoring Reduction Guidance.

Table 5: Ratio of Long Term Average Discharge to Average Monthly Limit	
Parameter	**Ratio**
Outfall 002 < 30 CFS	
Copper, TR	18%
Cyanide, weak acid dissociable (WAD)	12%
Mercury, Total	9%
TSS	28%

Table 5: Ratio of Long Term Average Discharge to Average Monthly Limit	
Parameter	**Ratio**
Zinc, TR	9%
Outfall 002 ≥ 30 CFS	
Copper, TR	22%
Cyanide, weak acid dissociable (WAD)	12%
Mercury, Total	9%
TSS	28%
Zinc, TR	11%
Outfall 003: Most Stringent Average Monthly Limit	
Copper, TR	17%
Mercury, Total	4%
TSS	17%
Zinc, TR	10%

Monitoring Frequency for Aluminum

The Fact Sheet dated June 11, 2015 had stated that the required monitoring frequency for aluminum was quarterly. This was the monitoring frequency that the EPA had intended to propose in the draft permit, however, the permit erroneously listed the monitoring frequency for aluminum as monthly. The revised draft permit proposes four times per year monitoring for aluminum for outfalls 002 and 003. Monitoring four times per year will result in a total of 20 samples for ammonia, for each outfall, at the end of the 5-year permit term. This will be an adequate data set to determine if the discharges of aluminum have the reasonable potential to cause or contribute to excursions above Idaho's water quality standards.

Monitoring Frequency for WET

Hecla requested in comments on the June 2015 draft permit that the monitoring frequency for WET be changed to semiannual (twice per year) in June and October.

The previous permit's required monitoring frequency for WET was four times per year. The Monitoring Reduction Guidance states that "Facilities would not normally be considered for reductions in monitoring frequencies below once per quarter, except in unusual circumstances of reliable performance at the requisite levels and outstanding compliance/enforcement histories." In addition, when the baseline monitoring frequency is once per week or less frequent, the Monitoring Reduction Guidance recommends maintaining baseline monitoring frequencies unless the long term average discharge is less than 50% of the average monthly limit. The average effluent WET discharges have been 68% of the average monthly limits for outfall 002 and 52% of the most stringent average monthly limits for outfall 003.

Thus, there is no basis to reduce the WET monitoring frequency to twice per year. The revised draft permit proposes monitoring for WET four times per year at both outfalls, which is consistent with the previous permit, but less frequent than the monthly monitoring proposed in the June 2015 draft permit.

Species for Chronic WET Testing

Hecla requested in comments on the draft permit that the permit not require a screening to determine the most sensitive species. Hecla stated that WET tests have been conducted consistently on *Pimephales promelas* since 2003 and that continuing to test using that species would allow for better historical comparisons of WET test results.

The EPA disagrees that the screening for the most sensitive species should not be repeated. The TSD states that, "to provide sufficient information for making permitting decisions, EPA recommends a minimum number of three species, representing three different phyla (e.g., a fish, an invertebrate, and a plant) be used to test an effluent for toxicity" (Section 1.3.4, Page 16). The EPA's recommendation for magnitude for whole effluent toxicity is that the chronic criterion "should be set at 1.0 chronic toxic unit (TU_c) to the most sensitive of at least three test species" (TSD Section 2.3.3). According to Hecla's comment, the screening was last performed in 2003 and 2003, which was before the tailings impoundment was reclaimed. Thus, the EPA believes it is reasonable to repeat the screening for the most sensitive species.

However, the EPA agrees that, if the screening for the most sensitive species is inconclusive, Hecla should continue testing with *Pimephales promelas*.

Flow Monitoring for Jordan Creek

Hecla stated in its comments on the June 2015 draft permit that, due to stream geometry in Jordan Creek, Hecla has monitored flow in Jordan Creek by Doppler at a location below Outfall 002 and then has subtracted recorded effluent flow to determine actual Jordan Creek flow since 2003. Hecla requested that the language of footnote 1 to Table 1 of the draft permit be edited to allow this method of flow monitoring to continue. The EPA has edited footnote 1 to Table 1 to read as follows: "The reported flow in Jordan Creek must be representative of flow directly upstream of outfall 002."

Monitoring for Conductivity and Dissolved Organic Carbon

The State of Idaho has begun negotiated rulemaking to adopt water quality criteria for copper based on the biotic ligand model, consistent with EPA recommendations. Effluent and receiving water monitoring for conductivity and dissolved organic carbon (in addition to pH, temperature and hardness) is required so that, when the State of Idaho adopts water quality criteria for copper based on the biotic ligand model, water quality criteria for copper can be evaluated.

Four Times per Year Monitoring Schedule

In general, for those pollutants for which quarterly effluent monitoring was proposed in the draft permit, the draft permit now instead proposes monitoring four times per year in April, June, August and October. This is consistent with the four times per year schedule for most of the receiving water monitoring, discussed below.

C. Surface Water Monitoring

In general, the surface water monitoring requirements are explained in the fact sheet dated June 11, 2015. However, some changes are proposed in the revised draft permit, as explained below.

Four Times per Year Monitoring Schedule

The revised draft permit continues to require surface water monitoring four times per year, for most parameters, however, the schedule has been changed from January, April, July, and October to April, June, August and October. This allows for monitoring of high, medium, and low flow conditions, while avoiding hazardous site conditions in the winter.

Temperature

In comments on the draft permit, Hecla requested that EPA delete the requirement to sample Jordan Creek for temperature in January, because of unsafe site conditions.

The EPA proposes to change the surface water monitoring requirements from grab samples to continuous monitoring, and to require surface water temperature monitoring for both Jordan Creek and Yankee Fork Creek. Continuous monitoring would be required from May 1st through October 31st, thus addressing Hecla's comment by avoiding hazardous site conditions in January. Continuous monitoring for temperature is appropriate because Idaho's water quality criteria for temperature include both an average and a maximum temperature, and continuous monitoring will allow for a comparison of the temperature data against both the average and maximum criteria.

Mercury Fish Tissue Monitoring

Hecla requested in comments on the June 2015 draft permit that the requirement to sample for mercury in fish tissue be removed from the permit. The EPA has removed the requirement for mercury fish tissue monitoring.

As stated in the fact sheet dated June 11, 2015, fish tissue data collected between October 2000 and August 2013 show that the average concentration of mercury in the fish tissue collected during each sampling event ranged from < 0.05 mg/kg to 0.14 mg/kg (GEI Consultants, 2014). The maximum average fish tissue concentration of 0.14 mg/kg, which was observed at station S-9 (upstream from outfall 003 on Yankee Fork Creek) in 2005, is much less than the 0.24 mg/kg threshold for reasonable potential recommended in the Implementation Guidance, and is less than half the water quality criterion.

