

I. Introduction

This 2011 Best Management Practices (BMP) and Storm Water Report is submitted by Hecla Greens Creek Mining Company (HGCMC) pursuant to Sections II.F.1 and II.F.2 of NPDES Permit AK-004320-6, effective 1 July 2005. Authority over the federal permitting, compliance and enforcement NPDES program transferred to the State (ADEC) in November of 2010 for the mining industry. The 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, description of the quantity and quality of the storm water discharged, and BMP Plan modifications made during the year. The final section of this report contains the required annual certification under Section II.F.2.

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

1. AK-CESCL Site Compliance Inspections

In April 2010, both Technicians who work in the Environmental department attended the Alaska certified erosion and sediment control lead (AK-CESCL) storm water training program. In December 2011, two additional members of the Environmental department and two members of the Surface Operations department attended the AK-CESCL class. 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 plans; and teaches how to conduct site inspections and monitoring. The class was developed with input from the USACE Alaska district, ADOT, ADEC, ADNDR, ARRC, MOA and Alaska construction industry representatives. All monthly inspections were completed by certified inspectors, and can be considered site compliance inspections. Items noted as deficiencies during the inspections, for example, as well as the corrective actions taken, included:

- After the winter, spring clean-out of most of the settling ponds along the road should occur. This was accomplished in April.
- Build up of sediment behind rock check dams near steep areas along the B road (i.e., 3 mile hill). Sediment was removed from these areas by the end of May.

All inspections were conducted as outlined in the BMP Plan, and copies of the inspection forms are available upon request.

2. EPA Site Compliance Evaluation Inspection June 8, 2009

On June 8, 2009 the EPA conducted a compliance evaluation inspection of the Hecla Greens Creek Mine to determine compliance with the requirements of the Clean Water Act (CWA) and the site's NPDES Permit (AK-004320-6). A summary of the findings from the 2009 inspection were documented in a letter to HGCMC dated 21 December 2009. The inspectors noted four violations and one concern. These findings, referenced first by a summary of the finding stated in the letter (*in italics*), followed by a summary of the corrective and preventive actions taken, are described in detail in the 2009 annual BMP Report (HGCMC, 2010). HGCMC provided the EPA with a

response letter dated 5 January 2010 also noting this information. Additional information on the findings and corrective actions are retained on-site and are available upon request.

Corrective and preventive actions continue on the items noted from two previous EPA site compliance inspections. Progress in 2011 on these actions includes work on the various storm water outfall sites, as well as improvements to BMPs. The list below summarizes the 2011 work and improvements, as well as plans for 2012:

- Storm Water Outfall 003-Hawk Inlet

Additional sampling of contributing flows to this outfall in 2009 had found a number of small seeps with elevated metal concentrations from waste rock foundation areas. Investigations into capturing these small seeps and rerouting them to containment led to a storm water containment improvement project at Hawk Inlet. It was determined that in order to capture the seeps and the water reporting to Outfall 003, the storm water collection capacity at Hawk Inlet needed to be expanded. In 2010, two 93,000 gallon water storage tanks were installed adjacent to the existing degritting basin (DB04) at Hawk Inlet. Tanks in this location are meant to disturb the least amount of useable space (vertical tanks minimize footprint). The tanks will also provide storm surge storage capacity. Water will be pumped from these tanks to the water treatment plant.

In 2010, primary construction elements for this project included subgrade excavation, grading, concrete forming and pour, placing the tanks onto the pad, and mechanical connections for filling and draining the tanks. In 2011, minor piping and mechanical work on the tanks was completed, a new boot wash was commissioned, and a network of small seepage collection sumps with pumps was installed to collect the seepage and the Outfall 003 waters. One seep remains to be collected in 2012.

- Storm Water Outfall 005.2 Zinc Creek Bridge

Routine maintenance of existing BMPs was performed in 2011. This included repair of silt fence and installation of additional straw wattles. The lime application onto the quarry rock buttresses of the bridge that was proposed for 2011 was delayed. Instead, further baseline study of the local water quality was performed. Lime application to the waste rock buttress is proposed for 2012 as long as appropriate monitoring devices can be installed in the Creek to monitor the effects of the lime addition to the buttresses on the pH of the Creek.

