

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SOLID WASTE PROGRAM

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FIELD INSPECTION REPORT HECLA GREENS CREEK MINING COMPANY (HGCMC)

Inspection Date: April 29, 2010, Thursday
Report Date: May 6, 2010
Report Written By: Ed Emswiler, ADEC Solid Waste Program
Weather: 45 degrees F., 0.38 inches precip., wind 5.2 mph ESE, some light rain, mostly clear (reported at Juneau Airport)

HGCMC Personnel: Jennifer Saran, Pete Condon
State Personnel: Ed Emswiler, ADEC Solid Waste Program
Federal Personnel: Chad Hood, USDA Forest Service

Documentation: Photos were taken and are available for inspection at ADEC in Juneau

Purpose of visit: The purpose of the site visit was to:

1. inspect the various waste disposal sites;
2. observe improvements to stormwater control at Site E;
3. observe the lay-down area at mile 1.8 on the B road containing pyritic rock and understand the plan to remove it;
4. discuss the West Tailings Facility Monitoring Action Plan that will be incorporated into the GPO for the tailings disposal facility;
5. observe the visual monitoring program for both tailings and waste rock disposal sites;
6. discuss air quality monitoring of the tailings facility for fugitive dust; and,
7. understand the proposed expansion of the tailings disposal site and the EIS process.

General Items:

Travel to Greens Creek was by charter aircraft provided by the USDA Forest Service. We met at the Environmental Department's building at the Cannery to discuss various items. We left the Cannery at approximately 12:30pm and headed out the A Road. We then drove to the 920 Mill Site and observed various points of interest on the way back to the Cannery. We traveled back to Juneau by way of HGCMC sponsored ferry at approximately 5:30pm.

There was very little precipitation in April (3.08 inches at the Juneau Airport). The level of impounded water and run-off in ditches was low to non-existent. Issues with run-on and run-off were not able to be observed.

Truck Pad at Warehouse

HGCMC has identified a small flow of water with elevated metal concentrations coming from the foundation drains of the warehouse on the truck pad above the cannery. The reddish colored contact water is reported to have high conductivity and elevated metal concentrations. HGCMC plans to collect this water in a sump and then pump it to Degritting Basin 4 (DB04). Water in DB04 is pumped to containment in Pond 7 and is treated prior to NPDES permitted discharge. This is a maintenance item that HGCMC will address this summer.

West Tailings Facility Monitoring Action Plan

The Alaska Department of Environmental Conservation (ADEC) received and is reviewing the West Tailings Facility Monitoring Action Plan. The action plan deals with the drainage of waters downgradient of the western portions of the Tailings Disposal Facility (TDF). The plan works to identify compliance and internal monitoring stations that serve as a warning of future problems. The program is also tailored to rule out complicating factors that include potential contaminants from the following sources:

1. a road in the area of Further Seep was removed approximately 10 years ago. It was excavated because it had a high amount of pyritic material. Excavation of the road may have remobilized sulfate and iron with a corresponding low pH that could have an impact on the Further Seep station;
2. impact due to windblown dust in the area;
3. impact due to pyritic material in the perimeter road;
4. impact due to historic disposal activities prior to the installation of the current slurry wall; and,
5. contact water from a breach in containment.

The plan is well thought out and will eventually be incorporated as an attachment to the General Plan of Operations (GPO), Appendix 3 for the Tailings Disposal Facility. ADEC may require only minor changes to this plan in terms of triggers and sampling frequency when drifts or trends are seen at internal monitoring stations. ADEC agrees that the Althea Creek station in the western Pond 7 drainage and Site 609 west of the tailings facility would likely serve as acceptable compliance monitoring sites. A waiver will be required under Title 18, Chapter 60 (18 AAC 60.900) for the Althea Creek drainage as it is beyond the distance required under 18 AAC 60.810(b). A demonstration will be required to waive the requirement in 18 AAC 60.810(b) in order to approve this compliance monitoring station. This is an action item to this report.

Visual Monitoring and Reporting of the Tailings Disposal Facility and Site 23/D

The HGCMC Environmental Manager showed how visual monitoring was performed at the disposal facilities. The HGCMC environmental staff conducts monthly visual inspections of the

disposal facilities using visual inspection forms. ADEC received electronic copies of the forms, as well as copies of maps that could be modified for use as an additional inspection tool, and will advise on improvements on the forms to show compliance with 18 AAC 60.800(a). Visual monitoring will be an attachment to the next version of the GPO, Appendix 3 for the Tailings facility under the renewed Waste Management Permit.

Monitoring of Fugitive Dust Emissions at the Tailings Disposal Facility

The HGCMC Environmental Manager discussed the plan to monitor fugitive dust at the tailings facility. There was no snow sampling during the winter of 2009-2010 due to the lack of snow. HGCMC has done some particulate sampling using an E-sampler (Met One) in the area of the truckwash. Based on the flow rate and the size of the filter, the run time needed to obtain a measurable sample appears to be two weeks. Results of this monitoring are forthcoming. Particulate sampling in the area of the western and southwestern portions of the tailings disposal facility would provide useful information in order to rule out this source of contamination to wells and surface water in these areas. The Environmental Manager mentioned that electrical power to operate particulate samplers is not supplied to the western portion of the landfill. HGCMC is advised to contact Barbara Trost of ADEC's Air Quality Monitoring Program at 269-6249 for technical assistance in this regard.

