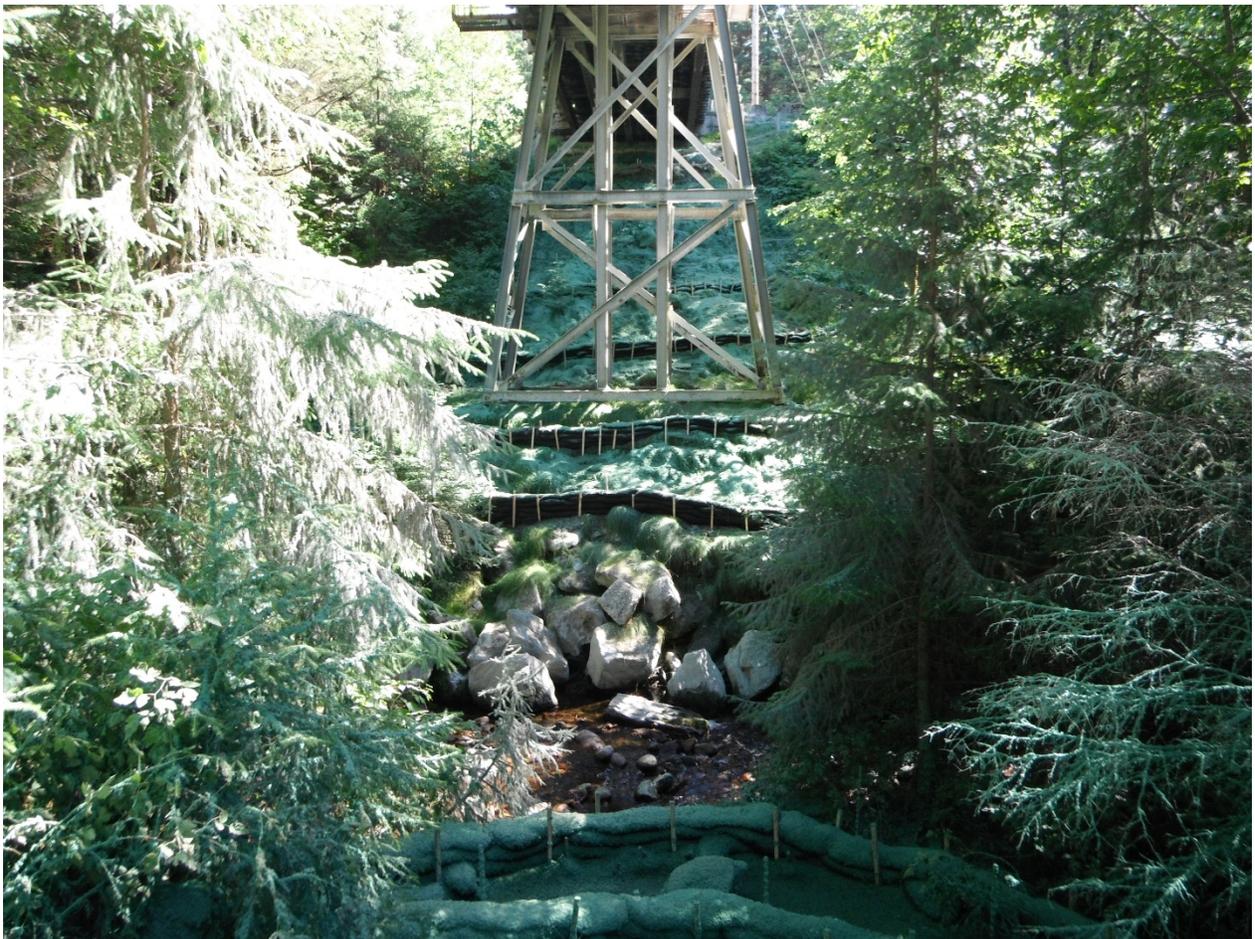


BEST MANAGEMENT PRACTICES PLAN 2018 ANNUAL REPORT



Hecla Greens Creek Mining Company

March 1, 2019

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1.0 Introduction

This 2018 Best Management Practices (BMP) Plan Annual Report is submitted by Hecla Greens Creek Mining Company (HGCMC) pursuant to Part 2.2.6 of Alaska Pollutant Discharge Elimination System (APDES) Permit AK-0043206, effective 1 October 2015. This report summarizes the scope and dates of the comprehensive site compliance inspections/evaluations, major observations related to implementation of the BMP plan, corrective actions taken as a result of the inspections/evaluations, identification of potential incidents of noncompliance as they pertain to the BMP plan, and BMP plan modifications made during the year.

