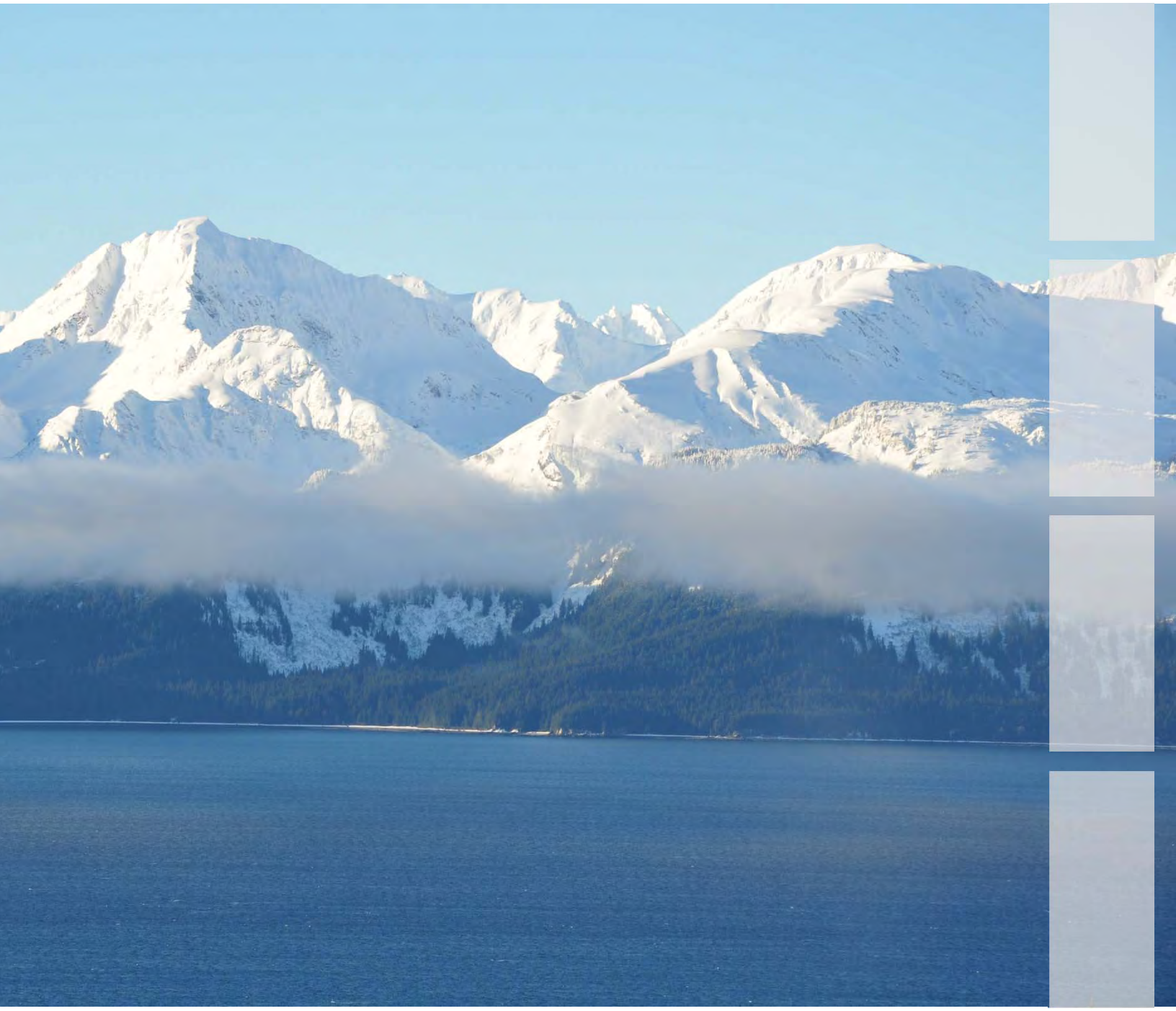
2013 RECLAMATION AND CLOSURE PLAN UPDATE FOR THE KENSINGTON GOLD PROJECT, BOROUGH OF JUNEAU, ALASKA



KC HARVEY
ENVIRONMENTAL, LLC

2013 RECLAMATION AND CLOSURE PLAN UPDATE FOR THE KENSINGTON GOLD PROJECT, BOROUGH OF JUNEAU, ALASKA

Submitted to:

United States Forest Service
Tongass National Forest
Juneau, Alaska

Submitted by:
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Juneau, Alaska

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April 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

Signature Page

Coeur Alaska, Inc. is the owner and operated of the Kensington Gold Project. All official notices required under 11 AAC 97.310 should be provided to Coeur Alaska, Inc. as follows:

Coeur Alaska, Inc.
3031 Clinton Drive, Suite 202
Juneau, AK 99801

Agents Name:
Telephone Number: 907-523-3300

To the best of my knowledge, this reclamation plan is complete and satisfies the requirement in 11 AAC 97.310.

_____ _____
Name Title

_____ _____
Signature Date

1.0 INTRODUCTION

The Kensington Gold Project (Project) is an underground gold mine located approximately 45 miles north of Juneau in Southeast Alaska (Figure 1). The project covers both private lands regulated by the Alaska Department of Natural Resources (ADNR) and public lands managed by the United States Forest Service (Forest Service). Coeur Alaska, Inc. (Coeur), a wholly owned subsidiary of Coeur d'Alene Mines Corporation, is the operator.

This reclamation and closure plan has been updated to reflect current life of mine closure requirements and will:

- Incorporate requirements for wetlands restoration consistent with the recent modification to the USACE Section 404 Permit;
- Update reclamation construction costs including equipment rates, labor rates, materials cost, and production rates determined during construction of the mine facilities;
- Update the financial assurances as required by the Forest Service; and,
- Include updated closure activities to address new or revised site conditions from the time of the original plan preparation.

The facility wide reclamation plan is a combination of site-specific reclamation plans for each part of the mine facility that are required as part of the Plan of Operations (POO) for closure of the property. This plan reflects the alternative chosen in the Final SEIS ROD and includes comprehensive cost estimates to be used for bonding purposes. The plan incorporates key reclamation, closure, and monitoring requirements described in the Final SEIS ROD, and individual, applicable permits for the project. This updated reclamation plan and reclamation cost estimate also serves as the basis for establishing a financial mechanism for the site to ensure that the initial reclamation and long-term operating, monitoring, and maintenance are completed.

The major components associated with the Project are an underground mine, a mill site, a tailings treatment facility (TTF), two development rock sites, borrow areas, administrative offices, maintenance and generator facilities, and a marine dock facility (Figure 2). Ancillary facilities include access roads, topsoil stockpiles, diversion systems, water treatment facilities, water supply, and other minor facilities.

The focus of the project is underground mining of a mesothermal gold deposit. The mine's life is estimated to be approximately 10 years, at a production rate of approximately 1,200 tons of ore and 400 tons of underground development rock (waste rock) per day.

The project facilities are located in three general areas (see Figure 2). The Kensington area is within the Sherman Creek watershed on the western side of the property and includes the 850 Portal and the Kensington Water Treatment Facilities. The Kensington road provides access between Comet Beach and the 850 Level Portal. The Jualin facilities that are located in the Johnson Creek watershed include the mill, Jualin Portal, the shop and warehouse, the camp, and administrative offices. The Jualin road provides access between the Jualin Facilities and the Slate Creek Cove Marine Facility. The Lower Slate Lake Tailings Dam Tailings Treatment Facility (TTF) is located in the Slate Creek watershed. This area includes the TTF dam, the TTF impoundment, an upgradient water diversion, and current and future

water treatment facilities. The TTF facilities and access road are connected to the Jualin access road on the west side of Johnson Creek.

The mine is accessed through the existing 850 Level portal and a newly developed portal (Jualin Portal) on the Jualin side of the project (Figure 2). Mined ore will be hauled to the process facilities adjacent to the Jualin Portal. Ore processing will consist of a flotation circuit producing a concentrate from the diorite host rock. The flotation tailings will be slurried by gravity through a pipeline to the mine for backfill or to the TTF (Figure 2).

Mining will occur 365 days per year; year-round processing would occur over the estimated 10-year life of the mine. Site reclamation and closure tasks are expected to generally be completed two years after cessation of all mining activities. Some project facilities will remain during the post-closure and monitoring period. Details regarding the mining project are provided in the Final Plan of Operations (Coeur Alaska, Inc., 2005).

The principal purpose of this plan is to identify, describe, and cost the required reclamation tasks that would have to be completed either concurrently with, or at the cessation of, the mining project. Cost estimates for implementing these reclamation tasks are provided for the purpose of establishing a bond amount estimate and for determining the best bonding mechanism for the project to ensure that adequate funds are available for reclamation, post-closure monitoring and maintenance, and long-term monitoring.

The reclamation guidelines and plans as outlined herein, in combination with the conditions and reclamation commitments presented in the Final SEIS-ROD (see Section 2.2), constitute the current reclamation proposal for the project. In concert with the USFS and State of Alaska this reclamation plan will be updated every five years, throughout the life of the project. Section 2.7 describes the scope and schedule for revising the reclamation plan. Two years prior to initiating permanent closure activities, Coeur will submit a final reclamation and closure plan.

2.0 GUIDELINES FOR RECLAMATION AND CLOSURE

This section summarizes the various reclamation policies, goals, requirements, principles, processes, and criteria for closing the Kensington Gold Project.

2.1 Coeur Corporate Environmental Policy and Reclamation Goals

Coeur has adopted a Corporate Environmental Policy, which states, in summary, that the company is committed to protecting the environment, while at the same time operating the project in a responsible manner to maximize the benefits of a modern extractive industry. This is the primary goal upon which this reclamation and closure plan is derived.

Coeur's long-term goals of reclamation during and after mining and processing operations are to return the land to a safe and stable condition, consistent with the establishment of productive post-mining uses. The primary land use designation for the Kensington Gold Project area indicated in the Tongass National Forest Land and Resource Management Plan (USDA, 2008) is defined as Modified Landscape (provide for natural-appearing landscapes while allowing timber harvest). The area also has an overlay designation of Minerals (Encourage mineral exploration and development of areas with high mineral

potential). Future mineral development on the private lands controlled by Coeur would utilize the process and administrative facilities located on the private lands.

Coeur will adhere to the above philosophy in developing and implementing the following reclamation goals at the project site:

1. Stabilization and protection of surficial soil materials from wind and water erosion;
2. Stabilization of steep slopes through recontouring and leveling in order to provide rounded landforms and suitable growth media surfaces for natural invasion and recolonization by native plants;
3. Establishment of long-term, self-sustaining vegetation communities by reseeding with native plants and promoting natural recolonization and succession;
4. Protection of surface and ground water quality including compliance with all applicable water quality standards at closure;
5. Protection of public health by reducing potential hazards typically associated with mines and processing facilities;
6. Establishment of fish and wildlife habitat; and
7. Minimization of long-term closure requirements, especially for ongoing care and maintenance.

Coeur has incorporated sound engineering principles in this reclamation plan to achieve these goals and uses.

2.2 Summary of Final SEIS Reclamation Requirements

Based on the analysis and evaluation in the Final SEIS for the Kensington Gold Project, the Forest Service made the decision to select Alternative D for mining and reclamation, as documented in the ROD. Table 2.2-1 provides a summary of the conditions and reclamation commitments identified in the SEIS-ROD.