Sand Pit

The Sand Pit on the A-Road was visited. There were no flows leaving the site. HGCMC mentioned they plan to expand the site from 5 to 15 acres to meet the demand for this material. The upper overburden layer from the expansion will be stored at Pit 7 for use at closure. A Forest Service Environmental Assessment has been completed for the 10 acre expansion. HGCMC reported some of the sand from the project would be tested using the newly developed Standard Operating Procedure for the Characterization of Construction Rock (SOP). The SOP was mainly developed for material to be used outside of containment. Most of the material from the sand pit will be used to provide the bedding and service layers for geosynthetic liner systems within containment.



Sand Pit on the A Road



**Settling Pond and Check Dam
for Sediment Control**

Site 23

The upper surface of Site 23 was well compacted to decrease sediment run-off, graded and sloped to prevent excessive ponding and provide adequate drainage. The lined temporary storage pad within the facility contains production rock from the removal of the downgradient berms at

both B and D Ponds. This rock has varying metals leaching and acid producing properties. The plan is to co-dispose this rock into the tailings disposal facility this spring according to a plan submitted to ADEC on February 8, 2010, which was approved on March 1, 2010. This will make the pad available to receive production rock from Site 1350 this summer. Site 1350 is often unreachable during the late fall, winter, and early spring due to snow accumulation at that altitude. Staging this material at the temporary storage pad at Site 23 will allow winter co-disposal operations to occur, as co-disposal of production rock from Site E will take priority over the Site 23 temporary pad material during the summer months. Work to excavate and co-dispose other inactive production rock sites is planned and will be on-going throughout the life of the mine.

HGCMC reports a paucity of waste rock according to the most recent mine plan. Waste rock is used to construct internal roads within containment at the TDF. Class 1 waste rock is used for erosion control on the outer slopes of both the TDF and Site 23. Therefore rock material is in demand, and will most likely need to be imported from off-site sources (i.e. Hoonah).



Site 23 Lined Temporary Production Rock Storage Site



**Site 23 - Note: Upper Surface Compacted and Sloped to Drain
(no ponding present)**

Site D

The outstanding feature at Site D was the newly constructed berm that replaced the previous one which contained pyritic material. The new berm was constructed using material from the Site 23 backslope. D Pond was empty of water at the time of this inspection. The newly installed pump at Pond D had not been tested under high flow conditions at the time of this inspection because of low flows. HGCMC has not yet provided an as-built showing the full build-out of this structure as per ADEC approval of this plan dated July 24, 2009. Both as-built site plan and cross-sections are action items to this report.



Site“D Pond and Berm Replacement



Site 23 Backslope

Site E

The sump at Site E was empty. However, the pump in this sump was installed and ready for use when needed. The HGCMC Environmental Manager showed how the system worked in providing a conduit for captured contact water to the B-Road pipeline that transmits water from the mill area to the treatment plant at the tailings disposal site. She also showed how water that over-topped the sump travels through a series of settling ponds and rock check dams to remove sediment prior to its discharge into the adjacent woods.

The plan at Site E this year is to install a stormwater collection pond located at the northeast aspect of the footprint (see Section 7, Mapsheets, Sheet 2 of 3 of April 14, 2009 approved plan entitled “Site E Removal and Waste Rock/Tailings Co-Disposal Plan). This pond will collect stormwater from the entire site and transmit it to the B-Road pipeline. Construction of the lined collection pond is slated to begin within the next two weeks.

HGCMC will not haul production rock from Site E until the pond is installed. The plan is to remove approximately 40,000 cubic yards of production rock this construction season given favorable weather conditions and timely construction of the above mentioned pond.

Several areas of the site continue to be covered by geosynthetic material even though ADEC approved its removal to prevent the build-up of salts while covered. The HGCMC Environmental Manager reported the cover would likely be removed as excavation is completed in that area.



Site E Southwest Aspect at B-Road Entrance



Sump at Site E



Settling Pond at Site E



Geosynthetic Cover at Site E

Mile 1.8 B Road

HGCMC identified a seep with orange-staining at the toe of a pull-out at 1.8 Mile on the B Road. This pull out was constructed from rock blasted from the road cut at Mile 2.5 on the B Road. The road cut was later found to have ARD and metals leaching potential and can be easily

visualized while driving up the B Road. The seep at Mile 1.8 is reported to have elevated levels of iron and manganese and somewhat lower zinc and copper concentrations. This material is also acid producing. The flow from this seep is low and the distance to the nearest tributary of Tributary Creek is approximately 200 feet. A low priority has been given to removing the material because of this.



Mile 1.8 Pullout – Note Seepage at Toe of Slope

Tailings Disposal Site

Stormwater collection ditches at the Tailings Disposal Facility were clear and able to transmit water freely from the southern end of the facility that included the truckwash area as well as the western aspects. This stormwater is transmitted to a new degritting basin near the water treatment plant where sediment is dropped out before entering Pond 7. This allows Pond 7 to remain as sediment free as possible to minimize the need to dredge the bottom of the pond.



