



INSPECTION REPORT: GREENS CREEK MINE

Tongass National Forest Minerals Group
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Date of Inspection: Wednesday, July 23, 2014
Date of Report: Friday, August 8, 2014
USDA Forest Service Inspector: Curtis Caton

Ranger District: Admiralty National Monument, Juneau Ranger District
Weather Conditions: partly cloudy. Temperatures in the mid 50's (°F).

Exploration in accordance with operating plan	Not Inspected
Timber removal following timber sale contract	Not Applicable
BMPs for erosion control	Satisfactory
Water Quality BMPs	Satisfactory
Public safety & fire prevention	Satisfactory
Reclamation work adequate and timely	Satisfactory
Roads maintenance adequate and current	Satisfactory
Tails placement in accordance with plan	Satisfactory
Waste Rock placement in compliance	Satisfactory
Company supervision of operation	Satisfactory
Operating in a clean and orderly manner	Satisfactory

Any conditions noted as UNSATISFACTORY will require follow up action by the Mine Inspector and a written memorandum to the operator, outlining the necessary work.

NEW REMARKS

Ward Air De Havilland Beaver provided transportation to site and and a Ward Air Cessna Float Plane provided transport back to Juneau.

Mitch Brooks (Environmental Engineer, Hecla Greens Creek Mining Company) accompanied David Wilfong (Engineer, Department of Natural Resources) and Curtis Caton (Geologist, US Forest Service) on this inspection. The emphasis of this visit was to inspect Best Management Practices (BMP) of selected facilities. The site inspection included the A (junction to pit 7) and B access roads, 920 footprint, Site 23, D Pond, Site E and Pit 7. HGCMC incorporates both general, and site-specific best management practices to mitigate surface runoff of contact and non-contact water.

ACCESS ROADS

The A and B access roads are in good shape, BMP have been effective at reducing erosion and storm water runoff. Appendix 8 (Road Maintenance), section 3 of the General Plan of Operations discusses how HGCMC will maintain access roads in varying surface conditions.

920

The 920 bridge across Greens Creek to the portal is good condition. The splashguards have been effective in preventing splash over into Greens Creek. Mucking may be needed to rid the bridge of excess sediment (Photo 01).

The area immediately surrounding the portal was in good condition and safe, recent scaling has removed overhead hazards (Photo 02). However, two issues were documented on the edge of the





improved surface, near the portal. First, the containment barrier surrounding the underground road base heap needs to be reestablished in order to prevent accidental spillage of road base into Greens Creek (Photo 03-05). Second, is the need to correct the section of the road at the 920 portal that has developed a preferential flow path. This area should be graded or additional water bar added to minimize the surface runoff at the base of the road (Photo 06-07).

Settling basins between the warehouse and the degrit basin may need mucking to prevent excessive sediment accumulation (Photo 08).

HGCMC has acquired new sea vans that fulfill secondary containment requirements. The estimated containment volume of the new sea van (8'x 20'x 0.25'), on a level surface, is approximately 299 gallons. This volume is sufficient for most of the containers in the 920 area except for the larger volume reinforced totes, which will need to be stored on non-porous concrete draining to the A Pond or in secondary containment with sufficient volume (Photo 09-10). The General Plan of Operations states that secondary containment must be capable of holding 110% of the largest container volume plus additional freeboard precipitation. HGCMC has stated that the sea vans were installed with the rear of the container sloping down gradient, which allows for the containment of approximately 500 gallons.

The potential for differential erosion by stormwater runoff near the southwest corner of the 920-warehouse yard exists but is not evident (Photo 11).

Figure 4 in HGCMC BMP Plan indicates that the ditch behind the 920 Warehouse does not discharge into cub creek; however, in the field, the 920 Warehouse ditch does appear to discharge into Cub Creek (Photo 12-14). This water in the ditch appears to be non-contact water and is being diverting around the localized area of the footprint towards Cub Creek. The diversion ditch has increased the localized potential of stormwater runoff from the preexisting natural conditions; however, no sediment loading was documented during this visit. Recommended mitigation at this site would be the addition of a settling pond or a rock check dam, which would help reduce sediment loading during a large storm event. Additionally, Figure 4, Appendix 5, should be updated to reflect existing field conditions.