Table 2.2-1 Conditions and Reclamation Commitments in the Kensington Gold Project SEIS-ROD

Discharge Permit Requirements
• EPA's decision regarding the Kensington Gold Project involves the issuance of a discharge permit based on Coeur's discharge permit application, which reflects Alternative D. • The permit sets conditions on the discharges of pollutants from the mine to Sherman Creek (Outfall 001), from the TSF to East Fork Slate Creek (Outfall 002), and domestic wastewater to Lynn Canal (Outfall 003). • The discharge permit includes effluent limitations specific to each outfall and other requirements to ensure water quality protection in each of the water bodies mentioned above, including compliance with the Alaska Water Quality Standards (AWQS) for aquatic life and human health. • Treatment requirements for the Outfall 001, 002, and 003 can be found within ROD.
Reclamation Requirements
• Once tailings disposal is complete, the tailings would be capped to isolate any toxic contaminants unless Coeur could demonstrate to the satisfaction of EPA that tailings are not toxic. • The U.S. Army Corps of Engineers, in its CWA 404 permit, requires a special condition for Coeur to use nontoxic chemical flocculent to enhance the deposition of suspended particles and reduce turbidity levels

in the Lower Slate Lake disposal site.

- Do not conduct instream construction work from May 1 through October 31.
- Develop mitigation measures to provide safe and efficient downstream fish passage from above the TTF dam to East Fork Slate Creek.
- Reestablish benthic and fish populations in Lower Slate Lake after closure.
- Develop and implement a reclamation plan to restore Dolly Varden char and other aquatic resources in Lower State Lake after closure.
- Establish vegetation test plots to evaluate the most effective means of reclaiming wildlife habitat after project closure.
- Maintain drainage patterns, water quality, and water quantity to the extent possible to support aquatic plant populations and habitats.
- Maintain sediment ponds as open water at closure, and retain any shallow water remaining in borrow areas as open water wetlands.
- Remove fill material from roads built in waters of the U.S. and reclaim to natural conditions.
- Reclaim vegetative cover to 75 percent.
- Apply seed and fertilizer (as necessary) to all disturbed areas to be reclaimed, including cut-and-fill dams and roadways. Seed mixtures should reflect the vegetation and growth characteristics of Southeast Alaska.
- Revegetate the external tailings slopes and borrow areas as soon as practicable.

This plan reflects current mining, mitigation, and reclamation plans described in the Final Plan of Operations and changes to site conditions since the last update to the plan.

The first step in reclamation would involve the removal and storage of growth media from all areas to be disturbed. Stockpiled growth media would be seeded to reduce the potential for erosion during storage. Growth media salvage and use during reclamation is discussed in more detail in Section 2.5.1.

Final reclamation would begin at the final stages of mining operations. Facilities not necessary during the reclamation process, including buildings, would be decommissioned and either salvaged, demolished, or forfeited to the private land owner. Table 2.2-2 presents a list of buildings and indicates if the building would be removed during closure or would be retained by the private land owner. Any demolition materials would be disposed of or removed from the site. After facilities are removed, concrete foundations or slabs would be broken into pieces and covered with fill material. Compacted areas (excluding the buried concrete slabs) would be ripped, and all areas would be graded to blend with the surrounding natural topography. Roads would remain in place as long as required to conduct monitoring and long-term care and maintenance activities. The access road from Slate Creek Cove to the Jualin Mine site could remain in place as a permanent highway right-of-way owned by the State of Alaska (see Consent Decree for Case No. A96-0478-CV [HRH] signed by U.S. District Court Judge H. Russel Holland on January 19th of 2002). All piers, decking, and pilings would be removed from the Slate Creek Cove marine terminal. The fill within the tideland lease area is expected to have recolonized naturally and removal may not be required. The fill will be removed as is necessary under the State of Alaska tideland lease. This issue will be evaluated prior to closure and addressed in the final closure plan. The closure cost estimate includes removal of the fill and it is included in this plan.

Later stages of final reclamation would include the removal of stormwater BMPs and sedimentation ponds, followed by regrading and revegetation. The final stages of reclamation would include removal of the remaining structures such as the water treatment facilities and covering or plugging the mine portals. Growth media would be spread over regraded areas to a minimum depth of one-foot followed by seeding. The depth of growth media, plant species, and seed mixtures, as well as the use of fertilizer and soil amendments (e.g., lime), would be determined through the evaluation of interim reclamation during mine operation. State agencies and the Forest Service would approve final plans. Mulch and other BMPs would be used to minimize erosion until vegetation became established. A monitoring program would be established to track reclamation success (see Section 4.2).

The TTF access road would remain for maintenance and monitoring of the TTF, which is being bonded for a 30 year post-closure monitoring and maintenance period. It is anticipated that shrubs and trees will become established on the road surface over time and brushing may be required to maintain access along the road. Long-term maintenance of the TTF road will be covered by the post closure financial assurances described in Section 5.6.

The tailings in the TTF would be deposited to an elevation of 704 feet with an operational water cover of at least nine feet. At closure, the lake level would be raised to an elevation at which the TTF would create or inundate at least the same acreage of natural sediment in shallow areas that support plant life and macroinvertebrates as was present in Lower Slate Lake before mining. A minimum of 11 acres of sediment would be flooded. The TTF water treatment system and diversion pipeline would continue to be operated, if needed, until the operator demonstrated that downstream water quality can be protected without the need for treatment. Once this was demonstrated to USEPA, ADEC, and the Forest Service, the treatment system and pipeline would be removed. A four- to six-inch tailings cover/amendment is a contingency for reclamation of the TTF. Coeur will be conducting testing during mine operations to demonstrate the habitability of the tailings and if a cover/amendment is necessary.

Table 2.2-2 Summary of Building to be Removed During Reclamation

Location/Building	Land Ownership	Removal During Reclamation[1]
Mill/Portal Bench		
Crusher Building & Conveyors	Private	No
Ore Silo & Conveyors	Private	No
Mill Building, Associated Tanks, Electrical Equipment	Private	No
Primary Generators (6) & associated Fuel System	Private	No
30,000 Gallon Fuel Tank/Cement Pad	Private	No
Propane Tank/Cement Pad	Private	No
Fire Water Pump Connex	Private	No
Potable Water Treatment Connex	Private	No
Potable Water Treatment Tanks	Private	No
Oil/Water Separator	Private	No
Johnson Creek Pump Shed & Infiltration Gallery	Private	No
Fire Water Tank	Forest Service	Yes
Assay lab building & baghouses	Forest Service	Yes
Incinerator	Forest Service	Yes
Upper/Lower Camps		
Surface Dry	Private	No

East/West Dorm Facilities	Private	No
Kitchen, Dining Room	Private	No
Meeting Room Yurt	Private	No
Surface Warehouse	Private	No
64-man camp at lower camp	Private	No
Office facility at lower camp	Private	No
Sewer Treatment Plant	Private	No
Geology Core Logging Connexes	Private	No
Pit 3 Area		
Pit-4 maintenance shop	Private	No
Pit-4 maintenance shop tent	Private	No
Comet/Lynn Canal Facilities		
Comet Water Treatment Plant & Expansion	Forest Service	Yes
Comet Shop Building	Private	Yes
Comet Electrical & Dry Buildings	Private	Yes
Tailings Treatment Facility		
Tailings Treatment Facility Water Treatment Plant	Forest Service	Yes
Temporary Seep Water Treatment Plant	Forest Service	Yes

[1] Buildings not removed during reclamation are located on private land and will be forfeited to the land owner.

The time required to implement the TTF reclamation plan, including establishing the final lake level, would vary depending on upstream flows and precipitation. Coeur would be required to continue to comply with minimum instream flows established by ADNR throughout the reclamation period when the lake is being filled to the spillway elevation. Filling of the TTF Lake is discussed in Section 3.7.2.

The TTF reclamation would focus on restoring fish habitat and would include a littoral zone, as well as areas deep enough for overwintering. The discharge from the reclaimed lake would occur through a spillway constructed in bedrock. The TTF spillway will be designed to handle runoff conditions and storm events as required by the State Dam Safety Engineer. An overflow spillway will be constructed during each embankment stage. The spillway would be designed to handle runoff conditions and storm events as required by the State Dam Safety Engineer. A reconstructed channel from the spillway would be designed so that fish would be able to safely move down the system and into East Fork Slate Creek. The preliminary design for the final spillway is presented in Appendix C. The design includes a series of steps that will allow for fish passage. Coeur would be required to establish a funding mechanism to ensure the long-term care and maintenance of the tailings dam and spillway. This includes completing dam safety inspections every three years and monitoring and maintenance every year. These activities would be ongoing after the 30 year post-closure monitoring and maintenance period included in this reclamation and closure plan. Activities required after the 30 year post-closure monitoring and maintenance period are addressed in the Long-Term Care and Maintenance plan for the project.

2.3 Reclamation and Closure Principles

In addition to the general policy, goals and SEIS ROD requirements discussed above, the following reclamation and closure principles will apply for the life of the project and during closure:

1. The reclamation plan will be reviewed and updated every five years and two years prior to final closure. This review would cover the status of reclamation activities, monitoring

and revegetation trial results, task scheduling and completion, and costs, particularly as related to financial assurance requirements.

2. The reclamation plan will describe reclamation requirements as they relate to interim, long-term shutdown, and final reclamation at closure.

3. All surface mining disturbances associated with the Kensington Gold Project will be bonded for an amount equal to the actual cost estimate of reclaiming the disturbed areas by a third party contractor working under the direction of the Forest Service and/or the State of Alaska. In addition to the surface reclamation, other reclamation and closure activities identified in the Reclamation and Closure Plan would be completed that involve the underground workings. These activities are specifically identified in the Reclamation Closure Plan.

4. Measurable bond release criteria will be developed for all reclamation activities.

5. Soil or soil-like growth media (organic material and/or suitable subsoil) will be inventoried for volume and general reclamation suitability and stored for future reclamation use. Protection from erosion will be provided.

6. Mine revegetation test plot research will be conducted at the site following receipt of approval from ADNR and FS of the Test Plot Plan to evaluate the potential of native species revegetation and dormant seeding of natural species in the spring and fall seasons.

7. Disturbed areas no longer involved in mining operations will receive reclamation treatment within two years, as described in the reclamation plan.

8. Best management practices (BMPs) for interim drainage stabilization and erosion control will be implemented during the life of the project.

9. Sediment control facilities such as dispersion terraces, ponds, dikes, and infiltration basins will be designed and installed before surface-disturbing activities begin.

10. Sediment control facilities will be inspected regularly, and maintained according to the schedule defined in the storm water pollution prevention plan.

11. Following construction, cut-and-fill embankments and growth media stockpiles will be seeded with native grasses to reduce the potential for soil erosion and to enhance natural plant reinvasion.

12. Unchanneled runoff from disturbed surfaces will be dispersed into undisturbed forest areas, to the extent practicable or additional mitigation measures would be implemented.

13. Engineered facilities and associated construction materials will be monitored during construction, operation, and a defined post-closure period.

14. Environmental audits will be conducted during the fourth year of every five-year permit cycle so the waste management permit renewal, the reclamation plan renewal approvals, and the cost estimate and bond update can be accomplished during the fifth year of the five year cycle. The final environmental audit should be completed immediately prior to final closure unless otherwise approved by the agencies.

