



31 January 2015

ADEC - Division of Water  
Compliance and Enforcement Program  
555 Cordova Street  
Anchorage, AK 99501

RE: APDES Permit Number AK-004320-6  
2014 Annual BMP and Storm Water Monitoring Report

Attached please find the Hecla Greens Creek Mining Company (HGCMC) Annual Best Management Practices and Storm Water Monitoring Report for year 2014 activities.

As per Sections II.F.1 and II.F.2, of NPDES/APDES Permit Number AK-004320-6, this report includes the following:

- Summary of the comprehensive site evaluations/inspections performed
  - Major observations related to implementation of BMP Plan
  - Corrective actions take as a result of inspection findings
- Modifications made to the BMP Plan
- Description of the quantity and quality of storm water discharged, and any incidents of potential noncompliance
- Annual Certification statement, signed in accordance with Permit Part V.E.

Authority over the federal permitting, compliance and enforcement NPDES program transferred to the State (ADEC) in November of 2010 for the mining industry. Therefore, a hard copy of this report and certification will be mailed to ADEC-Division of Water, Compliance and Enforcement Program in Anchorage. This report was sent via email to the cc list below on January 31, 2015.

Should you have any questions regarding this report, please feel free to contact me at 907-790-8473 or [cwallace@hecla-mining.com](mailto:cwallace@hecla-mining.com)

Sincerely,

A handwritten signature in black ink that reads "Christopher Wallace". The signature is written in a cursive, flowing style.

Christopher Wallace  
Environmental Affairs Manager

Attachment (1)

cc: T. Pilon – ADEC, W. Collingwood - ADEC, M. Reece – USFS

## I. Introduction

This 2014 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 APDES Permit AK-004320-6, effective 1 July 2005. Authority over the federal permitting, compliance and enforcement NPDES program transferred to the Alaska Department of Environmental Conservation (ADEC) in November of 2010 for the mining industry. 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, 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 2014, three Technicians and two Engineers in the Environmental department attended the 2-day 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, ADNOR, ARRC, MOA and Alaska construction industry representatives.

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 2014 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 2014 inspections, as well as the corrective actions taken, included:

- Culvert cleaning at Pit 7, accomplished in July and August.
- After winter, most of the settling sumps along the road were ‘mucked’ out. Also maintenance of ditches and hydroseeding was completed in the summer months.
- In October sediment under the Zinc Creek Bridge was removed, existing silt fencing was repaired, and additional silt fencing and straw wattles were installed.

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

### 2. ADEC Site Compliance Evaluation Inspection 16 September 2014

On September 16, 2014 the ADEC conducted a compliance evaluation inspection of the Hecla Greens Creek Mine to determine compliance with the requirements of the Clean Water Act and

the site's APDES Permit (AK-004320-6). A summary of the findings from the inspection were documented in a letter to HGCMC dated 25 September 2014; HGCMC received this letter via e-mail on 14 November 2014. In the letter the inspector noted the following violation:

‘Permit part IV, Compliance Responsibilities, Section E, states that “The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit...” ’

The following observations are directly from the inspection report (all pertain to the Zinc Creek bridge area):

- Major sediment was observed under the Zinc Creek Bridge.
- Silt fences were installed (in a staggered position) but were not effective in controlling the sediment. The staggering of the silt fences was discussed with onsite representatives. It was said that the staggering was an experiment due to bears are constantly destroying the BMPs HGCMC staff put in place.
- Straw wattles were in place near the creek but were filled beyond their effective capacity with sediment.

Within two weeks of receiving the Notice of Violation HGCMC as requested, submitted photographic evidence, that the stormwater Best Management Practices under the Zinc Creek bridge had the necessary maintenance performed. Maintenance of the BMPs began on 18 November 2014 and was completed within a week. In a follow up email from the ADEC it was stated that ‘ADEC considers this matter closed.’

Progress in 2014 included work on corrective and preventive actions from prior inspections, on continuous improvement projects on the various storm water outfall sites, as well as on improvements to BMPs. The list below summarizes the 2014 work and improvements, as well as plans for 2015:

- 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, and these flows were captured and sent to the water treatment plant. The last of these seepage collection systems was installed in April 2013.

