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October 1, 2014

Weather: Mostly sunny
Temperatures in the mid-50's F
Calm wind
No precipitation

The October 1, 2014 Inspection of the Kensington Gold Mine

This report covers the October 1, 2014 multi-agency inspection of the Kensington Gold Mine. The inspectors consisted of Matthew Reece and Curtis Caton (United State Forest Service), Will Collingwood (Alaska Department of Environmental Conservation) and David Wilfong (Alaska Department of Natural Resources). The inspectors were escorted by Kevin Eppers, the Environmental Manager of the Kensington Gold Mine, for the entire duration of the inspection. Transportation to and from the mine was provided by a United States Forest Service chartered de Havilland Beaver owned and operated by Ward Air out of the Juneau International Airport. Our departure was delayed by about 1 hour due to fog.

After offloading our gear from the Beaver onto the beach, the inspection team (team) walked to the marine load/unload facility and waited a short period for Kevin to arrive and shuttle us up to the Camp area so the team could acquire a few pieces of missing Personal Protective Equipment (PPE). After another quick stop at the Mill Building to pick up the extra equipment needed to travel underground, the team drove through the 14,000+ foot tunnel to the Comet side of the mine.

Figure 1 The Comet Water Treatment Plant as seen from atop the Comet Wasterock Pile.

After emerging from the Comet Portal and parking the truck, the team walked across the double berms to the west side of the Comet Wasterock Pile for an overview of the Comet Wastewater Treatment Plant (WTP) (Figure 1). The double berms designed to prohibit dumping of permitted waste off the west side of the pile are working well. There was a moderate flow in Ophir Creek, and the stream bed was clear of debris.

After leaving the Wasterock pile, the team moved to Pond 1 at the Comet Water Treatment Plant. Water from the mine was being delivered to Pond One at a rate of about 1300 Gallons Per Minute (GPM) during our visit. A slight preferential flow path could be seen in the gravel laydown area draining into Pond One (Figure 2). Water draining from the access road likely uses the path only during heavy rain events, and the path leads directly into Pond One where the water would be treated. At the time of the inspection there was no cause for concern that the preferential flow path would erode further into the gravel pad.

Figure 2 A preferential flow path draining into Pond One.

Silty water from the mine is alternately deposited into Pond One or Pond Two where it is pumped into the treatment plant, treated, and then discharged into a manifold that disperses the clean water into Sherman Creek. Water was discharging into Pond 1, and dredging operations were actively occurring in Pond Two. A floating suction dredge removes settled silt from the bottom of the pond as a slurry, and pumps it into a large porous bag contained inside a lined containment cell (Figure 3). The water is pushed through the pores in the bag, and all but the smallest of particles settle to the bottom of the inside of the bag. The water that exfiltrates from the bag is light brown, and a noticeably different color from the steel gray water contained in the ponds. The water from the sedimentation bags is collected in the lined containment area, and pumped back to the pond. When the bag becomes full of sediment a new empty bag may be placed on top of it and filled. This process is repeated until the containment cell is full. The filled bags may remain in the cells for some time while they continue to slowly dewater. When the sediment inside the bags have adequately dewatered, they are broken into smaller pieces with a front-end loader, and the clumpy, dewatered sediment is taken to the wasterock pile and disposed of. The Waste Management Permit issued by ADEC requires that the sediment is disposed of in the inner part of the pile, and surrounded with run-of-mine wasterock to deter erosion of the fine particles. It was noted, that a recently built sediment bag containment cell that was empty during a prior inspection on July 24, 2014 was

Figure 3 Dewatering bags inside lined containment.

Figure 4 Inside of a new 20 foot container. Note the integrated secondary containment, heater and floor vent.

nearly full with bags that had been filled during the previous nine weeks.

Two new 20 foot long containers were sitting empty near the treatment plant (Figure 4). These elaborate containers feature integrated secondary containment, onboard heating, and built in ventilation. The approved POO states that all hydrocarbons and hazardous liquids must be stored in secondary containment. Kevin stated that these containers will be used to store reagents for the water treatment plant that are susceptible to freezing.

Figure 5 New building and fuel tank.

This type of container is becoming very popular with the operating mines in Southeast Alaska. While the specially equipped containers are substantially more expensive than standard shipping containers, they are a great improvement and help to ensure that chemicals are properly stored.

Figure 6 Site of the proposed new portal.

Since the last inspection performed by ADNR, a 660 square foot concrete and steel building had been built, and a new fuel tank was placed between the WTP and wasterock pile. Both the tank and building have been sited on concrete foundation pads (figure 5). The new tank can hold 10,000 gallons of diesel fuel, and will be used mainly to fuel a 1.2 megawatt backup generator that will be housed in the adjacent new building and diesel heaters in the surrounding buildings.

A metered fuel pump with a nozzle is also connected to the fuel tank, and will likely supply fuel to the various pumps, and equipment that stay near the Comet Water Treatment Plant. The backup generator will remain on standby in case power from the main generators near the mill is interrupted.