2.4 Overview of the Reclamation and Closure Process

Coeur considers reclamation to be a progressive process directly tied to the design, construction, operation, and closure of the mining operation. Reclamation will, therefore, generally occur in the following phases, with some overlap:

1. Construction Reclamation,
2. Interim Reclamation,
3. Temporary Closure,
4. Final Reclamation and Closure,
5. Post-Closure Monitoring and Maintenance, and
6. Long-Term Care and Maintenance

2.4.1 *Construction Reclamation*

Construction reclamation activities will occur during and directly after the mine and process facilities are constructed in the form of topsoil salvaging and stockpiling. This phase of reclamation will involve the removal and storage of topsoil from all areas to be disturbed. During construction, vegetation will be cleared from the surfaces that will be developed. Topsoil and soil-like growth media will be removed where possible and stockpiled for reclamation activities. Topsoil stripping and stockpiling will continue as mine facilities are developed.

2.4.2 *Interim Reclamation*

Interim reclamation is defined as temporary measures for reducing the potential for erosion and sedimentation, and other activities required to protect surface- and ground-water resources. Interim reclamation would be done to stabilize road cuts, stockpiles and other disturbances that result from exploration, construction, and operational activities. Interim reclamation measures could include seeding, fertilizing, mulching, temporary diversions, sedimentation control systems, and other BMPs (included in the Forest Service Soil and Water Conservation Handbook Forest Service, 2006).

2.4.3 *Temporary Closure*

Temporary closure means the planned or unplanned cessation of the mining and processing operations for a period of more than 90 days but less than three years. If conditions require temporary closure to extend beyond three years, final reclamation and permanent closure activities would begin unless Coeur is granted an approval for extension by the Forest Service and ADNR. Temporary closure scenarios that require modifications to the plan of operations or reclamation plan would be coordinated with and submitted to the appropriate federal and state agencies for approval.

Planned temporary closures that have specific conditions defining their beginning and end include the following:

- Interruptions in the active beneficiation process for metallurgical or operating reasons;
- Any other planned conditions that interrupt active mining or beneficiation, including modification to process components or suppressed market economics; and

- Change in ownership requiring the temporary cessation of operations while operating permits are transferred to the new owner/operator.

Unplanned temporary closures may include the following:

- Closure because of unforeseen weather events;
- A failure in a major mining or processing system component, or a system failure that causes the system or a portion thereof to shut down;
- Discontinuation of operations due to temporary economic considerations or unforeseen labor disputes; and,
- The discontinuation of operations due to litigation or other legal constraints.

Coeur would notify the Forest Service and ADNR within three (3) days of the initiation of a temporary suspension of mining, milling and processing activities. The notice shall state the nature and reason for the temporary suspension and also the anticipated duration. After the initial notification, Coeur would submit to the ADNR and the Forest Service (following 36 CFR 228.10) an update to the conceptual suspension plan reflecting current conditions no later than 10 days after the initiation of a planned temporary suspension or 30 days after the initiation of an unanticipated temporary suspension. The updated temporary suspension plan would include the following:

- A statement of events that would reasonably be anticipated to result in either the resumption or the permanent cessation of mining, milling and processing activities;
- Reclamation or construction activities anticipated to occur during the period of temporary suspension;
- The procedures, methods, and schedule to be implemented for the treatment, disposal, and storage of process waters;
- The control of surface and groundwater drainage to and from the facility and the surrounding area;
- The control of erosion from the tailings area, development rock disposal areas, and any other disturbed areas within the facility boundary;
- The secure storage of chemicals during the period of temporary suspension;
- Procedures for continuing maintenance and monitoring of the dam including seepage collection and water balance; and,
- Procedures for maintaining containment of all water at the facility and providing continuing treatment of that water in accordance with APDES Permit No. AK-005057-1.

The ADNR and the Forest Service would review and approve the amended suspension plan within 15 days of submittal or would require modifications to the temporary suspension plan. Once a temporary suspension plan has been approved, it becomes enforceable under the conditions of the waste management permit and Plan of Operations and full implementation of the approved specific plan is required. The plan can be amended by submitting a revised plan to the department for approval.

During temporary suspension of the site, Coeur shall:

- Continue pollution control activities associated with the Tailings Treatment Facility and the waste rock disposal sites including, but not limited to, dust control, maintenance of the drainage diversion structures, maintenance of all seepage control structures and processes, and maintenance of the dam including appropriate freeboard;

- Continue monitoring and reporting as required for all active portions of the mine; and,
- Complete reclamation and corrective action requirements as appropriate under the Closure and Reclamation Plan in light of the nature of the closure.

Coeur would request written approval from the ADNR and the Forest Service before resuming operations after a period of temporary closure.

2.4.4 *Final Reclamation and Permanent Closure*

Final closure is defined as the permanent cessation of all mining and processing as a result of project completion, or depletion of the economic mineral resources for the project to the extent that the operation is no longer feasible. Final reclamation and closure activities would occur according to the provisions of this reclamation and closure plan as required by the Forest Service and ADNR.

Under the present construction and economic scenario and proposed mine plan, operation of the mill would begin in 2010, and production would cease in 2022. Final reclamation would be initiated at the cessation of mining and processing operations. Notification of final closure would be given to the Forest Service, ADEC, and ADNR 90 days prior to cessation of mining and processing operations. This notice would state the date on which final reclamation activities would begin.

Final reclamation will involve physical reclamation and water management. The schedule to complete reclamation will be dependent upon meeting post reclamation water quality objectives. As physical reclamation activities are completed, and erosion and sediment from reclamation construction is controlled, stormwater management practices will be reviewed and discontinued where appropriate. Final contouring of nonessential roads, borrow areas, development rock areas, the TTF margin area will likely occur during the first year of reclamation construction. As reclamation construction is completed and objectives are met final reclamation of access routes may occur. Critical reclamation objectives and access requirements that will influence the reclamation schedule include:

- Water quality criteria defined by the state of Alaska will be used to determine when discharge from the TTF, underground mine workings, and other sources would be allowed. Appendix G defines the water quality criteria and defines the monitoring points that would be used to determine if water quality objectives are being met for each source throughout the mine site. Operation of the water treatment plants located at the TTF and Kensington site would continue for a period of four weeks after influent meets water quality objectives.
- The treatment plants shall remain in place and be capable of being made operational for a period of 18 months after receiving approval from ADEC and Forest Service to terminate active water treatment at the plants and may not be permanently removed until approved by the Forest Service and ADEC.
- Once discharge from the TTF is possible without mechanical water treatment, operation of the water treatment plant would be discontinued. The lake level would be raised to the ultimate spillway elevation. The upgradient diversion would remain in operation when the lake is being filled in order to maintain flow in Lower Slate Lake Creek. The water treatment plant would remain on-site in operational condition until the Forest Service and ADEC concur that treatment is no longer required and the treatment plant can be removed in accordance with the schedule described above;

- The Kensington water treatment facilities would be required until water quality objectives for the underground mine water are met. Influent will be monitored at the water treatment plant during mine operation and closure to characterize influent water quality. Water quality trends during operations, shut downs and closure will be used to predict post closure water quality. A hydraulic bulkhead is planned that will prevent significant discharge from the Jualin Portal. The bulkhead will flood the mine to an elevation that will result in mine water discharge to the 850 Level Portal located in the Sherman Creek Drainage. Plugging of the portal will occur once access through the mine is no longer required. The Kensington water treatment facilities would be operated after construction of the bulkhead is completed until water quality objectives are met for a period of four weeks. The water treatment plant would remain on-site in operational condition until the Forest Service and ADEC concur that treatment is no longer required and the treatment plant can be removed in accordance with the schedule described above. Final removal of the Kensington water treatment facilities and reclamation in the related areas would occur when the water treatment facilities are no longer required. The remaining reclamation activities would be supported using access from the Comet Camp area.
- Materials and equipment salvaged during removal of the Kensington water treatment facilities will need to be transported to Comet Beach and should be removed from the site. All construction equipment remaining on the Kensington side will need to be staged at Comet Beach and removed from the site.
- Removal of the Slate Creek Cove Marine Facility will occur when the facilities are no longer required to support ongoing reclamation and closure activities. Coeur will submit a schedule for removing the facilities to the Forest Service and state agencies prior to closure. During closure, any equipment or materials salvaged from the TTF water treatment plant and other areas will be staged at the marine facility to be transported from the site. After the equipment and materials are removed the terminal facility and reclamation of the area within tidal lands may occur, if required.

Any remaining equipment or infrastructure required for post-closure monitoring and maintenance activities will be located on land controlled by the private land owner. It is anticipated that the majority of the reclamation and closure activities will occur during a two year period after cessation of mining and processing operations.

2.4.5 *Post-Closure Monitoring and Maintenance*

Post-closure monitoring includes reclamation success monitoring and maintenance, water quality monitoring and ecological monitoring of the TTF Lake for a period of 30 years beginning at the point when active water treatment is discontinued. Monitoring of reclamation success will occur in all reclaimed mine areas. Water quality monitoring will include site-wide monitoring of surface water, monitoring of the TTF water quality, and monitoring for the Kensington WWTP wetland site. Ecological monitoring will include monitoring of aquatic life in the TTF, benthic invertebrate community composition, sediment quality and metal toxicity, and periphyton biomass and community composition. The varying schedules for the post-closure monitoring and maintenance programs are described in Section 4.

Reclamation success refers to the stabilization and establishment of new vegetation on areas that were disturbed during active mining and reclaimed during the reclamation closure period. Coeur believes that a ten year period is adequate for this purpose. Successful revegetation may be determined three years

after the final application of seed and fertilizer. Bond release may occur on a facility by facility basis after the requirements of the approved reclamation and closure plan are complete and approved by the Forest Service and the requirements of 11 AAC 97.200, 11 AAC 97.220 and 11 AAC 97.240 have been met. Phased bond release will be based upon reclamation criteria being successfully achieved. At any given time during operations, active reclamation, and post-closure monitoring, the USFS will determine if reclamation criteria are met and funds may be released if the USFS determines that sufficient funds remain in the bond to complete all necessary actions in the approved Reclamation and Closure Plan. Most areas will become stabilized and establish new vegetation within several years. Best Management Practices will be focused on targeted areas identified during the monitoring activities.

Post-closure reclamation activities consist of maintenance until closure and reclamation performance standards are achieved. Post-closure reclamation would focus on erosion and sediment controls, and stabilization of reclaimed areas. BMPs would be maintained for management of surface runoff on reclaimed sites in order to meet requirements of the Alaska Department of Environmental Conservation (ADEC), and any APDES permits still in force. Post-closure monitoring is expected to be required for 30 years, except that it would be regularly reviewed, and reclamation progress may result in a reduction or extension of the post-closure monitoring period upon agency approval. Monitoring results would be submitted annually to the Forest Service and state agencies. The post-closure monitoring and maintenance program is discussed in further detail below in Section 4.2.

The closure cost estimate has included a budget to complete the post-closure monitoring activities. The estimated cost assumes that monitoring and maintenance activities will be performed by a third party.