The EPA's *Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion*, in Section 4.2.4, recommends biennial sampling of fish in waterbodies where recreational or subsistence harvesting is commonly practiced. Subsistence fishing by Shoshone-Bannock Tribal members occurs within the Yankee Fork drainage (USBR 2012), as does recreational fishing.

However, because of the long history of fish tissue monitoring in the watershed, which shows that fish tissue concentrations of mercury have consistently been below the water quality criterion, and because the permit includes numeric water quality-based effluent limits for mercury which are more stringent than the corresponding limits in the previous NPDES permit (for Outfall 002) and the CERCLA discharge authorization (for Outfall 003), and due to the absence of other point sources of mercury in the vicinity of this discharge, the EPA does not anticipate that fish tissue mercury concentrations will increase. Therefore, the EPA does not believe that it is necessary to require monitoring of methylmercury concentrations in fish tissue in this permit.

The EPA is specifically requesting comments on the removal of methylmercury fish tissue monitoring requirements from the draft permit.

Downstream Monitoring Contingent upon Discharge

Hecla requested in comments on the June 2015 draft permit that surface water monitoring should not be required if there is no discharge from either outfall. The EPA does not agree that requirements to monitor the receiving water upstream of the outfalls should be contingent upon a discharge to the stream, because upstream surface water monitoring results would not be influenced by the discharges. However, in the revised draft permit, the EPA has made downstream monitoring requirements conditional, so that downstream monitoring is only required when there is a discharge from the corresponding outfall.

Monitoring for Conductivity and Dissolved Organic Carbon

The State of Idaho has begun negotiated rulemaking to adopt water quality criteria for copper based on the biotic ligand model, consistent with EPA recommendations. Monitoring for conductivity and dissolved organic carbon is required so that, when the State of Idaho adopts water quality criteria for copper based on the biotic ligand model, water quality criteria for copper can be evaluated.

Tables 6 and 7, below, summarize the surface water monitoring requirements in the draft permit. Monitoring requirements that are different from the June 2015 draft permit are shown in bold, italic type.

Table 6: Surface Water Monitoring Requirements for Jordan Creek

Parameter and Units	Locations	Frequency
Ammonia, Total as N, mg/L	Upstream (S-3) and downstream (S-4)	***Four times per year: April, June, August and October***
Conductivity, µmhos/cm	***S-3 and S-4***	***Four times per year: April, June, August and October***
Copper, dissolved, µg/L	S-3 and S-4	***Four times per year: April, June, August and October***
Dissolved organic carbon, mg/L	***S-3 and S-4***	***Four times per year: April, June, August and October***
Hardness as $CaCO_3$	S-3 and S-4	***Four times per year: April, June, August and October***
Lead, dissolved, µg/L	S-3 and S-4	***Four times per year: April, June, August and October***
Mercury, total, water column, µg/L	S-3 and S-4	***Four times per year: April, June, August and October***
Nitrate + Nitrite, mg/L	S-3 and S-4	***Four times per year: April, June, August and October***
pH, standard units	S-3 and S-4	***Four times per year: April, June, August and October***
Selenium, total recoverable, µg/L	S-3 and S-4	***Four times per year: April, June, August and October***
Temperature, ºC	S-3 and S-4	***Continuous from May 1st – October 31st.***
TSS, mg/L	S-3 and S-4	***Four times per year: April, June, August and October***
Turbidity, NTU	S-3 and S-4	***Four times per year: April, June, August and October***

Table 6: Surface Water Monitoring Requirements for Jordan Creek		
Parameter and Units	**Locations**	**Frequency**
Zinc, dissolved, µg/L	S-3 and S-4	***Four times per year: April, June, August and October***

Table 7: Surface Water Monitoring Requirements for Yankee Fork Creek		
Parameter and Units	**Locations**	**Frequency**
Ammonia, Total as N, mg/L	Upstream (S-9) and downstream (S-10)	***Four times per year: April, June, August and October***
Conductivity, µmhos/cm	***S-9 and S-10***	***Four times per year: April, June, August and October***
Copper, dissolved, µg/L	S-9 and S-10	***Four times per year: April, June, August and October***
Dissolved organic carbon, mg/L	***S-9 and S-10***	***Four times per year: April, June, August and October***
Hardness as $CaCO_3$	S-9 and S-10	***Four times per year: April, June, August and October***
Lead, dissolved, µg/L	S-9 and S-10	***Four times per year: April, June, August and October***
Mercury, total, water column, µg/L	S-9 and S-10	***Four times per year: April, June, August and October***
Nitrate + Nitrite, mg/L	S-9 and S-10	***Four times per year: April, June, August and October***
pH, standard units	S-9 and S-10	***Four times per year: April, June, August and October***
Selenium, total recoverable, µg/L	S-9 and S-10	***Four times per year: April, June, August and October***
Temperature, °C	***S-9 and S-10***	***Continuous from May 1st – October 31st.***
Turbidity, NTU	S-9 and S-10	***Four times per year: April, June, August and October***
Zinc, dissolved, µg/L	S-9 and S-10	***Four times per year: April, June, August and October***

D. Biomonitoring

In its draft Clean Water Act Section 401 certification of the Grouse Creek Unit permit, the State of Idaho included a requirement that biologic monitoring consistent with or more rigorous than Idaho's Beneficial Use Reconnaissance Program protocols shall be conducted and completed annually in both Jordan Creek and Yankee Fork Creek. The EPA must incorporate requirements specified in States' certifications of NPDES permits (40 CFR 124.53(e), 124,55(a)(2)).

In addition, the non-discretionary reasonable and prudent measures (RPMs) in NOAA Fisheries' Biological Opinion (BO) on the effects of approving the Idaho Water Quality Standards for toxic substances require biomonitoring for this permit. Specifically, biomonitoring is necessary under RPM #1 (minimize the effects of toxicity resulting from simultaneous exposure to mixtures) and RPM #5 (monitoring and reporting). When biomonitoring is required to implement the RPMs, such biomonitoring shall be consistent with Appendix E to the NOAA BO.

Therefore, the EPA has required stream biomonitoring in the revised draft permit. The EPA is specifically requesting comments on the biomonitoring requirements in the revised draft permit.

IX. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. Hecla is required to develop and implement a Quality Assurance Plan within 120 days of the effective date of the final permit. This differs from the 90-day deadline in the June 2015 draft permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. BMP Plan

Federal regulations at 40 CFR 122.44(k) require the permittee to use best management practices (BMP) in order to control or abate the discharge of pollutants whenever BMPs are reasonably necessary to carry out the purposes and intent of the CWA. According to the *U.S. Environmental Protection Agency NPDES Permit Writers' Manual* (section 9.1.2) permits can either require specific BMPs in the permit, or require the permittee to develop a BMP plan. The draft permit requires that the permittee develop a BMP plan that is consistent with certain objectives and with applicable EPA guidance. In the revised draft permit, the deadline for annual review and certification of the BMP plan has been changed from January 20th to March 31st.