- Storm Water Outfall 005.2 Zinc Creek Bridge

In 2014 accumulated sediment was cleared from underneath the bridge, existing BMPs were maintained, and additional silt fences and straw wattles were installed. These BMPs are routinely damaged by bears, HGCMC is investigating other practices for controlling sediment in the area that are bear 'resistant'.

Weekly general parameter (pH and conductivity) water quality monitoring continues in Zinc Creek in order to monitor for any changes associated with liming applications to the buttresses. The BMPs used in 2014 were a combination of straw wattles, silt fences and check dams. Properly constructed and maintained, these structures control the sediment that passes through the bridge decking.

- Storm Water Outfall 005.3 Site E

No haulage of waste rock materials from Site E to the tailings disposal facility was performed in 2014. Delays in the progress of the permitting for the proposed tailings disposal facility expansion led to a decision to suspend codisposal activities so that the lifetime of the remaining, permitted capacity at the tailings disposal facility could be maximized. Site E was re-graded in the spring to direct surface drainage from the southern end of the pile to 1 acre pond at the northern end. Even though no removal activities took place in 2014, contact water from the site was captured during the spring, summer, and fall months and sent to Pond 7 at the tailings facility.

- 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 pyritic berm material was removed and replaced with clean, low permeability fill. The improvements at this site have prevented Pond D from overflowing to Greens Creek during large storm events. The auxiliary entrance road to D-Pile was reshaped to redirect the water to Pond D in October 2012 to address an action item from an ADEC inspection. Monitoring in 2014 showed that no overflows occurred from Pond D under normal operating conditions nor during storm events..

- Storm Water Outfall 007 Pond C

In 2010, a pad was constructed at the 860 in the proximity of Pond C, a lined diversion channel was installed on the up gradient side of the pad to convey noncontact waters from the western portion of the backslope diversion directly to Bruin Creek avoiding any mixing with contact waters from the 920 Area. This diversion minimized the volume of water routed to treatment, as well as decreased the probability of a discharge to Greens Creek from Pond C during storm events.

An intermittent seep was observed on the exterior of the lower Pond C berm, indicating that the Pond C pump back 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. 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. The 860 Area stormwater flow from the B Road routes to the upper Pond C.

During 2012, arctic pipe and heat trace were installed on the upper Pond C discharge line that transmits water to the Site 23 ditch. The headwall for the discharge pipe that collects the noncontact water flows above the 860 Pad was also installed during 2012. Flows are being tracked from the upper Pond C discharge; however, due to the backflow valve release for freeze protection (which discharges the line back up to upper Pond C during the pump's off cycles), accurate tracking of total volume pumped does not exist. Monitoring in 2014 showed that no overflows occurred from Pond C under normal operating conditions nor during storm events

- Storm Water Outfall 009 Site 1350

Approximately 11,231 cubic yards of material was removed from the 1350 site in 2014. This material was hauled to the temporary, lined, reclamation storage pad (RSP) at Site 23. Excavation and haul activities, from the 1350, were performed in June 2014 by the HGCMC surface operations group, using a Hitachi 160LC or CAT 330 and two to three 35-ton Volvo off-road haul trucks. HGCMC also operated an excavator at the Site 23 RSP to allow blending of stockpiled materials with lime. The disturbed areas at the 1350 were hydro seeded after removal of material in 2014 (Photo 2). With the completion of these activities, HGCMC had anticipated not needing to remove additional material from the area until final reclamation (material still in the road base to the 1350 portal and ventilation ports). However, in the fall after reviewing water chemistry HGCMC decided that some additional material should be removed from the access road to the ventilation ports. Along with future removal activities, there will be continued grading efforts to ensure that contact water from this area is routed to collection at the 1350 portal.

- Overlay and Containment Improvements at the 920 Area

This is a multi-year project to make improvements to deteriorated roadways, concrete reinforcements, and add new concrete pavement in currently uncontained areas and to overlay stable roadway surfaces to improve drainage problems in and around the 920 area of the mine site. A summary of work on this project includes:

- In 2010, the roadway and drainage issues at the Batch Plant were repaired.
- In 2011, repaved the road from the bridge entrance to the tie-in area of the 2010 project, paved a previously unpaved freight pad, improved road drainage issues at Degrit Basin 01 (DB01), paved a previously unpaved tractor parking area and overlaid the road behind the 920 Administration building.
- In 2012, activities included paving both sides of the portal for capturing surface water and pumping it to the mine's main sump and providing containment at the edge of the Creek, which will direct drainage into the portal. Also installed higher splash guards on the Greens Creek Bridge. Continued paving at the 920 Admin building site in front of the new Light Vehicle Maintenance Shop and continued to the tie in with the 2011 920 Dry Addition project. Provided containment in the second freight laydown area below the warehouse.