2.4.6 *Long-Term Care and Maintenance*

Long-term care and maintenance will consist of dam safety inspections and annual inspection and maintenance of the TTF dam and spillway in perpetuity. Dam inspections would be performed every three years as required by the ADNR Dam Safety Permit, Dam Safety Program. A budget is provided to complete minor maintenance such as removal of brush and debris from the dam and spillway. Coeur would be responsible for providing funds for completing the inspections during the 30 year post-closure monitoring period described above in Section 2.4.5. After 30 years the inspections will be funded through a reclamation trust fund that will be established by Coeur. Special event inspections included in the long-term care and maintenance plan will include one inspection by a qualified engineer in the event of a large earthquake, and one inspection in response to an extreme precipitation event such as a 100-year storm during the post-closure period.

2.5 Soil Salvaging and Revegetation Methods

2.5.1 *Topsoil Salvage and Stockpiling*

For the purposes of this plan, the term “growth media” is defined as all native soil material with physical and chemical properties capable of establishing and sustaining vegetation with or without soil amendments. The A and B horizon soils “stockpiled soils” salvaged during construction have been stabilized in stockpiles throughout the mine facilities. Upland soils in the Jualin Mine area are generally moderately well drained silt or sandy soils spread over bedrock or glacial till. Wetland soils tend to be thick, consisting of organic material or silty loams. Based on the volumes of salvaged materials indicated in Table 2.5.1-1, adequate volumes of material should be available for reclamation.

The stockpiled soils will be stored until needed during reclamation activities. Stockpiles have been located and shaped so that run-on and run-off is controlled. Stockpiles have been seeded to reduce the potential for erosion during storage and to maintain viability.

During reclamation, topsoil would be placed over all disturbed areas excluding rock cuts, areas of riprap, and, open water. Development rock storage piles would be treated as described in Section 3 below.

A summary of topsoil quantities salvaged during construction and required topsoil volume is provided in the following table:

Table 2.5.1-1 Summary of Stockpiled Soils

Stockpile Location Parcel Number	Stockpile Volume (cubic yards)	Reclamation Parcels Requiring Topsoil from Stockpile	Required Volume (cubic yards)
6	0[1]	4, 5, 6	33,100
18	54,400	18,28	6,130
20	71,800	20	17,750
25	55,000	24, 26, 28	52,870
31	53,400	9, 19, 31, 32	26,300
34	19,500	14, 29, 34	11,810
36	1,600	26, 36	970
Totals	255,700		148,930

[1] The current volume of stockpiled soil in Parcel 6 is unknown. For this reason the reclamation closure plan cost estimate assumes that surplus soil from other stockpiles will be hauled to Parcels 4, 5 and 6.

A minimum of one foot of topsoil is the goal for application to disturbed areas. Stockpiled soil included the A and B horizons throughout the planned disturbance area in addition to unsuitable materials excavated from the TTF dam footprint. Unsuitable soils consist of overburden soils excavated from the TTF dam footprint that have been stockpiled in Parcel 25. Unsuitable soil refers to material that was determined to be unsuitable for the dam foundation due to geotechnical characteristics such as strength and permeability. This material is intended to be used as cover soil for the submerged tailings deposit. The stockpiled soil inventory presented above represents the known volume of suitable soil or soil-like growth media (organic material and/or suitable subsoil) that was salvaged during construction activities through 2010. The total inventory volume indicates that sufficient volumes of topsoil or growth media will be available for reclamation at closure. If it is determined that there is insufficient topsoil material to cover all the required areas to an average depth of one foot, a detailed report will be prepared to identify all areas of the mine site that require topsoil as part of the reclamation process. These areas would be rated as to their environmental sensitivity and revegetation potential without topsoil. These ratings will include erosion and sediment accumulation rate calculations. Those areas that are identified as being the least environmentally sensitive and having the greatest potential for revegetation with less than the one-foot average goal, may receive less than one-foot of topsoil. Recommendations for final depth of growth media placement will be updated based on test plot results that will be presented to the Forest Service and ADNR for approval prior to closure.

Surplus materials will be reclaimed in-place in the stockpile location. The surplus material will be graded to blend with the surrounding topography. This approach will provide a source for growth media during the post-closure period if additional reclamation measures are required.

2.5.2 *Revegetation Methods and Materials*

The overall goal of disturbed site revegetation is to mimic the adjacent undisturbed muskeg/spruce communities, to the extent possible. However, the focus of the revegetation effort will be on establishing grasses, shrubs, and forbs to stabilize the reclaimed landforms and to provide successful plant communities that would lead to the natural recolonization of the muskeg/spruce vegetation community.

Coeur will construct test plots to evaluate methods for successful reclamation. Test plot construction is planned during 2013. This research would also consider the following:

- Reclamation methods for overburden deposits graded to 1.5H:1V;
- Species of native trees, shrubs, grasses, and forbs to determine the revegetation combination for the site;
- Topsoil or soil resource needs to determine the best methods for applying and stabilizing topsoil as well as the depth for optimum plant growth;
- Potential mulching and best method of application; and,
- Sufficient growth, for the purposes of reclamation bond release.

The site for test plot construction will be selected to assess typical physical conditions, material characteristics, and other parameters that are representative of critical conditions throughout the mine site. The results of this research would be used to optimize the revegetation scheme at the site.

In general, revegetation methods and materials will be as follows:

Ripping. Ripping will loosen and break-up compaction caused by operation of heavy equipment. Surface manipulation such as ripping is also needed in areas that are likely to develop rills and gullies. Areas requiring ripping include haul roads, access roads, the development rock disposal crest, laydown areas, and water treatment facilities. Areas of compacted fill surfaces will be ripped with a bulldozer to a minimum depth of one foot prior to topsoil placement.

Borrow areas will be regraded and ripped as required where heavy equipment has caused compaction of the native material.

Growth Media Placement and Grading. Topsoil salvaged from the disturbed areas will be used for the growth media source (see Section 2.5.1 above). A minimum of one-foot of stockpiled topsoil will be placed and graded over areas identified in Section 3 as requiring topsoil.

Prior to placement of the stockpiled materials, the disturbed area will be graded to reduce oversteep slopes, and to provide long-term drainage. Rock cuts such as pit walls and quarry slopes are exempt from the Land Reclamation Performance Standards in 11 AAC 97.200. Recontoured slopes in the development rock facilities and other locations requiring grading would be subject to the requirements in 11 AAC 97.200.

Coeur will evaluate the need for increased thickness of growth media in locations requiring engineered covers. Should an alternative thickness of growth media be required for any engineered cover, Coeur will provide plans to the Forest Service and state agencies for review and approval.

Growth Media Scarification. Where necessary, growth media will be scarified or roughened. A roughened configuration will serve to trap moisture, reduce wind shear, minimize surface erosion by increasing infiltration, and create micro-habitats conducive to seed germination and revegetation.

Seeding, Mulching and Fertilizing. The focus of initial revegetation is on establishing grasses for growth media stabilization that allow successional plant communities of forbs, alder, and muskeg/spruce. Upland areas include the development rock disposal sites, while the remaining area soils will normally be saturated, resulting in wetlands. The seed mixes proposed for upland and wetland areas are as follows:

Table 2.5.2-1 Seed Mixes

Upland Sites	
Species	**Percent Seed Mixture**
Boreal red fescue (*Festuca rubra*)	30
Nortan tufted hairgrass (*Deschampsia caespitosa*)	60
Arctared fescue (*Festuca rubra*, arctared variety)	10
Wetland Sites	
Species	**Percent Seed Mixture**
Nortan tufted hairgrass (*Deschampsia caespitosa*)	50
Norcoast Bering hairgrass (*Deschampsia beringénsis*)	30
Egan American sloughgrass (*Beckmannia Syzigachne*)	10
Kenai Polargrass (*Arctagrostis latifolia)*	10

Native Alaskan plants are available through suppliers in Anchorage, Fairbanks, and Delta Junction. The species list for the project site is based on currently available native species and their projected success. Certified weed-free seed will be used.

Several seeding techniques are suitable for reclamation. Seeding techniques may include hydro-seeding, broadcast seeding, and hand seeding. The seeding technique used will be based upon site conditions such as slope, soil type, surface roughness, existing vegetation, and total area to be seeded. Fertilizer and mulch may be applied with the seed to enhance seed germination and plant establishment. Based on past experience, successful establishment of vegetation may be achieved without application of mulch and fertilizer. Coeur will monitor areas reclaimed during active mining to evaluate the need for fertilizer and mulch. Generally, seeding will occur from May to mid-September, during periods with minimum standing water to maximize germination. The cost estimate assumes the reclaimed areas will be hydro-seeded. Each seeding task outlined in Appendix A includes the cost of seed, mulch and fertilizer in addition to labor and equipment costs.

The seed mixes will be applied at a rate of approximately 43 pounds pure live seed (PLS) per acre for the wetland and upland mixes, respectively. Fertilizer will be applied at a rate of 200 pounds of 10-20-10 fertilizer plus 100 pounds of urea per acre (Forest Service, March 2009). Mulch may also be applied to the seeded surfaces at a rate of about 1,000 pounds per acre. Specific prescriptions will be developed based on the results from reclamation test plots that will be conducted by Coeur during operations. Final prescriptions resulting from the reclamation test plots would be submitted to the Forest Service and state agencies for approval.

2.6 Reclamation Performance Criteria

2.6.1 *General Reclamation Completion Criteria*

The Project will be considered successfully reclaimed when all activities identified in the plan have been completed in accordance with the performance standards in 11 AAC 97.200, 97.220 and 97.240 as outlined in the following table and approved by the Forest Service.