C. Additional Permit Provisions

Sections III, IV, and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

The EPA proposes to revise Part III.B of the draft permit to require electronic reporting in NetDMR by December 21, 2016, consistent with the final NPDES Electronic Reporting Rule (80 FR 64097).

D. Definitions

Definitions of terms used in the draft permit are provided in Part VI of the permit.

Hecla stated in its comments on the June 2015 draft permit that some of the terms defined in the draft permit are defined in statute or regulation, and that the permit should cite the statutory or regulatory language directly as it appears in the statute or regulation.

The EPA has compared the definitions in the June 2015 draft permit to the definitions in federal regulations. In general, the definitions of these terms in the regulations are identical to those in the draft permit, except for non-substantive changes in formatting, capitalization and punctuation. For example, in the regulations at 40 CFR 122.2, the term

that is being defined is printed in italic type, whereas, in the permit, the term being defined is in quotation marks.

However, the definitions of "minimum level" and "grab sample" in the original draft permit were different from the definitions appearing in federal regulations or EPA publications. The definition of "minimum level" in has been replaced with the definition the sufficiently sensitive methods final rule (79 FR 49001). The definition of "grab sample" has been replaced with the definition found in the instructions for EPA Form 3510-2C.

In addition, since composite samples are required for whole effluent toxicity, the EPA has included a definition of "composite sample." This definition is from the instructions for EPA Form 3510-2C.

X. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

The EPA has prepared a biological evaluation and determined that the discharge from the Grouse Creek mine is not likely to adversely affect sockeye salmon. USEPA has determined that the permitted discharge is likely to adversely affect the Chinook salmon, steelhead, and bull trout.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. In the biological evaluation, the EPA concluded that the issuance of an NPDES permit to the Grouse Creek mine is likely to adversely affect EFH for Chinook salmon.

C. State/Tribal Certification

Section 401 of the CWA requires EPA to seek State or Tribal certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards.

D. Permit Expiration

The permit will expire five years from the effective date.

XI. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001. www.epa.gov/npdes/pubs/owm0264.pdf

EPA. 1996. *Interim Guidance for Performance – Based Reductions of NPDES Permit Monitoring Frequencies.* April 19, 1996. http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/Interim-Guidance-for-Performance-Based-Reductions-of-NPDES-Permit-Monitoring-Frequencies.pdf

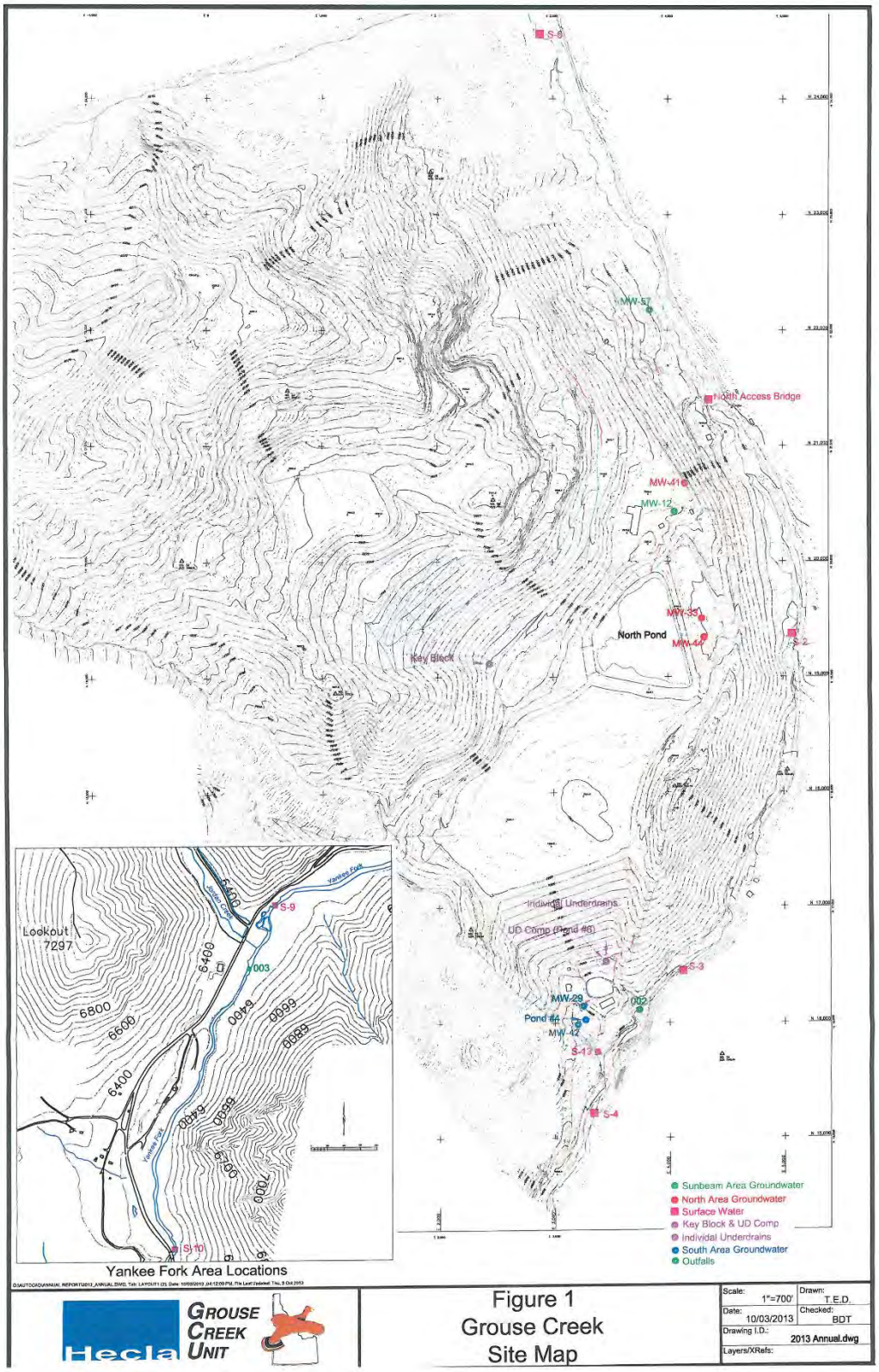
EPA. 2010a. *Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion*. United States Environmental Protection Agency. Office of Science and Technology. EPA-823-R-10-001. April 2010. http://water.epa.gov/scitech/swguidance/standards/criteria/health/upload/mercury2010.pdf

EPA. 2010b. *U.S. Environmental Protection Agency NPDES Permit Writers' Manual*. US Environmental Protection Agency, Office of Wastewater Management, Water Permits Division, EPA-833-K-10-001. water.epa.gov/polwaste/npdes/basics/upload/pwm_2010.pdf

EPA. 2016. *Biological Evaluation for the NPDES Permit for the Hecla Mining Company Grouse Creek Unit.* March 2016.