- In 2013, activities included paving in front of the portal along with repaving the Greens Creek bridge. Areas in behind the Mill and in front of the Surface Shop to the concentrate load-out entry were also repaved.
- In 2014, activities included paving areas between the Surface Shop and Powerhouse including a new concrete containment pad where the bulk oil tanks are staged for the Surface Shop. The road behind the Powerhouse was repaved. The 920 ditch directing contact water to DB02 was rebuilt and Pond A was relined.
- Summary of Plans for 2015
  - Continue waste rock removal and codisposal activities from Site E, contingent on the expansion progress for the tailings disposal facility and operational constraints.
  - Dispose of material on the Site 23 reclamation storage pad.
  - Potential relining of Pond 23.

### 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 2014 generally involve 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 2014

The storm water outfall site maps were all updated in 2014.

A copy of the HGCMC BMP plan is available onsite and upon request. An electronic copy will be provided to the ADEC Division of Water, Compliance and Enforcement in 2015 along with the submittal of this report.

### IV. HGCMC 2014 Annual Storm Water Monitoring Report

Storm water monitoring samples for 2014 were collected in June and October. Receiving water sampling, which was initiated in 2005 under the reissued permit, continued during 2014.

Table 1, 2014 Storm Event Details, summarizes the precipitation and duration data associated with the sampling events that occurred in 2014.

	2014 Storm Event Details					
	Mine/Mill Site (920)			Tailings		
	6/9/2014	6/17/2014	10/20/2014	6/9/2014	6/17/2014	10/20/2014
<b>SAMPLE EVENT</b>						
Duration	7.75 hr	12.25 hr	16.25 hr	10.75 hr	11.0 hr	20.25 hr
Started		6/17/2014	10/20/2014	6/9/2014	6/17/2014	10/20/2014
Precipitation	6/9/2014 8:45 0.64"	4:45 0.46"	5:00 0.38"	8:45 0.14"	5:15 0.77"	5:00 0.28"
Same Day precipitation	0.64"	0.46"	0.39"	0.14"	0.77"	0.02"
<b>PRIOR EVENT</b>						
Days Before Sampled Event	0.4	2.4	0.3	0.4	2.4	0.3
Duration	42.5 hr	27 hr	9.75 hr	41.5 hr	25.5 hr	10 hr
Started		6/13/2014	10/19/2014	6/7/2014	6/13/2014	10/19/2014
Precipitation	6/7/2014 5:30 1.47"	15:45 0.49"	12:15 0.77"	5:15 0.52"	17:15 1.0"	12:15 0.64"

Table 2, Storm Water Outfall Area and Estimated Total Discharge Volume, presents the estimated total gallons of storm water discharged through the outfalls that were sampled. These discharge estimates were calculated using the rational method equation, except for outfall 003.

Though the total drainage area for outfall 003 is 12 acres, the majority of drainage is now captured and pumped to the tailings facility for treatment prior to discharge. Only a small area can now drain through the outfall. Without the capture system in place at 003 an estimated 144,633 gallons would have been discharged through the 003 outfall during the 9 June 2014 storm event.

Outfall	Date	Catchment area (acre)	Total discharge (gallons)
003	6/9/2014	12	85
005.2	6/17/2014	4	20,211
005.2	10/20/2014	4	11,146
005.3	6/9/2014	20	119,070
005.3	10/20/2014	20	92,887
005.4	6/17/2014	6	40,422
005.4	10/20/2014	6	22,293
008	6/9/2014	1	4,763
008	10/20/2014	1	3,715
009	6/9/2014	4	19,051
009	10/20/2014	4	14,862

Table 3, 2014 Storm Water and Receiving Water Results, presents the required monitoring parameters for each outfall and any associated receiving water sites. The laboratory results for lead associated with the 17 June 2014 storm event had too high of an MDL (30µg/L instead of 0.5µg/L). This error was caught while preparing the data for the report. After consultation with the laboratory it was determined that the samples were analyzed using ICP not ICPMS. The samples have since been disposed and are unable to be reanalyzed. To prevent this from occurring the contract number (contains the required MDL for the analysis) will be referenced on the chain of custody and the HGCMC environmental quality assurance personnel will review the analytical results with respects to MDLs upon receipt of results. While preparing this report HGCMC contacted ADEC compliance personnel to discuss with and inform them of this non-compliance issue.