Table 2.6.1-1 Applicable Mine Reclamation Standards

11 AAC 97.200. Land reclamation performance standards
(a) A miner shall reclaim areas disturbed by a mining operation so that any surface that will not have a stream flowing over it is left in a stable condition. (1) For the purposes of AS 27.19.100 (7) and this section, a stable condition that "allows for the reestablishment of renewable resources on the site within a reasonable period of time by natural processes" means a condition that can reasonably be expected to return waterborne soil erosion to pre-mining levels within one year after the reclamation is completed, and that can reasonably be expected to achieve revegetation, where feasible, within five years after the reclamation is completed, without the need for fertilization or reseeding. If rehabilitation of a mined site to this standard is not feasible because the surface materials on the mined site have low natural fertility or the site lacks a natural seed source, the department recommends that the miner fertilize and reseed or replant the site with native vegetation to protect against soil erosion; however, AS 27.19 does not require the miner to do so. Rehabilitation to allow for the reestablishment of renewable resources is not required if that reestablishment would be inconsistent with an alternate post-mining land use approved under AS 27.19.030 (b) on state, federal, or municipal land, or with the post-mining land use intended by the landowner on private land. (2) If topsoil from an area disturbed by a mining operation is not promptly redistributed to an area being reclaimed, a miner shall segregate it, protect it from erosion and from contamination by acidic or toxic materials, and preserve it in a condition suitable for later use. (3) If the natural composition, texture, or porosity of the surface materials is not conducive to natural revegetation, a miner shall take measures to promote natural revegetation, including redistribution of topsoil, where available. If no topsoil is available, a miner shall apply fines or other suitable growing medium, if available. However, a miner may not redistribute topsoil and fines over surfaces likely to be exposed to annual flooding, unless the action is authorized in an approved reclamation plan and will not result in an unlawful point- or non-point-source discharge of pollutants. (b) A miner shall reclaim an area disturbed by a mining operation so that the surface contours after reclamation is complete are conducive to natural revegetation or are consistent with an alternate post-mining land use approved under AS 27.19.030 (b) on state, federal, or municipal land, or with the post-mining land use intended by the landowner on private land. Measures taken to accomplish this result may include backfilling, contouring, and grading, but a miner need not restore the site's approximate original contours. A miner shall stabilize the reclaimed site to a condition that will retain sufficient moisture for natural revegetation or for an alternate post-mining land use approved under AS 27.19.030 (b) on state, federal, or municipal land, or for the post-mining land use intended by the landowner on private land. (c) A pit wall, subsidence feature, or quarry wall is exempt from the requirements of (a) and (b) of this section if the steepness of the wall makes them impracticable or impossible to accomplish. However, a miner shall leave the wall in a condition such that it will not collapse nor allow loose rock that presents a safety hazard to fall from it. (d) If a mining operation diverts a stream channel or modifies a flood plain to the extent that the stream channel is no longer stable, a miner shall reestablish the stream channel in a stable location. A miner may not place a settling basin in the way of the reestablished channel location unless the fines will be properly removed or protected from erosion.
11 AAC 97.220. Underground mines
A miner shall stabilize and properly seal the openings of all shafts, adits, tunnels, and air vents to underground mine workings after mine closure to ensure protection of the public, wildlife, and the environment.
11 AAC 97.240. Acid rock drainage
A miner shall reclaim a mined area that has potential to generate acid rock drainage (acid mine drainage) in a manner that prevents the generation of acid rock drainage or prevents the offsite discharge of acid rock drainage.
AS 27.19.030 (b) Reclamation Plan
In reviewing a reclamation plan for state, federal, or municipal land under (a) of this section, the commissioner may consider, after consultation with the commissioners of environmental conservation and fish and game and with the concurrence of the miner and landowner, uses to which the land may be put after mining has been completed, including trails, lakes, recreation sites, fish and wildlife enhancement, commercial, and agriculture uses.

AS 27.19.100 (7) Definitions
"stable condition" means the rehabilitation, where feasible, of the physical environment of the site to a condition that allows for the reestablishment of renewable resources on the site within a reasonable period of time by natural processes.

This will include facility shutdown and reclamation, and reclamation tasks such as building removal, portal closing, regrading and revegetation, in accordance with the facility-specific plans described below in Section 3. Coeur will seek release of the reclamation surety on a facility-by-facility basis, as quantitative data indicate that the agreed-upon reclamation and revegetation criteria have been met. The following summarizes general site reclamation and closure completion criteria.

1. All applicable activities have been completed consistent with the reclamation plan, including demolition, regrading, and other applicable activities.
2. The reclaimed area has been stabilized to control erosion and sediment transport and meets the requirements for final stabilization in accordance with the multi-sector general stormwater permit AKR050000.
3. If vegetative cover does not meet the revegetation success criteria (Section **Error! Reference source not found.** below) three years after the last application of topsoil, seeding, fertilized or other soil amendments; Coeur will assess the conditions and submit a plan to the Forest Service and ADNR to address the areas that failed to meet reclamation success criteria. The mitigation plan will consider factors such as fertilizer, seed mixture change, re-seeding, or soil suitability. If two years after the mitigation efforts, the site still does not meet the criteria but no rills and gullies are present (Condition 2), then Coeur Alaska will submit a plan to the Forest Service and ADNR for approval and propose further action, consisting of either remedial measures or criteria modification.
4. No single plant species, from the seed mixture, may constitute more than 60 percent of the species found in the reclaimed areas. The determination of successful vegetation should be made three years after the last application of topsoil, seed, fertilizer, or other soil amendments. If, after three years, this condition cannot be met, Coeur will assess the condition and determine appropriate action. If two years after mitigation efforts the diversity of plant species continues to fail, then one additional seeding will be accomplished. If, one year after the second seeding, no rills and gullies are present (Condition 2), the site would be released after Forest Service and ADNR approval.
5. A determination of plant natural succession should be made three years after the last application of topsoil, seed, fertilizer, or other soil amendments. Natural succession will be determined by the plant species present for a given site. If two or more native species from natural succession are present, the site can be released three years after the initial seeding. Seeding to augment natural succession with native species from the project area will be completed if these criteria are not initially met. After two years of seed augmentation and when other release criteria are met, the site would be released.
6. Water quality sampling indicates that all water quality criteria are in compliance with applicable limits and closure standards upon approval by the Forest Service and state agencies.

36 CFR 228.13 directs the FS to release reclamation bonds for work that has been completed and approved. Coeur proposes a phased bond release upon approved completion of reclamation earthworks, upon meeting:

- All terms of the current Kensington Gold Project reclamation and closure plan and conditions of the POO approved by the Forest Service, ADNR Reclamation Plan Approval, and ADEC Waste Management Permit are met; and,
- The applicable performance standards under Federal and State regulations have been achieved.
- The Forest Service will determine if the reclamation satisfies applicable criteria and if sufficient funding remains in the bond to complete all necessary actions agreed to in the approved reclamation plan

The phased release would be based on the reclamation bond amount for each of the reclamation parcels included in the reclamation plan. Bond release would be tied to the environmental audit and the re-calculation of the financial assurances to be completed every five years during operation of the mine. The release or decrease of bond, and refund of a bonding pool deposit would need to comply with the requirements of 11 AAC 97.435, including: an application for a release or decrease in the bond amount would be made; an inspection of the reclamation or documentation of the reclamation would be made to determine if the reclamation fulfills the requirements of the reclamation plan; and, a cooperative agreement between the Forest Service and ADNR must be made to authorize the bond release. Final release would occur upon completion of the 30 year post-closure monitoring when the closure completion criteria are met. Direct cost items that do not have reclamation success criteria (such as mobilization, transportation) should be released. Long-term care and maintenance consisting of dam safety inspections and maintenance would be provided with funds from a trust established by Coeur.

Coeur proposes that bond release be evaluated under either of the following scenarios:

1. Bond release would be reviewed in conjunction with an update to the Reclamation Closure Plan and reclamation cost estimate. At this time the ADNR and the Service would review the scope for the updated plan. If ADNR and the Service approve the updated plan, agree that sufficient bonding is provided, and agree that any applicable performance criteria are met; bond release for the completed work should be approved or credited toward any increase in bond required by the updated reclamation plan. If the bond requirement for the plan update is less than the previous bond, a release should be made in the amount that the previous bond exceeds the updated bond amount.
2. After the final reclamation plan is completed, upon completion of a reclamation task(s), Coeur would request release of the bond applied for these items annually. Release under this scenario would also be contingent upon approval by ADNR and the Service, and would require applicable reclamation criteria being satisfied.

2.6.2 *Revegetation Success Criteria*

Revegetation criteria will be used to quantify revegetation success. Undisturbed reference sites and revegetation test plots will be used to evaluate revegetation performance for reclaimed areas. Annual monitoring would occur during each year until the reclamation trials meet reclamation success criteria. The schedule for monitoring may be adjusted or terminated based on the results indicated during monitoring upon approval of the Service and ADNR. Coeur has prepared a Reclamation Test Plot Plan and will coordinate with the USFS and ADNR during test plot construction and monitoring, and to

determine appropriate release criteria. Construction of the test plot is planned during the spring of 2013.

The reference sites will be used to assess the existing percent areal cover as required in the release criteria. Coeur and appropriate regulatory agency personnel would monitor vegetation success qualitatively by visual inspection on an ongoing basis and quantitatively once per year. Quantitative analysis would be conducted at the end of the growing season (end of August) by a qualified professional. Representative reference sites will be selected and agreed upon by the principal land management agencies and Coeur. All areal cover values measured at the reference sites will be compared to revegetation test plots. Test plots will be established at various locations on reclaimed areas to compare with the reference sites. Coeur will conduct reclamation monitoring over a period of several years following the test plot construction to document vegetative cover and site stability. A report from each monitoring event would be prepared and submitted to the Forest Service and ADNR for review. Coeur would work with the Forest Service and ADNR to establish appropriate release criteria based on the results from completion of the test plots.

2.7 Updating the Reclamation Plan

The reclamation plan will be updated on a five year cycle throughout the life of the project. This current revision to the reclamation plan and the reclamation cost estimate has incorporated data collected during construction. As-built maps that delineate actual areas of disturbance were used in preparing the reclamation construction cost estimate. Areas and quantities estimated in the previous plan have been updated. The scope for this reclamation plan includes the following closure costs that were not included in the previous reclamation plan:

- Construction of a bulkhead in the Jualin Portal;
- Removal of additional infrastructure at the Kensington WWTP;
- Disposal of Graphitic Phyllite (GP) material from the TTF plunge pool location;
- Remediation of the GP site after removal of the material;
- Disposal of the GP material stored at Parcel 20 in the underground mine;
- Removal of facilities located on Forest Service lands including the assay building, incinerator and water tank. Reclamation of these areas would be completed.
- Reclamation of a bioremediation cell at Comet Beach Camp; and,
- The cost for one year of care and maintenance was included prior to the start of reclamation.

Additional information including site conditions, soil characterizations, test plot results, closure water quality standards, and operational monitoring data will be considered each time when the reclamation plan is revised. A final reclamation plan and schedule will be prepared two years prior to permanent closure.

The current reclamation cost estimate has been recalculated to reflect the current reclamation scope and anticipated construction costs. The updated cost estimate includes adjustments to reclamation quantities based on current conditions at the time the estimate was prepared. Labor and equipment rates, indirect rates, and inflation rates will also be updated. The reclamation plan will be submitted to the Forest Service and state agencies for review and comment and approval during each revision.

2.8 Invasive Weed Controls

Coeur is committed to the control of invasive weeds at the site. To prevent the establishment of weedy species, disturbed areas will be seeded as quickly as practical following the completion of reclamation activities. All seed used in the project area will be state certified weed-free. Quick establishment of perennial (permanent) plant communities is an effective method to prevent the spread of invasive weeds. Recently reclaimed and seeded areas will be monitored to ensure that invasive weed infestations are not present. In the event of an invasive weed infestation, an appropriate combination of chemical and mechanical techniques will be used to resolve the problem. Invasive weed control techniques include, but are not limited to, the following: herbicide application, mowing, tilling, and re-seeding. Use of herbicide would require Forest Service approval and would be completed by a licensed herbicide applicator. The treatment technique will be designed based on the characteristics of the invasive species. Monitoring will be used to determine the effectiveness of the treatments, follow-up treatments will be used if necessary, until invasive weeds are controlled.

2.9 Other Environmental Issues

Several environmental issues have been highlighted throughout the reclamation plan are described in the following sections.

2.9.1 *Graphitic Phyllite Material*

During construction of the TTF dam and stripping of the dam borrow source, graphitic phyllite (GP) rock was encountered. Geochemical reactions that occurred in the disturbed GP material resulted in low pH storm water drainage. The drainage was characterized as low pH "seepage" containing dissolved metals. The seepage primarily occurred within the area of the east abutment of the TTF dam. Material excavated from this area was used to construct temporary fills and roads in the dam construction area.