This report does not include discussion of storm water discharges. Detailed information on storm events and water quality monitoring performed at permitted storm water outfalls is provided in the Storm Water Monitoring Program 2018 Annual Report, submitted to the Alaska Department of Environmental Conservation (ADEC) separately. A copy of the report is available upon request.

2.0 Comprehensive Site Compliance Inspections/Evaluations, Incidents of Potential Noncompliance and Associated Corrective Actions

2.1 AK-CESCL Site Compliance Inspections

In March 2017, fourteen HGCMC personnel completed the Alaska Certified Erosion and Sediment Control Lead (AK-CESCL) storm water training program. The training program outlines the key elements of a storm water pollution prevention plan; provides detailed instructions on how to select, install and maintain storm water best management controls; and teaches how to conduct site inspections and monitoring. The class was developed with input from the USACE Alaska district, ADOT, ADEC, ADNRR, ARRC, MOA and Alaska construction industry representatives. The AK-CESCL certification is for a period of three years from the date of the training.

Monthly storm water and BMP inspections were completed by certified inspectors and can be considered site compliance inspections. The results of the inspections conducted in 2018 generally involved the need for maintenance activities to existing BMPs. Records of these inspections are retained onsite and are available upon request. Items noted as deficiencies during the 2018 inspections, as well as the corrective actions taken, included:

- During the April inspection it was noted that ditches and settling sumps along the B-Road needed maintenance. Surface Operations personnel performed extensive ditch and BMP maintenance, including hydro-seeding, along the road system from April through October.
- Multiple inspections noted the need for sediment removal from sumps and cleaning/replacement of straw wattles in the 3.0-mile bridge area. Surface Operations

personnel performed BMP maintenance work in this area during the months of April, May, June, July, August, and October.

2.2 Agency Site Compliance Evaluation Inspections

Personnel with the USDA Forest Service (USFS) perform routine inspections, typically monthly. Frequently they will be accompanied by personnel from other regulatory agencies. The purpose of the inspections is to evaluate compliance with HGCMC operating plans and permits. The scope of the inspections includes the 1350 area, 920 area, 860 area, Site 23/D, Site E, the Tailings Disposal Facility, inactive pits/quarries, and the entire A & B Road system. Inspection reports with photographs are prepared by the agencies to document conditions and observations and includes a list of action items to correct any noted deficiencies. The table below lists the agency site inspections performed in 2018 and includes the date of the inspection, participating agencies, and action items.

2018 Agency Compliance Inspections

Date	Agency	Action Items
1/10/2018	USFS	Install additional fugitive dust controls at TDF
2/13/2018	USFS	No action items
3/15/2018	USFS / ADNR	No action items
4/11/2018	USFS	<ul style="list-style-type: none"> • Remove sediment from B-road bridge ends • Clean culvert at 3.4-mile B-road • Mitigate slope failure at 5.3 to 5.6-mile B-road
5/30/2018	USFS / ADEC	<ul style="list-style-type: none"> • Remove sediment from B-road bridge ends • Clean culvert at 3.4-mile B-road • 3.4-mile bridge decking and liner need replacement
6/28/2018	USFS	Remove sediment from ends of 3.4 and 7.4 bridges
8/30/2018	USFS / ADEC	No action items
9/19/2018	USFS	No action items
10/10/2018	USFS	Repair pipeline at Site E
11/5/2018	USFS	Slope stabilization at 0.9-mile A-road
12/6/2018	USFS/ADEC/ADNR	No action items

In addition to the routine agency inspections, personnel from the ADEC performed a two-day comprehensive site compliance evaluation inspection on October 17 and 18. This inspection focused on compliance with the APDES Permit and included a review of administrative records and plans, inspection of water treatment facilities, and inspection of each storm water outfall and associated BMPs as well as general BMPs throughout the site.

Progress in 2018 included work on corrective and preventive actions from inspections, on continuous improvement projects on the various storm water outfall sites, as well as on improvements to BMPs. The list below summarizes the 2018 work and improvements. A log of the BMP maintenance work is attached to this report. Photographs showing some of this work are included at the end of this report.

- Hawk Inlet Freight Barge Ramp

The rubber razor bar installed above the freight barge ramp in November 2016 functioned well to prevent turbid water from entering Hawk Inlet at this location. However, this BMP required periodic maintenance and replacement due to damage sustained by the heavy forklifts. To provide a more permanent, low maintenance solution, HGCMC installed a large concrete apron on the gravel approach ramp. The thick concrete apron will prevent the formation of ruts by the forklifts and is sloped to direct all runoff to the catch basin. This project was completed in October 2018.