USBR. 2012. *Yankee Fork Tributary Assessment: Upper Salmon Subbasin: Custer County, Idaho.* U.S. Department of the Interior. Bureau of Reclamation. Pacific Northwest Region. January 2012. http://www.usbr.gov/pn/fcrps/habitat/projects/uppersalmon/reports/uppersalmon/yfta/index.html

Appendix A: Facility Map



Appendix B: Water Quality-based Effluent Limits

A. Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit when the imposition of conditions in that permit cannot ensure compliance with the water quality standards of all affected States. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

B. Mixing Zones

Sometimes it is appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body, and decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the receiving water meets the criteria necessary to protect the designated uses of the water body. Mixing zones must be authorized by the Idaho Department of Environmental Quality (IDEQ).

Based on IDEQ's draft Clean Water Act Section 401 certification dated November 9, 2015, some of the reasonable potential analyses were conducted and some of the water quality-based effluent limits in this permit have been calculated using a mixing zone. The mixing zones sizes as percentages of the critical low flow volumes and the corresponding dilution factors, are listed in Tables B-1 and B-2, below. Dilution factors in bold, italic type are different from those used to develop the June 2015 draft permit. The differences in the dilution factors for outfall 002, with Jordan Creek flows greater than or equal to 30 CFS, are generally due to the change in the maximum daily flow limit, which now reflects the correct design capacity of the water treatment plant.

The results of plume modeling of the discharges using the Cornell Mixing Zone Expert System (CORMIX) are provided in the biological evaluation (EPA 2016).

Table B-1: Authorized Mixing Zones for Outfall 002 (Jordan Creek)

Parameter	Jordan Creek Flow < 30 CFS		Jordan Creek Flow ≥ 30 CFS	
	Mixing Zone	Dilution Factor	Mixing Zone	Dilution Factor
Ammonia	25%	3.00	25%	***3.00***
Arsenic	25%	3.00	25%	***3.00***
Cadmium	25%	3.00	25%	***3.00***
Copper	25%	3.00	***5%***	***1.40***

Table B-1: Authorized Mixing Zones for Outfall 002 (Jordan Creek)				
Parameter	Jordan Creek Flow < 30 CFS		Jordan Creek Flow ≥ 30 CFS	
	Mixing Zone	Dilution Factor	Mixing Zone	Dilution Factor
Cyanide (weak acid dissociable)	25%	3.00	25%	***3.00***
Lead	25%	3.00	25%	***3.00***
Mercury	25%	3.00	25%	***3.00***
Nitrate + Nitrite	25%	3.00	25%	***3.00***
Selenium	25%	3.00	25%	***3.00***
Silver	25%	3.00	25%	***3.00***
WET	***50%***	***5.00***	***50%***	***5.00***
Zinc	25%	3.00	***8%***	***1.64***

Table B-2: Authorized Mixing Zones for Outfall 003 (Yankee Fork Creek)						
Parameter	Yankee Fork Creek Flow < 15 CFS		Yankee Fork Creek Flow ≥ 15 and < 45 CFS		Yankee Fork Creek Flow ≥ 45 CFS	
	Mixing Zone	Dilution Factor	Mixing Zone	Dilution Factor	Mixing Zone	Dilution Factor
Ammonia	25%	4.74	25%	4.37	25%	6.61
Arsenic	25%	4.74	25%	4.37	25%	6.61
Cadmium	9%	2.35	18%	3.42	19%	5.26
Copper	13%	2.94	25%	4.37	13%	3.92
Cyanide (weak acid dissociable)	25%	4.74	25%	4.37	25%	6.61
Lead	25%	4.74	25%	4.37	25%	6.61
Mercury	25%	4.74	25%	4.37	25%	6.61
Selenium	25%	4.74	25%	4.37	25%	6.61
Silver	25%	4.74	25%	4.37	25%	6.61
WET	***75%***	***12.22***	***75%***	***11.10***	***75%***	***17.83***
Zinc	23%	4.44	25%	4.37	25%	6.61

If IDEQ does not grant a mixing zone in the final Clean Water Act Section 401 certification, the water quality-based effluent limits will be recalculated such that the criteria are met at the "end-of-pipe," before the effluent is discharged to the receiving water. If IDEQ grants mixing zones providing different dilution factors than those calculated in this fact sheet, EPA will re-calculate the effluent limits to be consistent with the mixing zone authorization.

C. Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an excursion above water quality standards in the receiving water.

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the State does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an excursion above the criterion. The following discussion details the specific water quality-based effluent limits in the draft permit.

Once a WLA is developed, EPA calculates effluent limits which are protective of the WLA using statistical procedures described below. The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated.

Determine the Applicable Water Quality Criteria

Water quality criteria specify the level of water quality that is necessary to support a waterbody's designated uses. At the point of discharge for Outfall 003, Yankee Fork Creek is designated for the uses of cold water aquatic life, salmonid spawning, primary contact recreation, and domestic water supply (IDAPA 58.01.02.130.03). Jordan Creek is not designated for specific uses in the water quality standards. However, IDAPA 58.01.02.101.01 designates all undesignated waters for cold water aquatic life and primary contact recreation. In addition, all waters of the State of Idaho are designated for industrial and agricultural water supply, wildlife habitats, and aesthetics (IDAPA 58.01.02.100).

Different water quality criteria are associated with the various uses. For each water quality parameter, water quality-based effluent limits must be based on the most stringent water quality criterion applicable to the receiving water, in order to ensure that all of the uses are protected. The applicable water quality criteria, based on the designated uses of the receiving waters, are listed in Table B-3.

Table B-3: Idaho Water Quality Criteria Applicable to the Grouse Creek Permit

Parameter	Criteria		Uses
	Jordan Creek:	**Yankee Fork Creek:**	
Ammonia	Acute: 8.31 mg/L Chronic: 3.24 mg/L	Acute: 10.3 mg/L Chronic: 3.74 mg/L	Cold Water Aquatic Life
Arsenic	10 µg/L		Human Health
Cadmium	Dependent upon hardness. See below.		Cold Water Aquatic Life
Copper	Dependent upon hardness. See below.		Cold Water Aquatic Life
Cyanide	Acute: 22 µg/L Chronic: 5.2 µg/L		Cold Water Aquatic Life
Lead	Dependent upon hardness. See below.		Cold Water Aquatic Life
Mercury, Water Column	Acute: 2.1 µg/L Chronic: 0.012 µg/L See discussion below.		Cold Water Aquatic Life
Methyl Mercury, Fish Tissue	0.3 mg/kg See discussion below.		Human Health (consumption of fish)
Nitrate + Nitrite (Yankee Fork Creek only)	10 mg/L		Domestic Water Supply
Nitrate + Nitrite (Statewide)	100 mg/L		Agricultural Water Supply
pH	6.5 – 9.0 standard units		Aquatic Life
Sediment	Narrative criterion (see Appendix B)		Various uses
Selenium	Acute: 20 µg/L Chronic: 5 µg/L		Cold Water Aquatic Life
Silver	Dependent upon hardness. See discussion below.		Cold Water Aquatic Life
Temperature	Max. daily avg.: 19 °C Maximum: 22 °C	Max. daily avg.: 9 °C Maximum: 13 °C	Cold Water Aquatic Life (Jordan Creek) Salmonid Spawning (Yankee Fork Creek)
WET	"Surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses." See below for numeric interpretation.		Cold Water Aquatic Life, other designated uses.