In order to control seepage from the GP material, the excavated material was collected and isolated. The stored material was encapsulated using a diorite base layer, a chimney drain, a diorite cover layer and a soil cover. A portion of the materials, approximately 15,000 cubic yards was hauled to Parcel 20 and placed in a lined containment area that was previously used for bioremediation. The remaining material, approximately 3,800 cubic yards was temporarily stored at the dam construction site (see Figure 13). It is estimated that upon removal, an additional 1,200 cubic yards of non-graphitic phyllite material will be inadvertently mixed with the GP material. Therefore a total volume of approximately 5,000 cubic yards will be removed and hauled to Parcel 20.

The current mine plan will allow removal of the GP material from temporary storage in 2014. Coeur is currently evaluating the locations that may be used for disposal. Removal of the material from temporary storage would occur prior to construction of the next stage of the dam. At the time when the material is removed, Coeur will perform a geochemical analysis of the area after GP removal. This evaluation will determine if additional remediation is needed. Coeur will evaluate the water quality originating from the site subsequent to removal of the GP material and will maintain water treatment to ensure that drainage from the site meets water quality standards.

Requirements for reclaiming mined areas with the potential for acid mine drainage are contained in 11 AAC 97.240. This code indicates that mined land with the potential to generate acid mine drainage shall be reclaimed in a manner that prevents generation of acid mine drainage or in a manner that prevents

the offsite drainage of acid mine drainage. Coeur has determined that treatment of the exposed GP surface with dental concrete is an effective treatment to prevent acid mine drainage. The agencies will approve the use of dental concrete as a final reclamation measure.

In order to address seepage that is collected from areas impacted by the graphitic phyllite, a water treatment facility was constructed and is being operated at the dam construction site. The volume of seepage varies seasonally due to precipitation and snowmelt. Flows are estimated to be in the range of 2 to 30 gallons per minute. The water treatment process uses lime slurry additions to increase seepage pH followed by aeration in a rotating cylinder. Flocculent is added after aeration to precipitate metals in a clarifying tank. Treated water is then discharged into a holding tank while the flocculated sludge can be recycled back to the clarifier for further treatment or processed through a filter press to produce a concentrated sludge. Operation of the treatment plant will be used during operation of the TTF and remediation of the impacted area until more permanent measures are implemented.

An electromagnetic survey was conducted to identify the extent of the GP deposit that was exposed during dam construction activities. The location of areas outlined by the survey are illustrated on Figure 13 and consists of approximately 4.1 acres. Two zones of GP material were delineated. The primary area located in the area of the left dam abutment is approximately 2.4 acres. A second location was identified in Parcel 26 in the dam borrow source covering an area of 1.7 acres. Given this occurrence, excavation of the borrow pit was discontinued. Low pH seepage issues from the borrow source GP location have not been detected. Approximately 1.5 acres of this area is beneath the ultimate dam footprint or will be flooded by the lake.

During operation and construction, Coeur will continue to monitor this location to detect potential impacts from the GP deposit using visual monitoring in addition to continued monitoring at the SLB monitoring point. Prior to placement of the Stage 1 dam fill, the foundation area was treated with dental concrete. This treatment was designed to address geotechnical requirements for the dam foundation. The dental concrete may also provide a benefit in buffering the GP material and reducing the potential for the GP material interacting with water and oxygen. During construction of the initial phase of the dam water collected in the dam foundation drainage system was not found to have to have a low pH and did not appear to be impacted by reactive GP material. Water from the drainage system is managed in the TTF Lake and is monitored in accordance with the approved O&M Plan and the Fresh Water Monitoring Plan. Data obtained from this monitoring during operations will be used to detect potential water quality impacts from the drain system. If potential impacts from the drain system are detected during operations Coeur would evaluate the occurrence and it would be addressed during the next revision of the reclamation closure plan. At the time of the final reclamation plan revision, Coeur would provide the final plan for removal of the drainage system or would identify any contingencies that would need to be addressed for final closure.

During construction of the remaining dam phases, construction activities will occur in areas identified as GP and in the GP temporary storage area. These activities will include removal of the stored material that was encapsulated adjacent to the East abutment of the dam, and construction of the interim and ultimate spillways. Collection of seepage from this area and operation of the water treatment system will continue until the GP material is removed and the area is treated. Coeur is committed to continued operation of the water treatment system until it can be demonstrated that treatment is no longer necessary and that water quality standards at the down gradient monitoring location can be met. Monthly monitoring will continue at the SLB monitoring location during removal of the GP material, and during construction of the remaining dam stages. Monitoring at the SLB point will also be required

during the closure and post closure periods as described in Section 4.1. Coeur understands that ADEC will need to approve removal of the water treatment prior to allowing discharge to East Fork Slate Creek. The final schedule for remedial activities to address issues related to the GP material is not completely defined at this time, although the following activities are planned:

1. The encapsulated material near the left abutment of the dam is estimated at 5,000 cubic yards of material. This volume includes the 3,800 cubic yards of GP material and a portion of the diorite fill that surrounds the GP deposit. GP material stockpiled at Parcel 20 (see Figure 14) is 12,360 cubic yards. The combined volume of GP material (17,360 cubic yards) will be disposed of by placing the material within the underground mine. The current mine plan indicates that a mined out stope adequate to contain all the GP material will be available by 2014 at which time the material will be relocated to the stope. The designated stope will be sealed with paste backfill.
2. Residual seepage having low pH and metals collected from the dam construction site will continue to be treated. The influent to the treatment plant is currently monitored and will continue to be monitored during and after removal of the GP material and remediation of the site. When it is determined that water from this source meets the water quality standards (18 AAC 70), Coeur will coordinate with ADEC to discontinue treatment.
3. The surface of the bedrock exposed in the dam foundation will continue to be treated with dental concrete and grout as construction progresses.
4. The area currently being used to encapsulate the GP material (3,800 cubic yards) in Parcel 28 will be treated to provide a barrier for water interacting with the surface of the GP rock. After the encapsulated material is removed from the site and bedrock exposed, the area will be cleaned and dental grout will be applied to the bedrock surface. An area covering 38,000 square feet will be treated.
5. The ultimate dam spillway was originally planned in the location where the GP material was detected. The spillway was to be excavated into bedrock. The spillway design has been revised to address issues related to the GP rock.
6. Reclamation of the disturbed surface at the dam borrow source will need to be monitored. Visual monitoring in addition to continued water quality monitoring at the SLB location will be performed to determine the need for additional measures during construction and operation of the TTF. Should the visual monitoring and water quality monitoring at the SLB location indicate a need for additional sampling, Coeur would coordinate sampling and reporting with the Service and state agencies.
7. The third party geochemical review will address the potential for acid mine drainage from all of the areas associated with the dam construction including the spillway. This review will consider potential impact during the post closure time period after removal of the dam seepage collection system. The long-term performance of dental grout to treat the surface of the GP deposit would be addressed. Coeur will complete this review and coordinate with the agencies prior to constructing the next dam phase.

Monitoring is underway to evaluate the need for additional measures to address any long-term water quality issues related to the GP material. Short term measures that will be implemented during operation will focus on source removal, isolation, water treatment, and monitoring. The reclamation

plan and closure cost estimate outlined below has identified additional closure costs for the Parcels 20, 26 and 28 for removal, placement, and isolation of the GP material.

2.9.2 *Water Treatment*

Two water treatment systems will be operated during active mining in addition to the GP seep treatment plant. The Kensington area Waste Water Treatment Plant (WWTP) is used to remove suspended solids from mine water that discharges from the 850 Level Portal. Water treatment at this location will be discontinued after construction of the hydraulic bulkhead near the Jualin Portal is completed and water quality objectives are met for water draining from the mine. The TTF water treatment system was constructed during 2010 in the TTF margin work area to treat water in the tailings lake. The closure cost estimate includes a budget for operating both systems for a period of 18 months during closure. After the water treatment systems are dismantled and removed the treatment plant locations will be reclaimed.

Operation of the TTF water treatment system for 18 months would treat approximately five times the anticipated volume of the TTF Lake at closure. The treatment plants would remain in place and be capable of being made operational for a period of 18 months after receiving approval from ADEC and the Forest Service to terminate active water treatment, and would not be permanently removed until approved by the Forest Service and ADEC.

3.0 FACILITY-SPECIFIC RECLAMATION AND CLOSURE PLANS

3.1 Site Disturbance Summary

For the purposes of this reclamation and closure plan, the Kensington Gold Project has been delineated into eight primary facilities (Figure 2). These represent the main areas of disturbance for construction and mining activities and include the following:

- Comet Beach – Kensington Side (Figure 3)
- Kensington Area Facilities – Kensington Side (Figure 5)
- Jualin Process Area – Jualin Side (Figure 7)
- Jualin Administrative and Laydown Areas – Jualin Side (Figure 9)
- Tailings Treatment Facility Road – Jualin Side (Figure 10)
- Tailings Treatment Facility – Slate Creek drainage (Figure 11)
- Jualin Access Road and Facilities – Jualin Side (Figure 14)
- Slate Creek Marine Facility – Jualin Side (Figure 16)

Facility-specific reclamation plans including goals and objectives, reclamation and closure tasks, post-closure monitoring and maintenance, and estimated reclamation costs are described below for each of the eight areas and the associated parcels. These plans form the basis of the reclamation cost estimate (Appendix A) for the reclamation and closure plan.

3.2 Comet Beach Camp and Kensington Road

The majority of the facilities at the Comet Beach Camp (Parcel 1) have been removed and reclaimed during recent construction. Major facilities remaining at the camp (Figure 3) include a generator building, shop, and two fuel tanks. The Kensington road (Figure 4) was constructed during early mining operations that predate the current POO. The road is used as an access route to transport materials and equipment between the Comet Beach and Kensington areas. Since a hydraulic bulkhead will be constructed in the mine at closure, access to this area from the Jualin Portal via the underground mine will no longer be possible. Therefore the Kensington road will be required during the post closure monitoring period in order to maintain access to the 850 Level Portal. The road will also continue to provide access between Comet Beach and the private land near the 850 Level Portal. Coeur has provided a budget in the closure cost estimate to maintain the road during the post-closure monitoring period. Maintenance will consist of grading the road every three years.

Construction of a bioremediation cell at the Comet Beach camp is planned to treat any hydrocarbon impacted soils excavated during the life of the mine. This facility will also be available to treat any soils requiring remediation at closure. The closure cost estimate includes a budget for construction and reclamation of the bioremediation cell.

Table 3.2-1 Comet Beach and Kensington Road Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland	Uplands	Total
Parcel 1 – Comet Beach Camp	3.2	0	3.2	3.2
Parcel 2 – Kensington Access Road	5.7	0	0	0
Totals	8.9	0	3.2	3.2

Partial reclamation of the Comet Beach Camp was recently completed. The majority of the camp area was revegetated after the facilities were removed. The area will be used during operation of the mine when materials and equipment are transported to and from the mine via Comet Beach. When final closure occurs the camp area will be used to stage salvaged equipment, mobile construction equipment and other items that will be removed from the site. Temporary Camp facilities would be located at Comet beach at this time.

Reclamation of the Kensington road is not included in this reclamation closure plan. The road will be used during the 30 year post-closure monitoring period. Coeur intends to utilize the road during the post closure period and will be responsible for long-term maintenance.