- Storm Water Outfall 005.3 Site E

Approximately 8,000 cubic yards of waste rock was removed from Site E in 2011. The waste rock from Site E was hauled to the tailings facility area, and codisposed of with tailings. This volume was less than previous years due to a number of factors, the main one being that the tailings placement area during the spring and summer months was in the northwest portion of the site, where placement was near the liner system. The standard operating procedure for codisposal is to place at least 3 lifts of tailings only on top of the liner system. After those three lifts, then codisposal can occur so that no rock will be placed near the liner system as it may have the potential to compromise the liner. The plan for Site E in 2012 is continued removal of waste rock for codisposal with tailings; however, similar placement issues seen in 2011 will likely be encountered in 2012 due to commissioning of the new East Ridge placement area (i.e., placement will be in a new area directly on top of the liner system).

- Storm Water Outfall 006 Pond D

To significantly increase HGCMC's ability to manage large storm water flows from the 920 area, improvements have been made to the Pond D site. In 2009, these improvements included installation of a larger pump system to increase pumping capacity. Also, Pond D pyretic berm material was removed and replaced with clean, low permeability fill. The improvements at this site over the past few years will prevent Pond D from overflowing to Greens Creek during large storm events. Visual monitoring of this site in 2011 showed that no Pond D overflows were noted during storm events in 2011.

- Storm Water Outfall 007 Pond C

In 2010, HGCMC constructed a diversion ditch to divert clean, upgradient noncontact water from entering Pond C. This will minimize the volume of water routed to treatment, as well as decrease the chance for storm water discharge from this area during large storm events. A parking pad was constructed, with the installation of a lined diversion drainage channel on the upgradient side of the pad to convey the western portion of the backslope surface diversion directly into Bruin Creek while avoiding any mixing with contact waters from the 920 area.

An intermittent seep was observed on the exterior of the lower C Pond berm, indicating that the Pond C pumpback system in the lower pond was not operating effectively. To address this, work completed at Pond C in 2011 included lining the upper pond and installing a pump system. The upper Pond C area was excavated and an underdrain, lined collection pond, caisson, and duplex pump system were installed (see Photo 1). The lower Pond C caisson now pumps to upper Pond C which is then pumped to the Site 23 ditch along the B Road which reports to treatment. As of December 2011, the routed stormwater flow from the B Road routes to the lower Pond C. This flow will be rerouted to the upper Pond C in 2012. Metering capabilities and freeze protection modifications to the upper pond piping system will be implemented in 2012.

- Storm Water Outfall 009 Site 1350

Approximately 13,000 cubic yards of waste rock was removed from the 1350 site in 2011 (see Photo 2). Excavation and haul activities were performed from 10 June through 9 July 2011 by the HGCMC surface operations department. Access road preparation initiated several days prior to the haul and included re-grading of the road, Jersey barrier installation, and re-establishment of rock check dams from the 920 area to the 1350 portal. Installation of guardrail was installed along steeper sections of the access road. Due to the steep slopes of the areas worked and the potential for significant soil erosion, all 2011 disturbed areas were hydroseeded rather than allowing natural revegetation.

Proposed haulage for 2012 is 15,000 cubic yards. Along with removal activities, there will be continued grading efforts to ensure that contact water from this area is routed to collection at the 1350 portal. Material from this site is transported to the temporary holding pad at Site 23, mixed with lime, and taken underground for permanent disposal when void space becomes available.

- Summary of Plans for 2012
 - Finish collection system for storm water flows, including waters that report to Outfall 003 at Hawk Inlet, and route to containment
 - Apply lime to waste rock buttresses at Zinc Creek bridge
 - Continue waste rock removal and co-disposal activities at Site E (15,000 cy planned)
 - Continue waste rock removal at the Site 1350 (15,000 cy planned)
 - Continue to improve the collection system for storm water flows in the area around Outfall 007 at Pond C

C. 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 2011 generally involved maintenance activities to existing BMPs. Records of these inspections are noted on various inspection sheets (i.e., SPCC inspection forms, General Plan of Operations inspection forms, etc), are retained on-site, and are available upon request. 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.

Under the BMP Plan, monthly inspection sheets are completed for each outfall. A BMP Inspection Record Form is then completed for each month. This form compiles the dates of the inspections, as well as any noted deficiencies onto one page for all the outfalls, for easier tracking of corrective actions. All inspections were conducted as outlined in the BMP Plan, and are available upon request.

III. BMP Plan Modifications in 2011

No major modifications were made to the BMP Plan in 2011.

A copy of the HGCMC BMP Plan is available onsite and upon request.

IV. HGCMC 2011 Annual Storm Water Monitoring Report

Storm water monitoring samples for 2011 were collected in May and September, with some additional samples in June. Receiving water sampling, which was initiated in 2005 under the reissued permit, was continued during 2011.