Table B-3: Idaho Water Quality Criteria Applicable to the Grouse Creek Permit			
Parameter	**Criteria**		**Uses**
	Jordan Creek:	**Yankee Fork Creek:**	
Zinc	Dependent upon hardness. See below.		Cold Water Aquatic Life

Hardness Dependent Metals Criteria

The numeric values of the aquatic life water quality criteria for certain metals vary with the hardness of the receiving water. Hardness is a measure of the concentration of divalent metal cations (mostly calcium and magnesium) in the water. Some metals are less toxic to aquatic life in hard water than in soft water, therefore, the water quality criteria become less stringent (i.e. numerically greater) in harder waters. Table B-4, below, lists the hardness of the effluent and the receiving water, for various conditions.

Table B-4: Hardness of Effluent and Receiving Water	
Description	**Hardness (mg/L as $CaCO_3$)**
Fifth percentile effluent hardness at outfall 002	191
Fifth percentile effluent hardness at outfall 003	198
Fifth percentile hardness in Jordan Creek, upstream from outfall 002, with flows less than 30 CFS	34.0
Minimum hardness in Jordan Creek, upstream from outfall 002, with flows greater than or equal to 30 CFS	17.7
Fifth percentile hardness in Jordan Creek, downstream from outfall 002, with flows less than 30 CFS	41.0
Minimum hardness in Jordan Creek, downstream from outfall 002, with flows greater than or equal to 30 CFS	24.0
Hardness in Yankee Fork Creek, upstream from outfall 003, with flows less than 15 CFS	24.0
Minimum hardness in Yankee Fork Creek, upstream from outfall 003, with flows greater than or equal to 15 CFS and less than 45 CFS	18.0
Fifth percentile hardness in Yankee Fork Creek, upstream from outfall 003, with flows greater than or equal to 45 CFS	15.9
Hardness in Yankee Fork Creek, downstream from outfall 003, with flows less than 15 CFS	38.0
Minimum hardness in Yankee Fork Creek, downstream from outfall 003, with flows greater than or equal to 15 CFS and less than 45 CFS	27.0
Fifth percentile hardness in Jordan Creek, downstream from outfall 003, with flows greater than or equal to 45 CFS	20.0

In the Grouse Creek permit, there are different sets of water quality-based effluent limits for each outfall, which apply under different circumstances for receiving water flow. The hardness values used to calculate the value of the water quality criteria, for the purpose of calculating these various effluent limits, are consistent with these varying conditions.

Influence of a Hard Effluent

As shown in Table B-4, the effluent is considerably harder than the receiving water. The fact that the effluent is relatively hard decreases the toxic impact of the effluent, relative to what it would have been if the effluent had been soft. EPA has considered this in the development of effluent limits for metals as described in Appendix C to the Fact Sheet dated June 11, 2015. The specific hardness values have changed for outfall 002 when Jordan Creek flows are greater than or equal to 30 CFS, because of the change in the dilution factors.

Metals Criteria Summary

Tables B-5 and B-6, below, summarize all of the hardness values used to calculate the values of the water quality criteria for metals, and list the resulting criteria values.

Table B-5: Hardness Values Used to Calculate Water Quality Criteria for Metals: Outfall 002

Limit Description	Hardness (mg/L as $CaCO_3$)	Hardness Basis	Acute Criterion (µg/L)	Chronic Criterion (µg/L)
Cadmium, copper and zinc, Jordan Creek flow < 30 CFS	86.4	Mixed hardness at the edge of the mixing zone	Cd: 1.19	Cd: 0.52
			Cu: 14.8	Cu: 10.0
			Zn: 103	Zn: 104
Cadmium, Jordan Creek flow ≥ 30 CFS	***75.5***	Mixed hardness at the edge of the mixing zone	***1.06***	***0.484***
Copper, Jordan Creek flow ≥ 30 CFS	***141.5***	Mixed hardness at the edge of the mixing zone	***23.6***	***15.3***
Zinc, Jordan Creek flow ≥ 30 CFS	***123.4***	Mixed hardness at the edge of the mixing zone	***140***	***141***
Lead and silver, Jordan Creek flow < 30 CFS	40.9	5th percentile hardness measured in Jordan Creek downstream of Outfall 002, with creek flows < 30 CFS	Pb: 24.1	Pb: 0.938
			Ag: 0.740	Ag: N/A
Lead and silver, Jordan Creek flow ≥ 30 CFS	23.6	5th percentile hardness measured in Jordan Creek downstream of Outfall 002, with creek flows ≥ 30 CFS	Pb: 13.9	Pb: 0.541
			Ag: 0.318	Ag: N/A

Table B-6: Hardness Values Used to Calculate Water Quality Criteria for Metals: Outfall 003

Parameter	Upstream Hardness	Dilution Factor	Hardness (mg/L as $CaCO_3$)	Hardness Basis	Acute Criterion (µg/l)	Chronic Criterion (µg/l)
Low Flow (< 15 CFS)						
Cadmium	24	2.35	98.2	Mixed hardness at the edge of the mixing zone	1.98	1.02
Copper	24	2.94	83.1	Mixed hardness at the edge of the mixing zone	14.3	9.689
Lead	N/A	4.74	38.0	Minimum hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows < 15 CFS.	22.2	0.865
Silver	N/A	4.74	38.0	Minimum hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows < 15 CFS.	0.653	N/A
Zinc	24	4.44	63.2	Mixed hardness at the edge of the mixing zone	79.4	80.1
Medium Flow (15 – 45 CFS)						
Cadmium	18	3.42	70.6	Mixed hardness at the edge of the mixing zone	1.43	0.797