**Table 3: 2014 HGCMC Storm Water Outfall and Receiving Water Results**

Outfall	S=Storm R=Receiving	Site	Sample Date & Time	Reason for No Sample	Flow (gpm)	Hardness (mg/l)	Oil & Grease (mg/l)	Lead -TR (µg/l)	pH Field (su)	TSS (mg/l)	Zinc-TR (µg/l)
003	S	527	6/9/14 15:45		0.13	238	<2.26	2.2	7.65	<5	48
	R	529	6/9/14 16:10			5440	<2.06	0.9	8.33	38	30
004	S	520	6/9/14 12:07	No flow							
005.2	S	539	6/17/14 13:18		0.8	52	<2.12	<30	4.76	<5	100
	S	539	10/20/14 14:35		1.3	32	<2.2	13.1	4.64	<5	43
	R	368	6/17/14 13:31			22	<2.04	<30	7.04	6	10
	R	368	10/20/14 14:45		4488	32	<2.00	<0.1	7.12	<5	9
005.3	S	545	6/9/14 13:55		3		<2.42	0.2	7.37	<5	236
	S	545	10/20/14 13:55		250	194	<2.00	13.2	7.7	8	448
005.4	S	547	6/17/14 14:09		2.11	125	<2.04	<30	6.98	<5	<10
	S	547	10/20/14 14:15		2.6	68	<2.00	<0.1	7.83	<5	4
005.5	S	560	10/20/14 13:35	No flow							
006	S	562	10/20/14 13:30	No flow							
007 <sup>a</sup>	S	565	10/20/14 13:25	No flow							
008 <sup>a</sup>	S	570	6/9/14 11:20		5	162		0.3	7.36	<5	26
		570	10/20/14 12:30		15.9	153		0.2	7.65	<5	20
009	S	580	6/9/14 10:45		5			2720	6.46	3900	6600
		580	10/20/14 12:05		15.9	112		11.8	7.28	9	1100
	R	585	6/9/14 10:55		60	76		81.5	7.42	144	229
Greens Creek	R	54 <sup>a</sup>	6/9/14 12:35			38	<2.06	1.1	7.67	5	9

a. Site 54 is the receiving water site for Outfall 007 and 008

Generally, the results for this year are in the historical range for each of the sites, the notable exception is outfall 009. This outfall is located near the original mine adit at the 1350. HGCMC has been reclaiming the site for several years, by removing the waste rock and disposing of it in the underground mine. The reclamation work in 2014 was directly in the drainage that is monitored at outfall 009. The 9 June 2014 storm water sample was being collected as work was just being started immediately up gradient in an old sediment settling basin. Reclamation activities were stopped, additional sediment controls were added, and surface runoff was captured and pumped to containment.

Water chemistry during the June storm event showed increases in total lead, total suspended solids, and total zinc. By the October samplings TSS was within an expected range, however total lead and total zinc, though lower than in June, remained elevated. HGCMC expects the water chemistry to continue to improve as the site stabilizes from the reclamation disturbance.



For outfalls that are paired with specific receiving water sites, the data are presented together in the table. The location of storm water outfalls are shown in Figure 1. 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.

#### V. Certification

Fulfillment of requirements set forth in Permit AK-004320-06 are met with the above report, the inspections and evaluations for 2014, and the BMP plan.

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.