3.2.1 *Reclamation Goals and Objectives*

The reclamation goal for the Comet Beach Camp area is to return the land to a safe and stable condition, suitable for use as wildlife habitat and for recreational use. Existing buildings at the site will be demolished and the site will be stabilized and protected from erosion. The reclaimed surface will be treated to establish a long-term, self-sustaining vegetation community. As illustrated on Figure 17, the Comet Beach Camp area is located within an upland area and final reclamation of the camp area will focus on establishing upland plant species. The private land in the camp area will be used as a staging area for post-closure monitoring and maintenance activities.

3.2.2 *Reclamation and Closure Tasks*

Parcel 1 – Comet Beach Camp. Reclamation tasks for Parcel 1 primarily consist of the following:

- Demolition of the remaining building;
- Removal of two tanks;
- Remediation of hydrocarbon impacted soils;
- Grading and preparation of the site, for seeding of native species; and
- Installation of BMPs.

Parcel 1 has an area of approximately 3.2 acres however approximately half of this area was previously reclaimed and seeded. The reclamation cost estimate assumes that final reclamation and seeding will be required over a 1.6 acre area. Grading of the site will be completed to contour and smooth the area. Onsite topsoil will be redistributed across the site during grading; therefore, import of growth media will not be required. The site will be scarified along the contour and seeded. Planting will include hydro seeding, and application of mulch and fertilizer if required.

Final reclamation of Parcel 1 will follow completion of closure activities in the Kensington area. Mobile equipment used during reclamation would be demobilized from the site using a barge once reclamation in the Kensington area is completed. Demobilization cost assumes that a barge would be used for removal of the salvaged water treatment facilities and materials, and mobile construction equipment. A landing craft was also included in the budget for removal of equipment used during the final reclamation activities.

Parcel 2 –Kensington Road. Reclamation tasks for Parcel 2 would consist of maintaining the road during closure and the 30 year post-closure monitoring period. A motor grader would be mobilized to Comet Beach using a landing craft. The road would be graded to maintain access between Comet Beach and the Kensington area. The cost estimate includes a budget to maintain the road every three years during the 30 year post-closure monitoring period.

3.2.3 *Post-Closure Monitoring and Maintenance*

Post-closure activities for Parcel 1 will consist of monitoring and maintenance of BMPs for erosion control and monitoring of seeded areas to evaluate revegetation success. Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.3 Kensington Area Facilities

Reclamation activities in the Kensington area will commence at the conclusion of active mining and will be concluded once the operation of the water treatment facilities are no longer needed. Four separate parcels are included in the Kensington area facilities. The location of each parcel is identified on Figure 5. A summary of the Kensington area parcels, disturbance area, and planned reclamation is provided in the following table.

Table 3.3-1 Kensington Area Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[1]	Uplands	Total
Parcel 4 – Kensington Development Rock Facility	13.0	3.1	9.9	13.0
Parcel 5 – Kensington WWTP and Ponds	3.7	1.9	1.8	3.7
Parcel 6 – Kensington Snow/Topsoil Stockpile	3.2	3.2	0	3.2
Parcel 7 – 2050 Level Portal	1.5	0	0	0
Totals	21.4	8.2	11.7	19.9

[1] Figure 17 illustrates the areas that will be reclaimed as wetland sites.

Of the total area (21.4 acres) 8.2 acres will be reclaimed as wetland. The 13.0-acre development rock site will primarily be reclaimed as an upland area (9.9). It is not anticipated that the reclaimed development rock deposit will saturate and support wetland species. Reclamation of the topsoil stockpile and WWTP site will focus on wetland restoration. Physical reclamation of the historic 2,050 Level Portal waste rock deposit is not proposed. No new disturbance occurred in this location.

3.3.1 *Reclamation Goals and Objectives*

Reclamation activities in the Kensington area will focus on removing the infrastructure used for water treatment during active mining and to return the land to a safe and stable condition. The two mine portals will be closed to restrict public access by installing a steel frame and grate to cover the openings. The development rock site and surrounding areas will be stabilized and protected from erosion. The areas below the development rock site will be primarily reclaimed as wetlands and will receive drainage from the mine portal. Runoff from the reclaimed development rock facility will also be managed within the restored wetlands. The reclaimed surface will be treated to establish a long-term, self-sustaining wetland community. Mine drainage from the 850 Level Portal will continue to be treated for an estimated 18 months, or until Agencies approve that treatment may be discontinued. Once treatment is no longer required the mine water will be diverted into the restored wetland area in the location of the existing WWTP and ponds.

3.3.2 *Reclamation and Closure Tasks*

Specific reclamation activities for each parcel are described in the following sections.

Parcel 3 – Kensington Borrow Source. The Kensington Borrow Source was not constructed and reclamation is not required.

Parcel 4 – Kensington Development Rock Storage. During construction and operation of the mine, it is estimated that approximately 500,000 cubic yards of development rock will be produced and placed within Parcel 4. A portion of this material may be diverted to the TTF site for dam construction. The ultimate volume of material that will exist in Parcel 4 at the time of closure will likely be less than the 500,000 cubic yards planned for the facility. Figure 6 illustrates the anticipated ultimate footprint for the development rock deposit and provides a conceptual grading plan and cross section of the area at closure assuming that 500,000 cubic yards of material is placed. The final slopes will be dozed to reduce the slope angle.

The final surface will be graded to a 1.5H:1V slope by dozing from the top down. In areas where regrading would encroach on Ophir Creek a truck haul operation would be used to relocate the fill away from the creek bed. The conceptual grading plan presented on Figure 6 has a final crest elevation of approximately 760 feet, resulting in a slope height of approximately 170 feet. The actual configuration of the deposit will be dependent upon the quantity of rock placed in the facility. Prior to closure, Coeur will evaluate the actual closure configuration considering the final volume deposited in the facility. The final slope will likely encroach into Parcel 5, in the area of the WWTP ponds. Based on the conceptual design, it is estimated that an excavation volume of approximately 87,000 cubic yards will be required to grade the slopes at closure. The closure cost estimate assumes that regrading would be completed using a combination of dozing and truck haul operations. The cost estimate includes a budget to truck haul 25% of the excavated volume.

During operation of the mine, Coeur will prepare test plots to evaluate the performance of placing growth media on the regraded (1.5H:1V) slopes. The test plots will evaluate the following:

- The stability of the growth media on the steep slope and resistance to erosion and other factor that may negatively impact the ability to establish vegetation on the slopes.

- To determine if the growth media will wash into the void spaces in the development rock fill as the result of precipitation events.

Results from the test plot construction would be reported to the Forest Service and the ADNR during annual reporting once results from the test plot work is available. If modification to the reclamation plan is required based on results from the study, Coeur would revise the plan prior to the next plan update. The closure cost estimate assumes that placement of growth media and seeding of the entire development rock facility would occur. Growth media stockpiled in Parcel 6A and other sources will be used for reclamation of the development rock sites and a minimum thickness of 12 inches of cover is planned. The current volume of growth media at Parcel 6A is not known. The reclamation and closure plan cost estimate includes a budget to haul growth media from stockpiles located in the Jualin area. The crest surface will be scarified along contours where practical and seeded using the upland seed mixture presented in Section 2.5.2.

Mine water from the 850 portal will be collected in a surface diversion along the southern margin of the development rock deposit and routed to the reconstructed wetlands in Parcel 5 (see Figure 6). The diversion channel will be armored with rock to prevent long-term erosion. The assumed channel design used for estimating purposes is described in Appendix A. Prior to closure a detailed design will be prepared based on the final volume of material deposited in the facility. The detailed design will be prepared and presented in the final reclamation closure plan.

The cost for closing the 850 Level Portal is also included in Parcel 4 reclamation budget. The objective of the portal closure is to restrict public access to the underground workings. Closure of the portal will consist of constructing a structural steel frame in the portal opening and covering the portal with a steel grate. Design of the grate will consider the opening size required to allow passage of bats.

Parcel 5 – Kensington Water Treatment Plant/Ponds. Reclamation in Parcel 5 will include decommission and demolition of the WWTP facilities and ponds, earthwork to grade the site and place growth media, and seeding. A construction plan for decommissioning the ponds including appropriate procedures for management of water stored in the ponds will be developed prior to closure of the facilities. The WWTP ponds and surrounding area will be graded to construct a wetland that will receive mine water from the 850 Level Portal. Placement of a granular subgrade consisting of development rock within the wetland site was included in the estimated cost. The design for the restored wetland will be developed in conjunction with the final grading plan for Parcel 4. Prior to closure when the volume of development rock is known the final grading plan for Parcels 4 and 5 will be prepared and incorporated into a future revision to the reclamation plan. It is anticipated that the restored wetlands will function as a BMP for surface water originating from the reclaimed surface of the Kensington Development Rock Storage Facility. A detailed evaluation for the wetland system design will be prepared prior to closure.

The Kensington WWTP includes two treatment units and two ponds. The treatment units consist of carbon and multimedia filtration, polymer addition, and clarification. This system is used to remove TSS from the mine water and will be operated during closure as long as influent monitoring indicates that treatment is necessary. The treatment plants would remain in place and be capable of being made operational for a period of 18 months after receiving approval from ADEC and the Forest Service to terminate active water treatment, and would not be permanently removed until approved by the Forest Service and ADEC.

The two filtration/clarification systems will be phased out once influent meets water quality standards. Construction of the replacement wetland system during removal of the water treatment facilities will need to occur prior to removal of the last water treatment unit. Prior to closure Coeur will complete a wetland system design that will define the construction, and outline the sequence for decommissioning the water treatment facilities. Final design will also consider the ultimate configuration of the development rock facility with respect to the post-closure wetlands design.

Closure of the water treatment facilities will require removal of equipment, and demolition of the buildings and foundations. The WWTP buildings and equipment will be dismantled and loaded onto a flatbed truck for transport. The WWTP equipment consists of skid-mounted units that would be salvaged. Material and equipment present at the site after access through the underground workings is no longer possible would be transported to the Comet Beach area for removal from the site.

The concrete slabs and foundations beneath the buildings and clarifier will be crushed into pieces no larger than 3-4 feet in diameter using an excavator with a hammer attachment and buried under a minimum of 4 feet of cover material. Concrete debris will be buried on site at the discretion of an authorized officer only after they are sampled and proven to be non-hazardous. Pond liners may be incorporated into the wetland system design, or they would be cut and folded into the bottoms of the ponds and buried. A dozer will be used for regrading the site and will push material from the pond containment dikes into the bottom of the pond. The closure cost estimate assumes that the liners would be folded and buried in the bottom of the ponds.

The existing ponds and surrounding areas will be contoured to form a wetland system and will discharge to Ophir Creek. A significant increase in peak surface water flow is not anticipated and the discharge channel would be configured to prevent fish access from the receiving stream. The configuration for the wetland will be determined based on the conditions prior to mine closure. During preparation of the final closure plan Coeur will complete an evaluation to support final design of the wetland system. The graded surface will be covered with a minimum of 12 inches of growth media and seeded using the wetland seed mixture presented in Section 2.5.2. Growth media required during reclamation will be obtained from stockpiles in the Jualin area. The reclamation cost estimate has provided a budget to haul material from the Jualin Stockpiles.

At closure, mine water discharge would be limited until the underground openings become flooded. The flooded openings would function as sediment traps during and after flooding. The portal roadbed surface is sloped to the ditch along the side of the underground opening. Mine water would be collected in the ditch drains through a sediment sump prior to discharging from the portal. The combination of these controls will minimize potential for sediment discharge from the mine to the restored wetland.