Table B-6: Hardness Values Used to Calculate Water Quality Criteria for Metals: Outfall 003						
Parameter	Upstream Hardness	Dilution Factor	Hardness (mg/L as $CaCO_3$)	Hardness Basis	Acute Criterion (µg/l)	Chronic Criterion (µg/l)
Copper	18	4.37	59.2	Mixed hardness at the edge of the mixing zone	10.4	7.255
Lead	N/A	4.37	27.0	Minimum hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows between 15 and 45 CFS.	15.1	0.590
Silver	N/A	4.37	27.0	Minimum hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows between 15 and 45 CFS.	0.363	N/A
Zinc	18	4.37	59.2	Mixed hardness at the edge of the mixing zone	75.2	75.8
High Flow (> 45 CFS)						
Cadmium	15.85	5.26	50.5	Mixed hardness at the edge of the mixing zone	1.03	0.622
Copper	15.85	3.92	62.3	Mixed hardness at the edge of the mixing zone	10.9	7.581
Lead	N/A	6.61	20.3	5th percentile hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows greater than 45 CFS.	13.9	0.541
Silver	N/A	6.61	20.3	5th percentile hardness measured in Yankee Fork Creek downstream of outfall 003, with stream flows greater than 45 CFS.	0.318	N/A
Zinc	15.85	6.61	43.4	Mixed hardness at the edge of the mixing zone	57.8	58.2

Whole Effluent Toxicity

The State of Idaho has a narrative water quality criterion for toxicity, which reads "surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses" (IDAPA 58.01.02.200.02). The federal regulation 40 CFR 122.44(d)(1)(v) states that, whenever a discharge has the reasonable potential to cause or contribute to excursions above a narrative criterion for toxicity, the permit must contain an effluent limit for WET. For the purposes of developing water quality-based effluent limits from narrative criteria, 40 CFR 122.44(d)(1)(vi)(A) states that effluent limits may be derived from a calculated numeric criterion that the permitting authority demonstrates will attain and maintain applicable narrative criteria. EPA's recommended numeric interpretation of this narrative criterion is 1.0 chronic toxic unit (TU_c) and 0.3 acute toxic units (TU_a) for the chronic and acute criteria, respectively (*See* TSD at Section 2.3.3). The recommended criterion for acute toxicity is converted to TU_c using an acute-to-chronic ratio of 10, also based on the recommendations of the TSD (*See* TSD at Pages 17 and 99). Thus, the acute WET criterion, expressed in TU_c, is 3.0 TU_c.

In the fact sheet dated June 11, 2015, the EPA had found that the discharge from outfall 003 did not have the reasonable potential to cause or contribute to excursions above Idaho's narrative water quality criterion for toxicity. This finding was made in error. Specifically, the EPA used acute WET data for outfall 002 in the reasonable potential analysis for chronic WET for outfall 003. Using the available chronic WET data for outfall 003, the EPA has found that the discharge

from outfall 003 has the reasonable potential to cause or contribute to excursions above water quality standards for WET, and the EPA has therefore proposed water quality-based effluent limits for WET.

D. Reasonable Potential Analysis

The EPA uses the process described in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* or TSD (EPA 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This following section discusses how the maximum projected receiving water concentration is determined.

The reasonable potential analysis procedure is described in detail in Appendix C to the Fact Sheet dated June 11, 2015.

The results of the calculations are presented in Tables B-7 and B-8 of this appendix.

E. WQBEL Calculations

Water quality-based effluent limits (WQBELs) in the draft permit were calculated based on the procedures of Chapter 5 of the TSD. The WQBELs for cadmium, copper, cyanide, lead, mercury, WET and zinc are intended to protect aquatic life criteria.

The calculation of water quality-based effluent limits is described in detail in Appendix C to the Fact Sheet dated June 11, 2015. The calculations for all WQBELs based on aquatic life criteria are summarized in Tables B-9 and B-10.

F. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001. March 1991. http://www.epa.gov/npdes/pubs/owm0264.pdf

EPA. 2016. *Biological Evaluation for the NPDES Permit for the Hecla Mining Company Grouse Creek Unit.* March 2016.

Table B-7: Reasonable Potential Calculations for Outfall 002

				State Water Quality Standard		Max concentration at edge of...																
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) ug/L	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	s	s^2	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS	z(Pn)	C99	Cn
Arsenic <30 CFS (HH)	1.00	1.00			10.0000		4.82	NO	0.99	0.720	6.70	0.46	0.442	0.195	14	2.16		3.00	25% MZ, Outfall 003 Effluent Data	0.582	2.533	1.173
Arsenic >30 CFS (HH)	1.00	1.00			10.0000		4.82	NO	0.99	0.720	6.70	0.46	0.442	0.195	14	2.16		3.00	25% MZ, Outfall 003 Effluent Data	0.582	2.533	1.173
Acute WET <30 CFS (Tua)	1.00	1.00		0.300	0.300	0.42	0.42	YES	0.99	0.681	1.50	0.18	0.178	0.032	12	1.39	5.00	5.00	100% MZ	0.471	1.490	1.070
Acute WET >30 CFS (Tua)	1.00	1.00		0.300	0.300	0.42	0.42	YES	0.99	0.681	1.50	0.18	0.178	0.032	12	1.39	5.00	5.00	100% MZ	0.471	1.490	1.070
Ammonia <30 CFS (mg/L)	1.00	1.00	0.204	8.31	3.24	0.27	0.27	NO	0.99	0.969	0.31	0.69	0.623	0.388	144	1.34	3.00	3.00	25% MZ	1.860	3.509	2.624
Ammonia >30 CFS (mg/L)	1.00	1.00	0.204	8.31	3.24	0.26	0.26	NO	0.99	0.969	0.31	0.31	0.303	0.092	144	1.15	3.00	3.00	25% MZ	1.860	1.932	1.678
Chronic WET <30 CFS (Tuc)	1.00	1.00		3.00	1.00	16.47	16.47	YES	0.99	0.763	16.00	1.35	1.017	1.035	17	5.15	5.00	5.00	50% MZ	0.715	6.351	1.234
Chronic WET >30 CFS (Tuc)	1.00	1.00		3.00	1.00	16.47	16.47	YES	0.99	0.763	16.00	1.35	1.017	1.035	17	5.15	5.00	5.00	50% MZ	0.715	6.351	1.234
Cyanide <30 CFS	1.00	1.00	2.00	22.00	5.20	5.90	5.90	YES	0.99	0.979	10.00	1.44	1.059	1.121	214	1.37	3.00	3.00	25% MZ	2.028	6.701	4.887
Cyanide >30 CFS	1.00	1.00	2.00	22.00	5.20	5.90	5.90	YES	0.99	0.979	10.00	1.44	1.059	1.121	214	1.37	3.00	3.00	25% MZ	2.028	6.701	4.887
Nitrate+Nitrite <30 CFS (mg/L)	1.00	1.00	0.200		100		0.57	NO	0.99	0.922	0.90	0.43	0.412	0.169	57	1.45		3.00	25% MZ	1.421	2.393	1.649
Nitrate+Nitrite <30 CFS (mg/L)	1.00	1.00	0.200		100		0.57	NO	0.99	0.922	0.90	0.43	0.412	0.169	57	1.45		3.00	25% MZ	1.421	2.393	1.649
Selenium <30 CFS	1.00	1.00	0.300	20.0	5.00	2.02	2.02	NO	0.99	0.969	4.70	0.336	0.327	0.107	145	1.16	3.00	3.00	25% MZ	1.863	2.030	1.744
Selenium >30 CFS	1.00	1.00	0.300	20.0	5.00	2.02	2.02	NO	0.99	0.969	4.70	0.336	0.327	0.107	145	1.16	3.00	3.00	25% MZ	1.863	2.030	1.744
Silver <30 CFS	0.85			0.740		0.052		NO	0.99	0.979	0.13	1.60	1.127	1.271	214	1.40	3.00		25% MZ	2.028	7.291	5.210
Silver >30 CFS	0.85			0.318		0.052		NO	0.99	0.979	0.13	1.60	1.127	1.271	214	1.40	3.00		25% MZ	2.028	7.291	5.210

