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KENSINGTON GOLD MINE
STORM WATER LAND INFILTRATION SYSTEM
DAILY OPERATIONS MANUAL OF
BEST MANAGEMENT PRACTICES

For Section 4.1.2, November 5, 2009 ADEC/Coeur Alaska Compliance Order By Consent

November, 2009

1.0 Background

On August 26, 2008 the Alaska Department of Environmental Conservation (ADEC) issued a Notice of Violation (NOV) to Coeur Alaska, Inc. (Coeur) regarding alleged discharges and exceedences of Alaska Water Quality Standards (WQS) at the Kensington Gold Mine Lower Slate tailings disposal facility and treatment works (TDF) construction site. These alleged discharges and exceedences involve low pH storm water drainage at the site.

Previously an August 24, 2006 order by the U.S. Ninth Circuit Court of Appeals in the *SEACC v. U.S. Army Corps of Engineers* litigation enjoined construction at the site after clearing, road building, installation of a construction coffer dam, and excavation were already underway. The August 24, 2006 court order and continuation of the litigation suspended construction activities for a total of three years, resulting in prolonged exposure of excavated areas and water quality condition at the construction site. However, Coeur continued to employ best management practices ("BMPs") and other environmental protection measures during this time period.

The *SEACC v. Corps* litigation was ultimately decided in favor of Coeur and the Ninth Circuit injunction was terminated in July 2009, enabling completion of TDF construction and better resolution of the low-pH water concerns. Coeur and ADEC resolved and settled the NOV by agreement in a Compliance Order By Consent ("COBC") effective November 5, 2009.

2.0 COBC Daily Operations Manual Provisions

This Daily Operations Manual of BMPs for the Land Infiltration System (the System) was prepared in response to Section 4.1.2 of the COBC (Remedial Measures and Agreements). The

document is designed to provide a standard set of operating, maintenance, and monitoring procedures for the System described in Section 4.1.1 of the COBC. This system receives treated water from the containerized interim water treatment plant ("WTP"), which was previously approved by ADEC on August 12, 2009. The WTP is also described in the COBC. The System is described in more detail in the draft October 13, 2009 Land Infiltration BMP Information Submittal referenced in Section 4.1.2. of the COBC and subsequent submittals to ADEC on November 2, 6, and 9, 2009.

3.0 Status of Land Infiltration System

The System is now fully operational (as of November 21, 2009). Field drawings of the initial installation are included as Appendix A of this manual. Appendices B1 and B2 include location drawing and photographs of the initial siting for the operation.

Additional BMP infiltration structures may be installed, depending on flows from the interim WTP. Typically, these flows increase in the spring and fall with storm water. At his time, treated storm water flows from the interim WTP are less than 15 gpm. Section 4.1.3 of the COBC provides for these installations, as needed.

4.0 Best Management Practices Approach

Key BMPs outlined herein address specific requirements of the COBC. These are: Section 4.1.3 (additional infiltration structures); Section 4.1.4 (surface runoff observed); Section 4.1.5 (significant field design changes); and Section 4.1.6 (monthly monitoring reports).

The System has been designed as a site-specific BMP to be applied on a short-term basis during the construction and startup phases at the TDF site.[1] Construction on subsequent phases of the TDF dam is expected to continue through 2017.

A BMP approach for managing storm water is presented in this manual. This includes: minimizing the source where feasible, treating the source, and land infiltration. The BMPs are

[1]Underground Injection Control (UIC) program specifications do not apply to this system.

situation-specific. The operations and maintenance programs and monitoring components will allow Coeur to continually evaluate the effectiveness of the land infiltration program and make any necessary adjustments with the approval of ADEC.

5.0 Objectives of the Operations Manual

- Provide an operational guidebook designed to allow treated storm water from the interim WTP to be effectively infiltrated into the approved disposal system, while still protecting the environment and human health.
- Use infiltration structure locations that are readily accessible for monitoring and inspection, and water tankage or water truck holding/transport of treated water, if required.
- Use locations that will not interfere with construction operations at the TDF.
- Use locations which allow for contingency back-up treatment to be employed, if necessary.
- Operate the System components as BMPs until such time as the full-scale WTP is constructed and operating and a tailings slurry is being delivered to the TDF.
- Develop a Monitoring Plan that is responsive to treatment quality and efficiency, and can define potential land infiltration or treatment modification needs.
- Provide annual and monthly reporting.

Protection of the environment is a fundamental goal of the System and this manual. This will be accomplished by a combination of storm water treatment BMPs (including RCTS interim WTP) and monitoring to confirm the absence of any adverse impact due to the System. This monitoring program will also document and/or validate design criteria used for the project.

6.0 General Operation, Maintenance and Environmental Monitoring

The System will be operated and maintained in a safe and environmentally responsible manner. This includes routine inspections to ensure that all connections are secure and there are no major leaks in the piping system to the interim WTP (influent), and no leaks from the interim WTP (effluent) line to the land infiltration structure(s). These routine inspections will also involve

visual checks for water overflows at the interim WTP site, and to document no erosion resulting from the discharge to the System.

Coeur will designate a qualified onsite individual and a backup who will have the overall responsibility for operating and maintaining the System. All work shifts would be covered by these personnel. These personnel will be responsible for operation, maintenance, monitoring, reporting and emergency response. These personnel will be trained in System operation and fully informed regarding the existing SWPPP and related BMPs for the site.

Weekly reports will be kept regarding storm water flow volumes to the interim WTP and treated storm water to the System. These records in combination with the results of compliance monitoring will be used to determine the operation's efficiency and any potential additional BMP needs.

All related operation and maintenance activities shall be consistent with and complement the current SWPPP. The SWPPP will be updated for any material change in operations, maintenance, or monitoring.