The table below summarizes the required precipitation and duration data associated with the sampling events that occurred in 2011.

2011 Storm Event Details

	Hawk Inlet Camp Site			Mine/Mill Site (920)		
	5/3/2011	6/29/2011	9/20/2011	5/3/2011	6/29/2011	9/20/2011
SAMPLE EVENT						
Duration	28 hrs 5/3/2011	66 hrs 6/28/2011	62 hrs 9/19/2011	28 hrs 5/3/2011	66 hrs 6/28/11 01:00	62 hrs 9/19/2011
Started	10:00	01:00	07:00	10:00	01:00	07:00
Precipitation	0.50"	2.37"	2.00"	0.55"	1.86"	1.98"
Same Day precipitation	0.19"	1.20"	0.85"	0.33"	0.57"	0.74"
PRIOR EVENT						
Days Before Sampled Event	0.7 Days	7.6 Days	0.5 Days	0.7 Days	7.6 Days	0.5 Days
Duration	28 hrs 5/1/2011	23 hrs 6/19/2011	17 hrs 9/15/2011	28 hrs 5/1/2011	23 hrs 6/19/2011	17 hrs 9/15/2011
Started	14:00	12:00	03:00	14:00	12:00	03:00
Precipitation	0.26"	0.26"	0.14"	0.32"	0.12"	0.08"

The table below, 2011 Storm Water and Receiving Water Results, presents the required monitoring parameters for each outfall and any associated receiving water sites. For outfalls that are paired with specific receiving water sites, the data are presented together in the table. The relative metal loadings shown in the table continue the typical fluctuations, often approaching or exceeding an order of magnitude for all sites, reflecting the widely varying precipitation conditions at the HGCMC site. Storm frequency and intensity continues to exhibit high variability, resulting in the differing monitoring result, both within and between years, as well as between sites.

2011 HGCMC Storm Water and Receiving Water Results

Outfall	S=Storm R=Receiving	Site	Date	Time	Flow (gpm)	Hardness (mg/l)	Oil & Gr (mg/l)	Pb-TR (ug/l)	pH Fld (su)	TSS (mg/l)	Zn-TR (ug/l)
003	S	527	5/3/11	14:45	45	82	<2.1	1.4	7.47	1	51
	R	529	5/3/11	14:54	na	5900	<2.1	1.3	8.12	15	6
004	S	520	6/29/11	08:30	no flow						
		520	9/20/11	08:47	2	176	<2.1	2.5	7.23	18	100
	R	524	no flow at stormwater site so 524 not sampled								
005.2	S	539	5/3/11	13:40	no flow						
		539	9/20/11	10:00	0.25	31	<2	17.9	4.65	40	106
	R	368	5/3/11	13:26	no flow						
		368	9/20/11	10:23	100	41	<2	<0.1	6.72	1	8
005.3	S	545	5/3/11	12:49	20	174	<2.1	1.7	7.52	1	359
		545	9/20/11	11:29	15	197	<2	3.9	6.96	1	441
	R	591	not sampled due to unsafe access to sample site								
005.4	S	547	5/3/11	12:29	1	43	<2	<0.1	7.62	1	<2
		547	9/20/11	10:58	1	61	<2	<0.1	6.92	<2	2
	R	591	not sampled due to unsafe access to sample site								
005.5	S	560	9/20/11	13:49	no flow						
006	S	562	9/20/11	14:09	no flow						
007	S	565	9/20/11	13:11	no flow						
008	S	570	5/3/11	11:03	12	163	na	0.1	7.48	1	54
		570	9/20/11	12:40	15	212	na	0.2	7.64	<1	26
009	S	580	6/29/11	10:00	3	314	na	<0.1	6.9	<1	16
		580	9/20/11	12:13	5	328	na	1.7	7.66	12	20
	R	585	6/29/11	10:15	50	63	na	<0.1	7.75	<4	27
Greens Creek below	R	54	9/20/11	14:19	na	51	<2	0.2	8.01	3	8

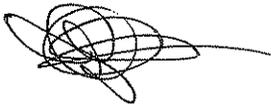
*not taken during storm event

Note Site 54 is receiving water site for Outfall 007 and 008

V. Certification

Based on the above report, the inspections and evaluations have been completed for 2011 and the BMP Plan fulfills the requirements set forth in permit AK-004320-6.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Jennifer L. Saran
Environmental Affairs Manager
Hecla Greens Creek Mining Company

Photos



PHOTO 1. New Upper Pond C Caisson, September 2011



PHOTO 2. Site 1350 Post Removal Area (hydroseeded), August 2011