SITE 23

The production rock at Site 23 is sorted and labeled (1-3) according to the potential of acid generation the material possesses (Photo 13). Site 23 pile is constructed so that the material with the highest potential for acid generation is placed in the interior of the pile. The pile is constructed and compacted in two-foot lifts to minimize air and moisture infiltration. All material stored at Site 23 will eventually be moved to the Tailings Disposal Facility (TDF).

Recently, waste rock from the 1350 area has been moved to site 23 for temporary storage and eventual disposal in the TDF. The waste rock from the 1350 has been contained and placed on a lined surface that is bermed to prevent comingling with other material (Photo 15).

Site 23-contact water is routed to Site 23 settling pond then either to Pond A or to Pond 7 for treatment. Non-contact water is diverted around the facility and drains naturally through the vegetation into the watershed. Site construction and site specific BMP have minimized surface runoff and erosion at Site 23.





D POND

The purpose of D Pond is to collect stormwater from a waste rock storage pile (Photos 16-17). The waste pile (D) is designed so that surface runoff does not pick up contaminants. Waste rock pile D was phased out in 1991. During normal operations, this water is pumped from Pond D to the water treatment facility. However, large storm events used to exceed the capacity of Pond D and overflow. Larger pumps have been installed in the caisson, which minimizes the chance of overflow. Site-specific BMP for this site (Outfall 006) include diversion ditches, hydroseeding, natural revegetation, check dams, and settling ponds, which have all reduced erosion and runoff at this site.

SITE E

Deposition of waste rock began at Site E in 1988 and continued through 1994. Site E is currently inactive and the waste rock is planned for deposition in to the TDF. Vegetated ditches, check dams, settling ponds, hydroseeding, and natural revegetation have minimized surface runoff (Outfall 005.3). Exposed areas of Site E that are not vegetated are covered during the winter months with a liner to reduce infiltration into the pile (Appendix 5, Measures and Controls, Capping pg. 65). The settling basins have been properly maintained and the settling pond at the North West end of the facility is stable (Photos 18-21).

PIT 7

Outfall 004 is located at the discharge site from a reclamation material storage area in an old road construction quarry called Pit 7. Most of the runoff from this area is first diverted into settling basins and then is discharged into a constructed wetland consisting of two ponds linked by a vegetated swampy area. Site-specific BMP have been effective in reducing erosion and runoff from this site (Photos 22-23).

The culvert that crosses Pit 7 access road has been clogged due to beaver activity (Photo 24).

FOLLOW UP ITEMS

- **Inspect remaining facilities for compliance with the BMP Plan**
- **Measure slope of the 920 sea vans**
- **Underground road base storage area**
- **Pit 7 culvert**

PHOTOS

(High-resolution version of all images available upon request)





Photo 01. Accumulated sediment on the 920 bridge.



Photo 02. Scaling bar near the portal.



Photo 03. Underground road base storage area.



Photo 04. Retaining wall knocked over.



Photo 05. Retaining wall knocked over.



Photo 06. Preferential flow path developing.



Photo 07. Preferential flow path developing.



Photo 08. Settling basin full of sediment.



Photo 09. Reinforced totes stored with insufficient secondary containment.



Photo 10. Example of modified lip.



Photo 11. South West corner of 920 Warehouse.



Photo 12. Ditch behind the 920 Warehouse.



Photo 13. Ditch behind the 920 Warehouse.



Photo 14. Cub Creek.



Photo 15. Waste rock from the 1350 area stored at Site 23.



Photo 16. D Pond.



Photo 17. D Pond.



Photo 18. Site E pond.



Photo 19. Sediment barrier disturbed by bear activity at Site E.



Photo 20. Site E.



Photo 21. Site E.



Photo 22. Settling pond at Pit 7.



Photo 23. Pit 7.



Photo 24. Beaver dam blocking culvert.

Thanks to HGCMC for a safe visit.
U.S. Forest Service Officer: /s/ Curtis Caton