Christopher Wallace  
Environmental Affairs Manager  
Hecla Greens Creek Mining Company

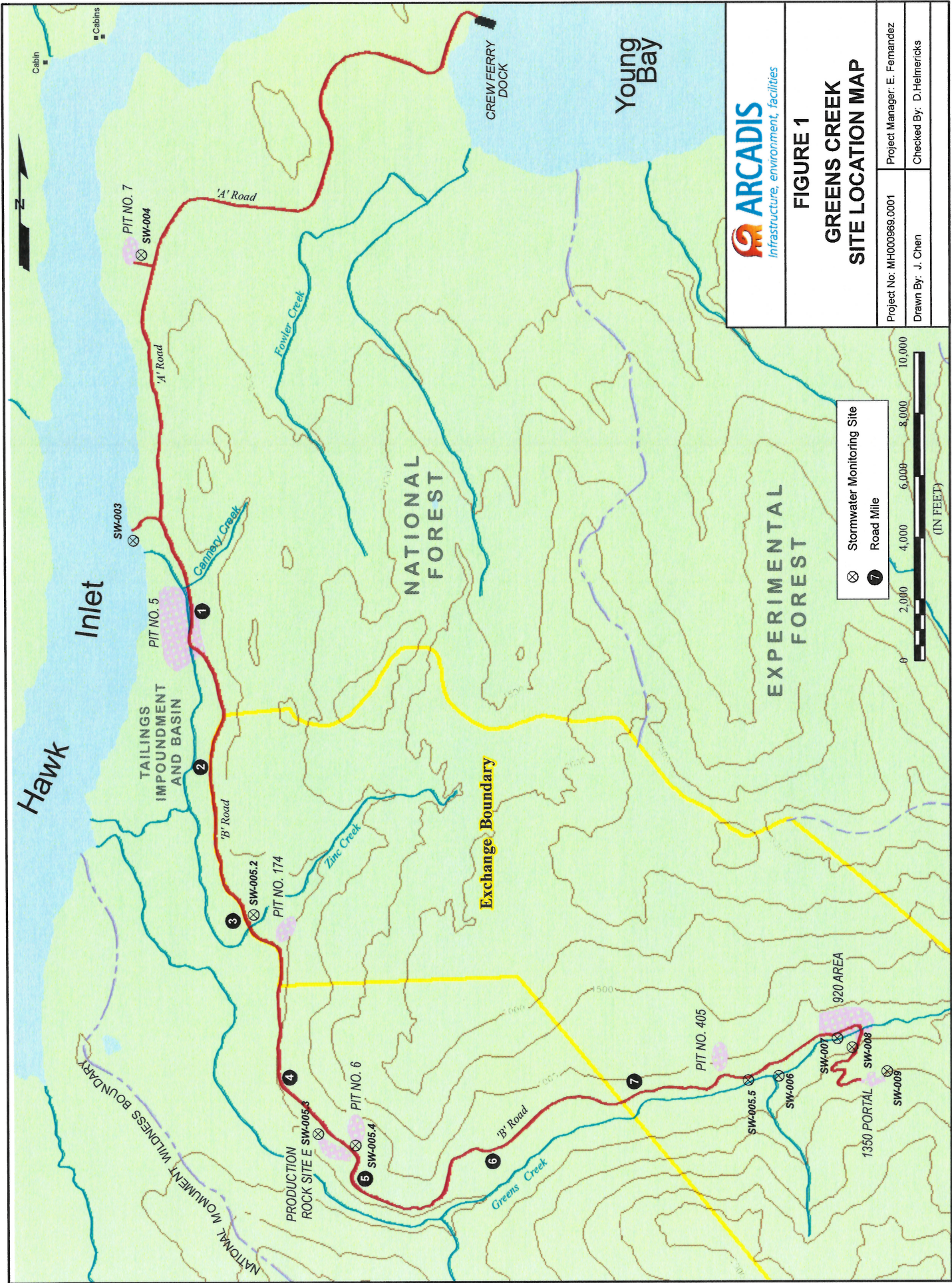
## Photographs



PHOTO 1. Northern bridge abutment BMPs (24 November 2014). The fencing seen in this photograph was designed to funnel sediment to a sump at the base of the slope and is operating as intended. A portion of the sump can be seen behind the base of the tower.



PHOTO 2. 1350 area view towards east and former sediment pond location (1 August 2014).



**FIGURE 1**  
**GREENS CREEK**  
**SITE LOCATION MAP**

Project No: MH000969.0001	Project Manager: E. Fernandez
Drawn By: J. Chen	Checked By: D. Helmericks