Table B-8: Reasonable Potential Calculations for Outfall 003

				State Water Quality Standard		Max concentration at edge of...											
Parameter	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
	Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*Pn*	*ug/L*	*CV*	*s*	*n*			
Ammonia, mg/L (<15)	1.00	1.00	0.0740	10.3	3.74	0.11	0.11	NO	0.99	0.973	0.21	0.65	0.60	167	1.27	4.74	4.74
Ammonia, mg/L (15-45)	1.00	1.00	0.0740	10.3	3.74	0.12	0.12	NO	0.99	0.973	0.21	0.65	0.60	167	1.27	4.37	4.37
Ammonia, mg/L (>45)	1.00	1.00	0.0740	10.3	3.74	0.10	0.10	NO	0.99	0.973	0.21	0.65	0.60	167	1.27	6.61	6.61
Arsenic-CWAL (<15)	1.00	1.00		340	150	3.05	3.05	NO	0.99	0.720	6.70	0.46	0.44	14	2.16	4.74	4.74
Arsenic-CWAL (15-45)	1.00	1.00		340	150	3.31	3.31	NO	0.99	0.720	6.70	0.46	0.44	14	2.16	4.37	4.37
Arsenic-CWAL (>45)	1.00	1.00		340	150	2.19	2.19	NO	0.99	0.720	6.70	0.46	0.44	14	2.16	6.61	6.61
Arsenic-HH (<15)	1.00	1.00			10		3.05	NO	0.99	0.720	6.70	0.46	0.44	14	2.16		4.74
Arsenic-HH (15-45)	1.00	1.00			10		3.31	NO	0.99	0.720	6.70	0.46	0.44	14	2.16		4.37
Arsenic-HH (>45)	1.00	1.00			10		2.19	NO	0.99	0.720	6.70	0.46	0.44	14	2.16		6.61
Chronic WET, TUc (<15)	1.00	1.00		3.00	1.00	5.936	5.936	YES	0.99	0.464	19.00	0.60	0.55	6	3.82	12.22	12.22
Chronic WET TUc(15-45)	1.00	1.00		3.00	1.00	6.54	6.54	YES	0.99	0.464	19.00	0.60	0.55	6	3.82	11.10	11.10
Chronic WET TUc (>45)	1.00	1.00		3.00	1.00	4.07	4.07	YES	0.99	0.464	19.00	0.60	0.55	6	3.82	17.83	17.83
Cyanide (<15)	1.00	1.00		22.0	5.20	4.50	4.50	NO	0.99	0.973	13.00	1.86	1.22	166	1.64	4.74	4.74
Cyanide (15-45)	1.00	1.00		22.0	5.20	4.89	4.89	NO	0.99	0.973	13.00	1.86	1.22	166	1.64	4.37	4.37
Cyanide (>45)	1.00	1.00		22.0	5.20	3.23	3.23	NO	0.99	0.973	13.00	1.86	1.22	166	1.64	6.61	6.61
Selenium (<15)	1.00	1.00	0.1000	20.0	5.00	0.74	0.74	NO	0.99	0.973	2.80	0.29	0.29	168	1.12	4.74	4.74
Selenium (15-45)	1.00	1.00	0.1000	20.0	5.00	0.80	0.80	NO	0.99	0.973	2.80	0.29	0.29	168	1.12	4.37	4.37
Selenium (>45)	1.00	1.00	0.1000	20.0	5.00	0.56	0.56	NO	0.99	0.973	2.80	0.29	0.29	168	1.12	6.61	6.61
Silver (<15)	0.85			0.653		0.035		NO	0.99	0.973	0.10	3.85	1.66	167	1.95	4.74	
Silver (15-45)	0.85			0.363		0.038		NO	0.99	0.973	0.10	3.85	1.66	167	1.95	4.37	
Silver (>45)	0.85			0.318		0.025		NO	0.99	0.973	0.10	3.85	1.66	167	1.95	6.61	
Mercury (<15)	1.00	1.00	0.0066	2.10	0.012	0.0066	0.0066	NO	0.99	0.316	0.00140	0.60	0.55	4	4.74	4.74	4.74
Mercury (15-45)	1.00	1.00	0.0066	2.10	0.012	0.0066	0.0066	NO	0.99	0.316	0.00140	0.60	0.55	4	4.74	4.37	4.37
Mercury (>45)	1.00	1.00	0.0066	2.10	0.012	0.0066	0.0066	NO	0.99	0.316	0.00140	0.60	0.55	4	4.74	6.61	6.61