- 3.4 and 7.4 B-Road Bridges

The accumulation of sediment at the ends of the B-Road bridges, primarily at 3.4-mile and 7.4-mile, and the potential for that sediment to reach the streams, was a concern noted in three of the 2018 agency inspection reports. To mitigate the concern, accumulated sediments were removed and sediment deflectors (2"x12" boards) were placed at each end of the bridges to prevent sediments from washing onto the face of the abutments beneath the bridges. With proper maintenance, these measures are effective at directing runoff away from the bridge ends and into established BMPs. Also, at the 7.4-mile bridge straw wattles and compost filter socks were placed in the ditch and on the abutment beneath the bridge to help filter runoff and contain sediment.

- 3.0-Mile B-Road Bridge Area

Several improvements were made to the BMPs in this area. The roadside ditch on the uphill side of the bridge was cleaned and enlarged and several rock check dams were installed. The ditch was then hydroseeded to establish vegetation. The settling pond that receives runoff from this ditch was also cleaned and enlarged. Beneath the 3.0-mile bridge, silt fences that had been utilized for many years to contain sediments were removed and replaced with rows of compost filter socks. Accumulated sediments were removed and the area was hydroseeded to establish vegetation.

- Storm Water Outfall 009 Site 1350

To improve water quality at Outfall 009, during the summer of 2016 a shallow trench, caisson and pump system were installed to capture runoff from the remaining waste rock at Site 1350. Intercepted water is pumped to the 1350 adit where it enters the mine water system that is routed to treatment facilities. The pump system has operated seasonally since September 2016. This system was operated again in 2018 from May through November. The water quality at outfall 009 continues to show improvement.

- Ore Pad Drainage Improvements

A new concrete de-grit basin was constructed which will receive all runoff from the ore pad to reduce the amount of sediment that accumulates in ditches and A Pond. The de-grit basin was completed in November.

- New Vacuum Truck

HGCMC purchased a new vacuum truck in 2018 that has enabled sediment sumps and other BMPs to be cleaned on a higher frequency.

2.3 HGCMC Monthly Evaluations and Site Inspections

HGCMC environmental staff members conduct weekly, monthly and quarterly visual inspections of a variety of areas within the mine site to identify any potential breaches that may lead to pollutants entering the permitted outfalls, storm water drainage system, or surface waters. The results of the inspections conducted in 2018 generally involve maintenance activities to existing BMPs. Any corrective actions needed to address findings from the inspections are conducted with coordination between the environmental department staff, the maintenance department staff, or the surface operations department staff.

2.4 Incidents of Noncompliance

There was one incident of non-compliance associated with a BMP that occurred in 2018. From January 2 to January 3, there was a discharge of approximately 16,350 gallons of contaminated storm water to Greens Creek through Outfall 007 due to a frozen pump discharge line from the C Pond system. HGCMC reported the incident to the ADEC immediately and followed up with the appropriate noncompliance notification. This incident was included in a Notice of Violation issued by the ADEC following the October comprehensive site compliance inspection.

3.0 BMP Plan Modifications in 2018

The HGCMC BMP Plan addresses all components and facilities associated with the Greens Creek Mine. The BMP Plan is a “living” document subject to frequent edits and revisions resulting from routine inspections and BMP modifications. The official copy is retained on-site.

Modifications to the Plan in 2018 include:

- Adding sections on the “B Road and Bridges” and “Hawk Inlet Freight Barge Ramp” in the site-specific best management practices for areas of concern.
- Revising the section on “1.4 Mile A-Road Sand Pit” to reflect modifications to the embankment and spillway made in 2018.
- Revising the section on the tailings disposal facility to address the addition of Pond 10.
- Including a process flow diagram for the tailings area water treatment plant.
- Adding figures to show 8-miles of the B-Road with all culvert locations.
- Revising the section on Outfall 005.2 to reflect the new BMPs installed.

Photographs



PHOTO 1. Ditch above 3.0-mile bridge showing rock check dams.



PHOTO 2. Improved settling pond above 3.0-mile bridge.



PHOTO 3. New BMPs under 3.0-mile bridge, after hydroseeding.