7.0 Land Infiltration BMPs

Specific operation and maintenance BMPs for the System are as follows:

- Facilities, ponds, pipes, ditches, pumps and diversion works shall be maintained to ensure the ability to fully function, as outlined in the COBC information submittals and this manual.
- Adequate storage facilities (i.e., storage tank, water truck) shall be available to storage and/or removal of treated water from the interim WTP, if required in emergency situations.
- Discharge from the interim WTP to the System shall not exceed the treatment design flow for that facility, or any additional basins that may be installed.
- No land infiltration will cause or contribute to a violation of surface WQS at the SL-B compliance monitoring point.

- SL-B shall be the water quality monitoring compliance point for the System, consistent with the COBC and the existing State certifications and permits.
- Storm water BMPs to reduce run-on into the System shall be installed.
- No treated water effluent shall overflow out of the System. If this occurs, the flow shall be diverted to a storage tank and the system shall be shut down and "rested".
- If an overflow does occur, terraces or berms shall be installed to collect and/or reduce the velocity of the runoff and related scouring/sedimentation.
- Drain valves or valve boxes will be located at low points in the lines.
- Heat traces shall be employed as necessary to prevent freezing.
- Some selective seeding of "exposed areas" around the disturbed TDF footprint may be implemented to reduce erosion and sedimentation into the facility.
- Dispersion terraces, silt fences and other BMPs may be also employed to reduce erosion and sedimentation.
- Some construction of diversion piping and storm water conveyance channels around the TDF perimeter and System may also be implemented to reduce storm water inflow. These BMPs would target storm water run-on flows from the west and northwest drainages.
- All related storage tanks shall be maintained on flat, stable ground, gravel or hard surface. If tanks are used they shall be inspected weekly for leaks and valve seal problems, and daily for tank overflow. Any repairs shall be made in a timely manner.
- The System shall be inspected daily to ensure that the storm water infiltration area is intact, not overflowing, free of excess sediment or fines from run-in, and does not pose a safety hazard.
- Gravity collection lines shall be inspected weekly to be sure of free flow and to verify there are no leaks, freezing, slumps, holes, slippage or spillage. Collection fittings will also be checked (see Appendix C, Weekly Inspection Form). Drain valves at low points shall be regularly flushed for accumulated sediments.
- Adding or removing an infiltration unit shall occur only after approval by ADEC.
- At such time as two or three infiltration units have been installed and are operational, a rest and rotation schedule may be developed and implemented.

8.0 Contingency Plan or Measures for Handling Spillage or Unplanned Discharges

The following contingency measures will apply for operation of the System.

- Early detection methods such as regular inspections of the facilities and pressure and flow indicator equipment for the System distribution components will be employed by the operator.
- Contingency storm water storage facilities for untreated flows from the interim WTP will be made available by the operator.
- An upset contingency notification and reporting list (responsible employees and agencies) shall be available to the System operator and employee training for potential major unplanned releases will be part of the overall Kensington Environmental Management Plan.
- Unplanned release reporting shall be for major uncontrolled treated storm water flows including pipeline failures, tankage overflows, and pumping failures which reach receiving waters of the U.S. Regular maintenance events like leaky valves, pump bearing, pinhole leaks, etc. are not required to be reported.
- Notification of major uncontrolled releases are first verbal to ADEC. ADEC will decide if a written report is required to be submitted within five days. A written report will include: explanation of event , when event occurred, any impact to waters of the U.S., corrective action, and approach to prevent reoccurrence.
- Distribution lines from the interim WTP shall be inspected daily in sub-freezing weather to ensure that frozen or broken lines do not occur.

9.0 Land infiltration Monitoring/Reporting

Operational monitoring will include 1) visual inspections for leakage/spillage, slope stability, erosion, and runoff; and 2) down-gradient surface water sampling as follows:

- Consistent with the COBC and NPDES permit monitoring program, the compliance point for the System will be SL-B. The TDF is a designated “treatment works”, and the state-certified NPDES permit AK-005057-1 authorizes discharge through Outfall 002 to East Fork Slate Creek at compliance point SL-B.

- Adding or removing monitoring sites shall not be done without approval of ADEC.
- Monitoring frequency of the SL-B compliance point will be monthly; the schedule will be the same as for SL-B described in Appendix 4B, Fresh Water Monitoring Plan, Final Plan of Operations, Kensington Gold Project (May, 2005).
- Sample collection and QA/QC procedures shall be the same as described in the Fresh Water Monitoring Plan.
- Laboratory analysis requirements shall be the same as described in Table 4 of the Kensington Quality Assurance Project Plan.
- Reporting will be monthly as part of the information provided into the Discharge Monitoring Report Forms (DMRs).
- In addition, Coeur will describe the operation of the System in a summary paragraph to be included in the Kensington NPDES Annual Report.

Coeur will use the monitoring results to apply adaptive management measures for the System, as necessary.

10.0 Completion

Operation of the interim WTP and System will conclude upon completion of the TDF Phase 3 dam. This will occur after full operations and commencement of tailings slurry delivery to the TDF. At this time, the full-scale WTP at Outfall 2 will also be operational. This schedule may be modified by agreement between ADEC and Coeur Alaska, as provided in the COBC.

Upon conclusion of System operations, Coeur Alaska will remove distribution lines and otherwise close and reclaim the locations occupied by components of the System to the satisfaction of ADEC. Within 90 days after conclusion of System operations, Coeur will submit to ADEC a Completion Report describing:

1. completed and planned closure and reclamation actions,
2. total volume of water infiltrated via the System,
3. water quality monitoring results for the final 12 months of operations, and
4. photo-documentation of System closure.