Table B-9: Water Quality-based Effluent Limit Calculations for Outfall 002

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

	Permit Limit Calculation Summary										Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations							Statistical variables for permit limit calculation			
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Comments	WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	LTA Coeff. Var. (CV)	LTA Prob'y Basis	Limiting LTA	Coeff. Var. (CV)	AML Prob'y Basis	MDL Prob'y Basis	# of Samples per Month
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*decimal*	*decimal*	*ug/L*	*decimal*	*decimal*	*decimal*	*n*
Jordan Cr < 30 CFS, 8:1															0.60	0.99		0.60	0.95	0.99	4.00
Cadmium	3.00	3.00	0.95	0.92		1.19	0.52	**1.44**	**2.72**		3.74	1.72	1.33	0.969	0.53	0.99	0.969	0.53	0.95	0.99	4.00
Copper	3.00	3.00	0.96	0.96	2.11	14.8	10.01	**18.6**	**41.9**		41.9	26.9	10.8	12.1	0.77	0.99	10.77	0.77	0.95	0.99	4.00
Cyanide	3.00	3.00	1.00	1.00	2.00	22.0	5.20	**7.47**	**21.3**		62.0	11.6	9.25	3.18	1.44	0.99	3.18	1.44	0.95	0.99	4.00
Lead	3.00	3.00	0.92	0.92	0.20	24.1	0.94	**1.80**	**4.84**		77.9	2.62	13.53	0.841	1.20	0.99	0.84	1.20	0.95	0.99	4.00
Mercury	3.00	3.00	1.00	1.00	0.0025	2.10	0.012	**0.022**	**0.057**		6.29	0.0310	1.22	0.0110	1.06	0.99	0.0110	1.06	0.95	0.99	4.00
Zinc	3.00	3.00	0.98	0.99	6.70	103.5	104.3	**141**	**304**		304	304	85.5	146	0.70	0.99	85.5	0.70	0.95	0.99	4.00
WET (TUc)	5.00	5.00	1.00	1.00		3.00	1.00	**3.30**	**9.2**		15.00	5.00	2.36	1.453	1.35	0.99	1.453	1.35	0.95	0.99	4.00
Jordan Cr ≥ 30 CFS																					
Cadmium	3.00	3.00	0.96	0.92		1.06	0.48	**1.32**	**2.50**		3.33	1.58	1.18	0.891	0.53	0.99	0.891	0.53	0.95	0.99	4.00
Copper	1.40	1.40	0.96	0.96	2.11	23.60	15.27	**14.9**	**33.54**		33.54	21.4	8.6	9.6	0.77	0.99	8.62	0.77	0.95	0.99	4.00
Cyanide	3.00	3.00	1.00	1.00	2.0000	22.00	5.20	**7.47**	**21.3**		62.00	11.60	9.25	3.183	1.44	0.99	3.183	1.44	0.95	0.99	4.00
Lead	3.00	3.00	0.99	0.99	0.20	13.9	0.54	**0.84**	**2.28**		41.5	1.23	7.21	0.395	1.20	0.99	0.40	1.20	0.95	0.99	4.00
Mercury	3.00	3.00	1.00	1.00	0.0025	2.10	0.012	**0.022**	**0.057**		6.29	0.0310	1.22	0.0110	1.06	0.99	0.0110	1.06	0.95	0.99	4.00
Zinc	1.64	1.64	0.98	0.99	6.70	140.0	141.2	**107**	**230**		230	230	64.9	111	0.70	0.99	64.9	0.70	0.95	0.99	4.00
WET (TUc)	5.00	5.00	1.00	1.00		3.00	1.00	**3.30**	**9.2**		15.00	5.00	2.36	1.453	1.35	0.99	1.453	1.35	0.95	0.99	4.00

Table B-10: Water Quality-based Effluent Limit Calculations for Outfall 003

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

	Permit Limit Calculation Summary										Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations							Statistical variables for permit limit calculation			
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Comments	WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	LTA Coeff. Var. (CV)	LTA Prob'y Basis	Limiting LTA	Coeff. Var. (CV)	AML Prob'y Basis	MDL Prob'y Basis	# of Samples per Month
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*decimal*	*decimal*	*ug/L*	*decimal*	*decimal*	*decimal*	*n*
Low Flow (< 15 CFS)																					
Cadmium	2.35	2.35	0.94	0.91		1.98	1.02	**2.22**	**4.08**		5	2.62	1.9	1.5	0.49	0.99	1.54	0.49	0.95	0.99	4.00
Copper	2.94	2.94	0.96	0.96	1.97	14.29	9.69	**21.6**	**39.8**		40	25.73	14.8	14.9	0.50	0.99	14.80	0.50	0.95	0.99	4.00
Lead	4.74	4.74	0.93	0.93	0.20	22.2	0.865	**1.40**	**4.84**		112	3.60	8.7	0.4	4.84	0.99	0.37	4.84	0.95	0.99	4.00
Mercury	4.74	4.74	1.00	1.00	0.0066	2.10	0.012	**0.026**	**0.053**		10	0.03	3.2	0.0	0.60	0.99	0.0170	0.60	0.95	0.99	4.00
Zinc	4.44	4.44	0.98	0.99	4.70	79.4	80.1	**158**	**344**		344	344.20	95.2	163.6	0.71	0.99	95.22	0.71	0.95	0.99	4.00
WET, Chronic, TUc	12.22	12.22	1.00	1.00		3.0	1.0	**10.0**	**20**		37	12.22	11.8	6.4	0.60	0.99	6.45	0.60	0.95	0.99	4.00
Medium Flow (15-45 CFS)																					
Cadmium	3.42	3.42	0.96	0.92		1.43	0.80	**2.50**	**4.59**		5	2.95	1.9	1.7	0.49	0.99	1.73	0.49	0.95	0.99	4.00
Copper	4.37	4.37	0.96	0.96	1.97	10.4	7.26	**21.8**	**40.3**		40	26.09	15.0	15.1	0.50	0.99	14.98	0.50	0.95	0.99	4.00
Lead	4.37	4.37	0.98	0.98	0.20	15.1	0.59	**0.75**	**2.60**		67	1.94	5.2	0.2	4.84	0.99	0.20	4.84	0.95	0.99	4.00
Mercury	4.37	4.37	1.00	1.00	0.0066	2.10	0.012	**0.025**	**0.050**		9	0.03	2.9	0.0	0.60	0.99	0.016	0.60	0.95	0.99	4.00
Zinc	4.37	4.37	0.98	0.99	4.70	75.2	75.8	**147**	**319**		319	319.59	88.4	151.9	0.71	0.99	88.4	0.71	0.95	0.99	4.00
WET, Chronic, TUc	11.10	11.10	1.00	1.00		3.0	1.0	**9.09**	**18**		33	11.10	10.7	5.9	0.60	0.99	5.9	0.60	0.95	0.99	4.00
High Flow (>45 CFS)																					
Cadmium	5.26	5.26	0.97	0.94		1.03	0.62	**2.96**	**5.42**		6	3.49	2.1	2.0	0.49	0.99	2.04	0.49	0.95	0.99	4.00
Copper	3.92	3.92	0.96	0.96	1.97	10.90	7.58	**20.8**	**38.5**		39	24.95	14.3	14.5	0.50	0.99	14.30	0.50	0.95	0.99	4.00
Lead	6.61	6.61	0.99	0.99	0.20	13.9	0.54	**0.96**	**3.32**		91	2.47	7.1	0.3	4.84	0.99	0.26	4.84	0.95	0.99	4.00
Mercury	6.61	6.61	1.00	1.00	0.0066	2.10	0.012	**0.035**	**0.069**		14	0.04	4.4	0.02	0.60	0.99	0.022	0.60	0.95	0.99	4.00
Zinc	6.61	6.61	0.98	0.99	4.70	57.8	58.2	**167**	**364**		364	363.77	100.6	172.86	0.71	0.99	100.6	0.71	0.95	0.99	4.00
WET, Chronic, TUc	17.83	17.83	1.00	1.00		3.0	1.0	**15**	**29**		53	17.83	17.2	9.40	0.60	0.99	9.4	0.60	0.95	0.99	4.00