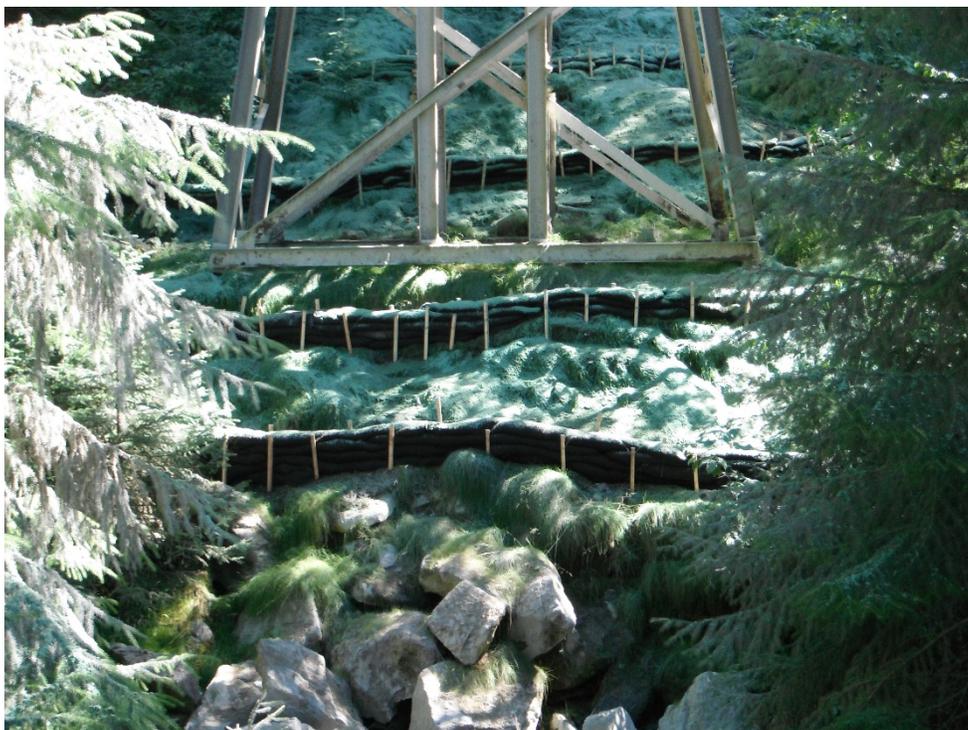


PHOTO 4. New BMPs under 3.0-mile bridge, after hydroseeding.



PHOTO 5. Compost filter sock under 7.4-mile bridge.



PHOTO 6. Sediment/runoff deflector at 7.4-mile bridge.



PHOTO 7. New concrete apron at Hawk Inlet freight barge ramp.



PHOTO 8. Construction of Ore Pad de-grit basin.

2018 BMP MAINTENANCE LOG

Date	Location	Description of Activity
3/31/2018	B Road bridges	Sweep bridges at 3.0, 3.4, and 7.4
4/1/2018	DB-04	Clean and haul to tails
4/1/2018	DB-05	Clean and haul to tails
4/2/2018	Junction to 3.3 B Road	Clean rock check dams and sumps; ~80 yds sediment
4/3/2018	3.4-6.0 mile B Road	Clean rock check dams and sumps; ~72 yds sediment
4/4/2018	5.3-5.4 mile B Road	Clean ditch and culvert inlets; ~80 yds sediment
4/5/2018	Site 23 sumps	Clean and haul to top of Site 23
4/6/2018	Ore Pad Hill	Clean ditch and sumps
4/24/2018	1.8-4.7 mile B Road	Road resurfacing - 23 loads
4/24/2018	6.0-8.0 mile B Road	Road resurfacing - 13 loads
4/25/2018	Ore Pad Hill	Clean ditch and sumps
4/27/2018	4.7-6.0 mile B Road	Road resurfacing - 7 loads
4/28/2018	3.1-3.3 mile B Road	Clean rock check dams and sumps
4/29/2018	B Road bridges	Sweep bridges at 3.0, 3.4, and 7.4
5/23/2018	0.8-0.9 mile B Road	Hydroseed disturbed areas
5/26/2018	2.0-8.0 mile B Road	Road resurfacing - 8 loads
5/29/2018	3.2-3.3 mile B Road	Clean settling ponds
5/29/2018	4.3-5.3 mile B Road	Hydroseed ditches
5/30/2018	5.6-6.0 mile B Road	Clean ditch and culvert inlets; ~60 yds sediment
5/30/2018	5.7-6.2 mile B Road	Hydroseed ditches
5/30/2018	DB-03	Clean and haul to Site 23
5/31/2018	5.3-5.6 B Road	Clean ditch and culvert inlets; ~40 yds sediment
6/1/2018	3.1 mile B Road	Clean settling ponds and remove cut trees
6/2/2018	3.1 mile B Road	Clean and rebuild settling ponds
6/2/2018	Ore Pad Hill	Clean ditch and sumps
6/2/2018	Shop sump	Clean and haul to DB-01
6/3/2018	3.1 mile B Road	Complete settling pond rebuild; install filter rock
6/3/2018	3.1 mile B Road	Clean roadside ditch, culvert and install rock check dams
6/4/2018	2 mile section B Road	Clean ditch and culvert inlets
6/4/2018	DB-04	Clean and haul to tails
6/23/2018	3.2 mile B Road	Clean settling ponds
6/23/2018	Ore Pad Hill	Clean ditch and sumps
6/23/2018	Site 23 sumps	Clean and haul to top of Site 23
6/24/2018	0.9 mile B Road	Hydroseed slopes above road
6/26/2018	7.4 mile B Road	Remove sediment below bridge
7/15/2018	Ore Pad Hill	Hydroseed disturbed areas
7/18/2018	DB-07	Clean and haul to tails
7/19/2018	Tails West Buttress	Hydroseed
7/21/2018	3.0 mile B Road bridge	Remove sediment, Replace old silt fence with compost filter socks
7/22/2018	Site 23 sumps	Clean and haul to top of Site 23
7/22/2018	DB-03	Clean and haul to Site 23
7/22/2018	3.0 mile B Road bridge	Install compost filter socks and new straw wattles
7/23/2018	3.0 mile B Road bridge	Hydroseed below 3.0 mile bridge
7/24/2018	3.0 mile B Road bridge	Hydroseed below 3.0 mile bridge
7/24/2018	920 Pump House	Hydroseed disturbed areas
7/31/2018	7.4 mile B Road bridge	Install compost filter socks and new straw wattles
8/7/2018	Site 23	Hydroseed slopes