The team loaded into the pickup, and returned to the other side of the mine through the Jualin Portal. After driving around the mill, the team stopped at the

Figure 7 High wall and propane tank.


Figure 8 Water seeping from a crack in the high wall.

site of the proposed new portal (Figure 6). The portal, if built, would access a previously unknown ore reserve. It would be built on the existing Mill Bench, upon patented claims within the current disturbance footprint. The portal would be about the same size as the existing Jualin Portal (approximately 18' diameter), and would lead to an estimated 8000' decline. The newly discovered ore body is slightly different from the currently mined ore. While the new ore body is hosted in the same dioritic country rock, it contains some free gold, and is a higher grade than the current ore. The new ore will be mixed with the existing ore and milled in the same fashion, but a dormant gravity circuit will be activated to remove the free gold from the ore before it is processed in the flotation circuit.

Limited space is available on the Mill Bench, and a propane tank (Figure 7) used to fuel the portal heaters in winter will need to be relocated to accommodate the haul trucks entering and exiting the portal. The loaded haul trucks will drive around the lower side of the mill, up to the existing portal area, where they will dump ore onto the existing ore pad, or wasterock on the existing Jualin Wasterock Pile.


Figure 9 New walkway leading to a water quality monitoring site.

Water could be seen seeping from the high wall near the location of the proposed portal (Figure 8). Several hundred gallons per minute of water is expected to be encountered infiltrating into the proposed decline. Coeur will attempt to limit the amount of seeping water by pressure grouting flow paths wherever possible. Water from the workings would be collected, pumped to an existing sump near the Jualin Portal, and then pumped to the Comet WTP for treatment.

After breaking for lunch, the inspection team drove to the Tailings Treatment Facility (TTF), and moved downstream of the dam. A new walkway had been built since the previous inspection (Figure 9). Kevin stated that the walkway was installed to make it safer to travel to the water sampling point on the East Fork of Slate Creek required by the Quality Assurance Project Plan and Fresh Water Monitoring Plan. The remaining exposed area of the original emergency spillway for Stage One of the TTF Dam has been filled in with diorite (Figure 10). The old

Figure 10 Filled Stage One Emergency Spillway.

spillway still collects Acid Rock Drainage (ARD) seepage from the shotcrete covered graphitic phyllite formation. Any collected ARD will infiltrate through the porous, crushed diorite containing a high amount of carbonate. The carbonate will help to neutralize acidic drainage before it reaches a sump at the bottom of the now filled spillway where it is collected and pumped to the small ARD Treatment Plant below the dam. The treated water is then discharged into an infiltration gallery just upstream of the TTF Dam.

The team moved to the crest of the dam, where we observed several light colored areas that marked the crests of several mounds of tailings that had been deposited on and near the upstream face of the dam (Figure 11). Section 3.5 of the approved POO states that a minimum of 9 feet of water will be maintained above the tailings during operations. It is estimated that a cover of 4-6 feet of water was atop the tailings at the time of this inspection. The depth of the cover is not a safety concern, and the height of the water cover will increase as precipitation increases during the rainy autumn season.

Figure 11 A mound of tailings with a shallow cover of water.

The inspectors traveled north to the road that accesses the site of the barrel tests. The test site was only accessible by foot because a low area of the access road had become inundated by the rising level of water in the TTF. A loader was actively placing fill on the inundated roadbed (Figure 12). Kevin stated that a new road alignment may be needed so that consistent road access to the test area is maintained.

Figure 12 A loader raising the elevation of the road bed. The haze is caused by a fogged up camera lens.

The team left the TTF and headed toward the Slate Creek Cove Port Facility. Stopping at a laydown area about a half mile short of the end of the road, the team looked around the site of a proposed fuel tank farm. The Kensington Mine currently supplies 100% of its own electricity via diesel powered generators. These generators require a large quantity of fuel that is presently shipped in 20 foot long ISO fuel tanks which can hold up to 10,600 gallons of diesel.

These tanks are transported by forklift from the barge to the laydown area about 1000 feet away, and stacked 3 high. When the fuel is needed, the massive forklift lifts a tank onto a truck and it is transported to the mill area where the fuel is pumped into the main fuel tank. The empty ISO tank is then trucked back to the laydown area, offloaded with the forklift and stored until it can be loaded back onto an outgoing barge. Coeur has proposed to build a tank farm on an existing gravel pad. Fuel would be pumped through a double wall pipeline from the fuel delivery barge to the tanks near the current fuel tank storage area. When needed, fuel would be pumped into a tank-truck and transported to the main fuel tank near the mill. The reduced handling of the fuel should lower the chance of a spill. The USFS is currently evaluating the tank farm proposal.

The team traveled the short distance to Slate Creek Cove for an on-time egress to the Juneau Airport via floatplane. The Alaska Department of Natural Resources would like to thank the United States Forest Service for providing transportation to and from the mine, and Coeur Alaska for providing lunch and a safe and informative inspection.