



October 29, 2013 Inspection of the Kensington Gold Mine

Weather: Rain with temperatures in the mid to upper 40's F.

Inspectors: Andrea Hilbert - ADEC
Pete McGee - ADEC
Allan Nakanishi – ADEC
David Wilfong – ADNR
David Schmerge – USFS

This report covers the October 29, 2013 joint inspection of the Kensington Gold Mine located in Southeast Alaska. The inspectors consisted of: Andrea Hilbert, Pete McGee, and Allan Nakanishi from the Wastewater Discharge Program at the Alaska Department of Environmental Conservation (ADEC); David Wilfong from the Department of Natural Resources (ADNR) – Mining Section; and David Schmerge with the Tongass Minerals Group at the United States Forest Service (USFS). The inspectors were escorted by Kensington Mine personnel Kevin Eppers and/or Pete Strow with Coeur Alaska (Coeur). The purpose of this trip was a general inspection with an emphasis on the Acid Rock Drainage (ARD) site and the Potentially Acid Generating (PAG) Graphitic Phyllite (GP). Transportation to and from the site was provided by Ward Air in a USFS chartered de Havilland Beaver floatplane.

The inspectors were greeted at the Slate Creek Cove Marine Terminal by Kevin Eppers with a small school-type bus, and were shuttled to the administration building at the “camp” for a required safety training video. After gathering some personal protective equipment, the group was driven to the first stop at Pit 7. The PAG graphitic phyllite that is stored at the gravel pit was actively being hauled underground for disposal (Figure 1).



Figure 1 A front-end loader gets ready to load a 40 ton underground haul truck with graphitic phyllite.

A front end loader transfers GP to an underground haul truck, and it is driven about 3 miles to the Jualin Portal and then to a mined out stope on the 630 level where it is dumped down a raise. The raise leads to the 555 level where it is stored until it can be mixed with Portland Cement and placed into secondary stopes as cement rock fill. A sizable amount of GP had been hauled underground in the past month. While on site during the September 19, 2013 inspection, about 10,000 tons of the rock was stored in Pit 7, but during the October 29, 2013 inspection, it was estimated that less than 1,000 tons were left. Coeur had committed two 40 ton haul trucks to haul the material full time during the 12 hour day shift to ensure that all of the PAG rock got transported underground before November 15. When Kevin was asked if they would make the deadline, he stated that they were on track to finish about a week prior to the 15th.

The inspectors left Pit 7 and traveled to the north end of the Tailings Treatment Facility (TTF). The GP at Pit 7 had been excavated from the north end of the TTF after iron staining was found after the breakup. A water quality analysis showed that the water had a low pH and was high in dissolved metals.

The PAG material had been mistakenly placed at the north end of the TTF as fill after being excavated from the Area around the TTF dam foundation during the Stage II raise in the summer and fall of 2012. The excavated area still showed some signs of possible ARD from one of the seeps at the toe of the pile (Figure 2). Coeur had recently excavated 200 more tons of material after



Figure 2 The middle seep was still brighter orange than the other seeps.

continued sampling showed deteriorated water quality from the middle seep. Kevin stated that the extra material showed signs of being PAG, such as orange staining. At this time it is difficult to ascertain whether the orange color at the middle seep is due to even more PAG material in the pile, or just leftover residue from the previous ARD. Despite warmer than normal temperatures this fall, the facility will inevitably be covered with snow soon, and it may the spring of 2014 before it is known if all of the PAG material has been removed. More information may be found on the ARD remediation in the 10-10-13 Inspection Report from ADNR.

The barrel tests continue to run and the results are as expected. The water that was collected for the first round of tests showed a low pH, and high dissolved metals. The rain water drains down through four different samples of GP, and is collected in translucent containers placed below the

barrels. The collected water is clear, and shows no sign of metals leaching, but the low pH may inhibit the precipitation of metals, causing the liquid to remain clear.



Figure 3 An invisible line has formed at the top of the emergency spillway.

The inspectors moved to the south end of the TTF and walked to the bottom of the downstream face of the dam. Low pH water continues to seep through the shotcrete in the dam's emergency spillway. A noticeable "line" has formed on the shotcrete at the top of the orange – brown stains (Figure 3). It is possible that it delineates the upper extent of the PAG graphitic phyllite geologic formation. It may be a potential tool to use this

visual reference to estimate the extent of the graphitic phyllite during Stage III of the dam construction. Staining can also be seen on the shotcrete that was placed on the embankment near the Upper Slate Lake diversion pipe outlet. More staining can be found in the gravel at the toe of the covered graphitic phyllite pile at the east end of the dam. The pile was encased with diorite to aid in the neutralization of any acid that may form. At this time, the staining is not severe enough to cause much worry, but the situation should be monitored in the future.