2018 BMP MAINTENANCE LOG

Date	Location	Description of Activity
8/7/2018	3.1 mile B Road	Clean settling ponds and hydroseed
8/9/2018	5.2-5.4 mile B Road	Road resurfacing - 7 loads
8/13/2018	1.3-1.8 mile B Road	Road resurfacing - 16 loads
8/17/2018	1.3-1.8 mile B Road	Road resurfacing - 50 cubic yards
8/18/2018	3.0-3.2 mile B Road	Road resurfacing - 40 cubic yards
8/20/2018	3.2 mile B Road	Clean settling ponds
8/22/2018	DB-04	Clean and haul to tails
8/22/2018	B Road sumps	Clean sumps
8/22/2018	Tails S3P1	Hydroseed south embankment
8/23/2018	Tails West Buttress	Hydroseed
8/24/2018	B Road bridges	Sweep bridges at 3.0, 3.4, and 7.4
8/24/2018	Tails West Buttress	Hydroseed
8/26/2018	Tails	Hydroseed backside of TDF
8/27/2018	7.4 mile B Road	Remove sediment below bridge
9/6/2018	920 Area	Clean sumps
9/7/2018	920 Area	Clean sumps
9/8/2018	1.4 mile A Road	Hydroseed embankment spillway and outlet channel
9/10/2018	8.0 mile B Road	Clean 23 lined ditch
9/27/2018	Above 7.9 mile B Road	Road resurfacing - 146 cubic yards
9/28/2018	2.3-4.7 mile B Road	Road resurfacing - 144 cubic yards
10/2/2018	DB-03	Clean and haul to Site 23
10/3/2018	3.1 mile B Road	Clean settling ponds
10/4/2018	920 Area	Clean sumps
10/12/2018	DB-04	Clean and haul to tails
10/12/2018	6.1-8.3 mile B Road	Road resurfacing - 190 cubic yards
10/15/2018	5-mile A Road	Clean ditches shale pit to Young Bay
10/16/2018	4.0-3.9 mile A Road	Clean ditches and culverts
10/17/2018	3.9-3.8 mile A Road	Clean ditches and culverts
10/17/2018	2 mile section B Road	Clean ditch and culvert inlets
10/18/2018	3.8-3.6 mile A Road	Clean ditches and culverts
10/21/2018	Ore Pad Hill	Clean ditch and sumps
10/21/2018	3.1-3.3 mile B Road	Clean settling ponds and sumps
10/27/2018	1.3-7.6 mile B Road	Road resurfacing - 100 cubic yards
11/18/2018	0.8-4.7 mile B Road	Road resurfacing - 30 cubic yards