Southwest Tailings Facility Near Water Treatment Plant Showing Stormwater Collection and Controls



Tailings Disposal Site – Degritting Basin Near Water Treatment Plant

Co-disposal practices at the TDF were not observed. Tailings were actively being disposed into the northwest Pit 5 area of the facility and there were areas where the sand and geotextile layers were exposed. These areas would need a sufficient amount tailings placement (approximately 5-feet) and proper distance away from the outside edges of the facility before co-disposal of waste rock can take place. Some off-site rock was observed in the road construction within containment. This was reported to come from the Hoonah area.



Tailings Disposal in the Northwest Pit 5 Area – Note: Sand Layer and Geotextile

Trees have been cut down in the permitted East Ridge area of the landfill in preparation for hydrologic and geotechnical studies that will form the basis of a design. A geosynthetic liner used in this area of the landfill has not been confirmed although it is assumed one will be needed. Approval to construct will be given by ADEC after sufficient operation and design information is available. The construction of the East Ridge area is projected to take place during the 2011 or 2012 construction season.



**East Ridge Expansion at Tailings (Background)
Stormwater Controls at South Tailings (Foreground)**

HGCMC is proposing a large expansion project to the south of the tailings disposal site in the Tributary Creek Drainage (see attachment at the end of this report). The “Stage 3 Tailings Expansion Project” will nearly double the size of the existing footprint. The expansion was not approved as part of the current Waste Management Permit and will likely involve a permit modification in concert with an Environmental Impact Statement (EIS) under the National Environmental Protection Act (NEPA) as coordinated by the USDA Forest Service.



**South of Tailings Facility in Tributary Creek Drainage
Site of Proposed Future Tailings Expansion Project**

Conclusions

1. On April 29, 2010 the HGCMC mine was visited to perform the various items mentioned at the beginning of this report.
2. Water flows at the various sites of interest were low. It was not possible to identify issues with run-on or run-off at the various roads and sites.

3. Both tailings and production rock disposal facilities were inspected and found to be operating effectively according to plan for those items inspected.
4. HGCMC is aggressively preparing the tailings facility to accept production rock for co-disposal in the current placement area. Work at Site E will begin in a few weeks with the construction of a new stormwater collection pond. Production rock at Site E and on the temporary production rock storage pad at Site 23 are slated to be co-disposed this spring and summer. Approximately 40,000 cubic yards of production rock will be extracted from Site E this construction season if weather permits.

Action Items

1. The collection and pumping of a small flow of contact water containing elevated metal concentrations at the foundation drains of the warehouse near the cannery is needed. HGCMC mentions this to be a maintenance item that that will be addressed this summer.
2. A sampling location at Althea Creek may be a suitable compliance monitoring location for the Pond 7 area of the Tailings Disposal Facility. A demonstration is needed in order to secure a waiver under 18 AAC 60.900.
3. Air quality monitoring for particulate is needed at the western and southwestern portions of the tailings disposal facility. Greens Creek should follow up with the ADEC Air Quality Monitoring group in order to develop this program if it is possible.
4. A representative quantity of the material from the sand pit should be sampled according to the newly developed Standard Operating Procedure for the Characterization of Construction Rock.
5. HGCMC must provide as-built plans and drawings showing the build-out of the Site D berm reconstruction structure as per ADEC approval of this plan dated July 24, 2009.
6. The material from the lay-down area at Mile 1.8 B Road should be removed as soon as practicable and be replaced with clean fill material.
7. The Tailings Disposal Facility Stage 3 Proposed Expansion Project should be coordinated between HGCMC and the USDA Forest Service NEPA/EIS and ADEC.

Additional Comment:

The Waste Management Permit renewal application is needed. The permit renewal has been put on hold since October 6, 2008 when HGCMC was given approval to operate under the terms of the expired permit. HGCMC has placed a higher priority to the production of a Waste Management Permit renewal application now that the 2009 Annual Reports have been submitted. ADEC expects to review a permit renewal application that will include updated GPO's by the fall of 2010. ADEC is compiling a spreadsheet of items from an environmental audit that was completed in March of 2009 that should guide the way toward the production of a renewed permit. ADNR and the Forest Service are reviewing the proposed update to the bond amount, which will be an integral component of this permit renewal. We look forward to the Annual Meeting that will take place on June 8, 2010 to discuss the Annual Reports for 2009.

ADEC understands HGCMC will lose Pete Condon and Kerry Lear from their environmental and operations staff. These valuable members will be hard to replace as they carry with them a large degree of history and knowledge of the various activities, projects and studies that have taken

place at Greens Creek. We sincerely hope that HGCMC can fill in this gap with staff of equal knowledge and experience.

The Alaska Department of Environmental Conservation appreciates the continuing cooperation of the Hecla Greens Creek Mining Company with the ADEC Solid Waste Program.

** * * End of Report * * **

Proposed Stage 3 Tailings Expansion