After leaving the TTF, Pete and Allan went underground to look at the GP storage, and Andrea, David and Dave went to the revegetation test plots. All three test plots continue to grow well, but the plot using fertilizer and mulch appears to be outgrowing the other two (Figure 4). The plot using the biopolymer shows a small area (~18"X18") of erosion. This is likely due to thin growth media cover. At this time, it does not appear to be leading to slope instability. The test plots will soon



Figure 4 The plot using fertilizer and mulch (in the distance) shows the best results.

be covered with snow and will not be accessible until next spring.

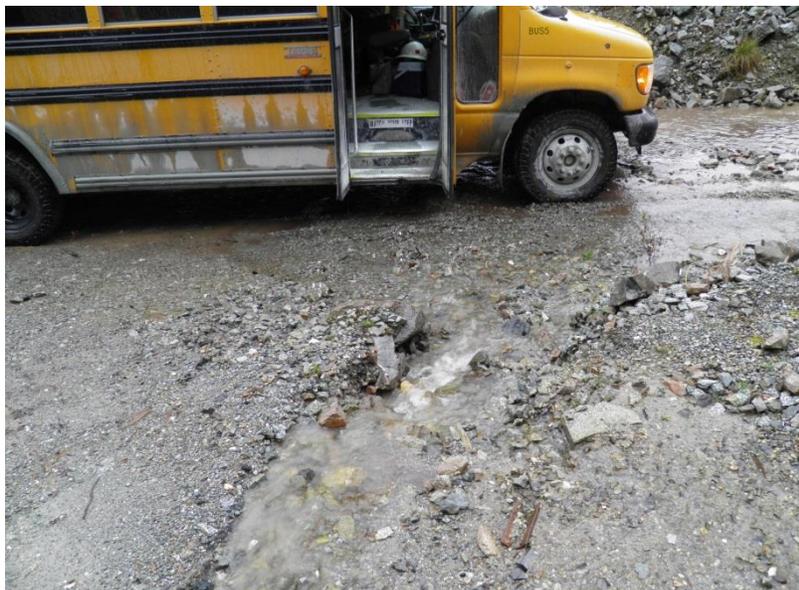


Figure 5 Heavy rain caused surface runoff on the Pipeline Road.

As the group was leaving the test plots, the bus's transmission began to slip, and when it stopped near a core drill rig, it was found that the transmission was leaking (what appeared to be several gallons) transmission fluid onto the ground. Due to the heavy rain, water was flowing down the "Pipeline" Road (Figure 5). Coeur personnel responded swiftly to the situation by laying down oil absorbent pads on the floating transmission fluid, while

deploying oil absorbent boom across water flow paths and digging sumps to catch any contaminated water (Figure 6). The level of containment demonstrated by the responding environmental personnel (Pete Strow) confirmed a high level of training and awareness, and the response to the small spill was swift and appropriate. It appeared as though a rock may have punctured the oil pan on the transmission, causing the leak.



Figure 6 The response to the leaking oil was swift and appropriate.



Figure 7 The Comet Water Treatment Plant from the top of the waste rock pile.

After the two smaller teams of inspectors regrouped for lunch, a new bus shuttled them to the “Comet Side” to look at the waste rock pile, and the water treatment plant (Figure 7). Both of the treatment plants were operating as the mine was dewatering about 2,000 gallons per minute. The desedimentation sumps continue to work well, and the turbidity reporting to the Comet water treatment plants is

noticeably lower than in previous years. At the base Comet waste rock pile, David and Pete walked into the woods to Ophir Creek. Kensington has been troubled by periodic water quality exceedances which may be originating in Ophir Creek. The situation is being closely monitored.

The team traveled back through the mine and stopped at the Jualin waste rock pile. The pile on the Jualin side will soon begin to grow in size as Coeur begins to stockpile waste rock for the construction of the Stage III dam lift. The inspectors were treated to a rare look at the gold ore stockpile (Figure 8), and were then shuttled to the Slate Creek Cove Marine facility for the 20 minute flight back to the Juneau Airport.

The Alaska Department of Natural Resources – Mining Section would like to thank Coeur Alaska employees Kevin Eppers and Pete Strow for the safe and informative stay at the Kensington Gold Mine. Their knowledge of the site is unparalleled. Also, thanks to David Schmerge and the United States Forest Service for providing floatplane transportation to and from the mine.



Figure 8 Gold-laden pyrite in quartz diorite at the Kensington Gold Mine.

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