Parcel 6 –Kensington Snow/Topsoil Stockpile Area. Reclamation of the Kensington Snow/Topsoil storage area may commence once the topsoil stockpiles have been depleted during reclamation activities. Grading of the area will be performed to blend the site with the surrounding contours and to redistribute growth media across the site. The area will be seeded to reintroduce native wetland species using the wetland broadcast seed mixture presented in Section 2.5.2.

Parcel 7 – Kensington 2050 Level Portal Waste Rock Dump. The 2050 Level Portal waste rock dump is a historic mine disturbance covering an area of approximately 1.5 acres. New dumping of development rock in this location is not included in the Final Plan of Operations. Over the years native vegetation has become established on the deposit and no physical reclamation of the waste rock is planned. Closure of

the portal opening is planned and will consist of installing a steel frame and grate in the opening similar to that planned for the 850 Level Portal. Design of the steel grate will consider the opening size required to allow passage of bats.

Closure costs for Parcels 3-7 are presented in Section 4.1 and Appendix A.

3.3.3 *Post-Closure Monitoring and Maintenance*

Post-closure activities in the Kensington area will focus on water quality monitoring as required by the APDES permit, and stormwater monitoring during closure required under the ADEC stormwater discharge permit. Monitoring of seeded areas will be conducted to evaluate revegetation success, and to identify periodic maintenance of erosion controls. Reclaimed areas will be evaluated to determine vegetation success and evaluated for erosion and sediment control issues. Monitoring of the restored wetland system in Parcel 5 would follow the post-closure monitoring and maintenance schedule. Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.4 Jualin Process Area

Reclamation activities in the Jualin Process area will commence at the conclusion of active mining. Five separate parcels are included in the process area. The location of each parcel is identified on Figure 7. A summary of the disturbance and planned physical reclamation for each parcel is as follows:

Table 3.4-1 Jualin Area Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland	Uplands	Total
Parcel 8 & 8A Jualin Process Area	17.4	0	0.8	0.8
Parcel 9A Development Rock Facility	4.7	1.7	3.0	4.7
Parcel 10 Jualin Process Area Treatment Pond	0.7	0.7	0	0.7
Parcel 11 Jualin Process Area Snow Stockpile	1.3	0.4	0.9	1.3
Parcel 12 Jualin Pump House Area	0.1	0	0	0
Totals	24.2	2.8	4.7	7.5

Of the total area (24.2 acres), an area of 7.5 acres, including Parcel 9A at the base of the development rock facility and the snow stockpile area, are to be reclaimed at closure. The Jualin Portal, located in Parcel 8 will be covered with a steel gate and construction of a bulkhead is planned to control discharge of mine water from the portal. Water backed up by the bulkhead will gravity drain to the 850 Level Portal located in Parcel 4. Reclamation of the mill site would address areas located on Forest Service land. The remainder of the process area facilities are on private land and removal during closure is not planned. They will remain at the discretion of the private land owner (refer to Appendix E). The process area treatment pond (Parcel 10) would be reclaimed as a wetland.

3.4.1 *Reclamation Goals and Objectives*

Reclamation activities in the Jualin Process area will focus on closure and stabilization of the development rock site and closure of the Jualin Portal. In order to manage mine water a bulkhead will be installed in the portal. The development rock site will be graded and stabilized and protected from

erosion. The reclaimed surface will be graded to produce a slope of 2H:1V and reclaimed to establish a long-term, self-sustaining vegetation community as described below. The entrance to the Jualin Portal will be closed to restrict public access by installing a steel frame and grate to cover the opening.

3.4.2 *Reclamation and Closure Tasks*

Specific reclamation activities for each parcel are described in the following sections.

Parcel 8 – Jualin Process Area (Mill Site). Physical reclamation of the entire process facility including demolition and salvage is not planned. Coeur intends to forfeit the facilities to the private landowner as provided under AS 27.19.030(b). A cover will be constructed over the Jualin Portal to restrict public entry to the underground workings. Closure of the portal will consist of constructing a structural steel frame in the portal opening and covering the portal with a steel grate. Design of the cover will be evaluated to provide for future access to the area of the proposed bulkhead. Removal of the process area facilities will be limited to the southern end of the mill bench that is located on Forest Service land. The assay building, fire water tank, and incinerator located in this area will be removed and the disturbed area would be restored. After the improvements are removed from this area, the slope would be graded to 2H:1V, topsoil would be placed and the area would be seeded using the upland seed mix.

The current plan for managing post-closure mine water from the Jualin Portal is to install a bulkhead within the portal to control groundwater flow. During operation of the mine, water would gravity drain to both the 850 and Jualin portals. This occurs since a hydraulic divide is located between the two portals. The proposed bulkhead would create a hydraulic dam that would flood the underground workings to the 1007 foot elevation. This will allow mine water to drain to the Kensington 850 Level Portal where the water can be managed in one location. During active mining, mine water draining towards the Jualin Portal is collected in a sump and pumped over the hydraulic divide so it drains to the 850 Level Portal. Mine water is collected at the 850 Level Portal and treated at the WWTP prior to discharge under the current APDES permit. Data will be collected during active mining to support design for the bulkhead construction. Coeur will identify the location for the bulkhead, and prepare a bulkhead design and cost estimate that will be provided to the ADNR prior to the next environmental audit.

The conceptual plan used for the closure cost estimate assumes that the bulkhead can be located between the Jualin Portal sump and the Jualin Portal. The sump and current pumping system would then be used for dewatering during bulkhead construction. The timing for constructing the bulkhead will need to be scheduled after the completion of reclamation activities in the Kensington area that require access through the mine workings. The exact location and design for the bulkhead has not been determined at this time. For estimating purposes the bulkhead is assumed to be 30 feet in length. The dimensions of the bulkhead are assumed to be four feet greater than the existing opening in order to provide a key.

Parcel 9A – Jualin Development Rock Storage Facility. The previous reclamation plan assumed that approximately 277,000 cubic yards of development rock would be excavated and placed within Parcel 9A. During 2009 it was determined that the development rock placed in Parcel 9A was needed for dam fill at the TTF. The majority of the development rock placed in Parcel 9A was therefore loaded and hauled to the TTF and used for dam construction during January 2010. It is estimated that the future development rock will also be needed for constructing the final dam stages. The required volume of material will likely use the majority of any new development rock placed in Parcel 9A during active mining.

Figure 8 illustrated the anticipated ultimate disturbance footprint for the development rock deposit and provides a conceptual cross section of the area at closure assuming that the facility is filled to capacity. The ultimate capacity of the overburden deposit shown on Figure 8 is less than previously indicated; therefore, required reclamation would be less than previously estimated. Backfill will be achieved by end dumping from a working surface at the 1,000-foot elevation. This will result in an angle of repose slope (approximately 1.25:1) during backfilling.

During closure, the deposit will be graded to reduce the slope to approximately a 2:1 slope angle. This is approximately equal to the predevelopment slope angle. The closure surface will be graded using a dozer to cut material from the upper section of the slope and fill along the slope toe. Final contouring of the deposit will be dependent upon the quantity of rock placed in the facility. A grading volume of approximately 29,000 cubic yards at closure was estimated for the facility based on full capacity (Figure 8). The final crest area will be graded with a back slope and runoff will be routed to the stormwater BMP in Parcel 10.

Reclamation of the development rock facility would be completed to satisfy the performance standards included in 11 AAC 97.200. The graded development rock surface will be covered with a minimum thickness of 12 inches of growth media that will be obtained from the stockpile in Parcel 31. The reclaimed crest area will be scarified along contour where practical and seeded using the upland seed mixture presented in Section 2.5.2. The reclamation cost estimate includes a budget for grading, placement of growth media, and seeding the entire development rock facility footprint illustrated on Figure 8.

Parcel 10 – Jualin Process Area Treatment Pond. Parcel 10 will be reclaimed as a wetland area. The pond liner system would be folded and buried during grading. The treatment pond will be regraded to remove the berm along the east side of the pond, the reclaimed surface would be covered with a minimum of 12 inches of topsoil, and the area would be seeded to reintroduce native wetland species using the seed mixture presented in Section 2.5.2. Surface drainage from the reclaimed area would discharge to the existing riprap channel.

Parcel 11 – Jualin Process Area Snow Stockpile. The area delineated as Parcel 11 in this plan consists of two areas that were previously delineated as Parcel 11 and Parcel 17A. These areas have been combined in this plan. This area was previously designated as a snow and topsoil storage area and as part of the admin area. Parcel 11 is currently being used to manage stormwater and for snow storage. Reclamation of Parcel 11 may commence once the area is no longer needed for snow storage and stormwater management. Grading of the area will be performed to blend the site with the surrounding contours and to reestablish a wetland on the location. The stormwater pond berms will be graded to discharge to the adjacent waterways. The area will be seeded to reintroduce native wetland species using the seed mixture presented in Section 2.5.2.

Parcel 12 – Jualin Pump House Area. Physical reclamation of Parcel 12 is not planned. The pump house will be returned to the private property owner. The disturbed surfaces within Parcel 12 will be stabilized at the time of construction and native vegetation will become established during operation of the mine. The infiltration gallery is located on private land. The private land owner desires that the sump system remain in place since it is a component of the fire water and potable water system for the mill and camp facility. Coeur would transfer any permits for the infiltration gallery to the landowner who would be

responsible for maintaining and operating the system. Appendix E addresses the land owner's commitment to retain the pump house and accept any required permits.

3.4.3 *Post-Closure Monitoring and Maintenance*

Post-closure monitoring and maintenance for Parcels 8, 9A, 10 and 11 will evaluate reclamation success, and will include periodic maintenance of erosion controls if required. Stormwater management and inspections will be completed as required during closure, and surface water monitoring required under the APDES permit will be completed. The performance of the underground bulkhead in the Jualin Portal will be monitored. Section 4.2 provides more detail of the anticipated monitoring and maintenance programs.

3.5 Jualin Administrative/Laydown Areas

Closure in the Jualin Administrative and Laydown Area will commence at the conclusion of active mining. Four parcels are included in the area and are identified on Figure 9. A summary of the disturbance and planned physical reclamation for each parcel follows:

Table 3.5-1 Jualin Administrative/Laydown Areas Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[1]	Uplands	Total
Parcel 15 Jualin Laydown Area #2	3.7	0	0	0
Parcel 16 Jualin Laydown Area #3	0.6	0	0	0
Parcel 17 Jualin Administrative Areas	4.5	0.1	0.6	0.7
Parcel 38 Jualin Land Application Area	0	0	0	0
Totals	8.8	0.1	0.6	0.7

[1] Figure 18 illustrates the areas that will be reclaimed as wetland sites.

A total area of 8.8 acres is included in the Jualin Administrative/Laydown area parcel. The majority of this area is located on private land and will not be reclaimed. An area of 0.7 acres at the north end of Parcel 17 is on Forest Service land and will be reclaimed with 0.1 acres being reclaimed as wetland. Removal of the administrative buildings and reclamation of the laydown sites is not planned. No land disturbance is associated with the land application area in parcel 38 although the land application system may be removed or abandoned in-place if it is no longer needed. Parcels 21 and 37 that were previously planned in this area have not been constructed at this time. If these locations are constructed in the future they will be incorporated in the next revision of the reclamation plan.

3.5.1 *Reclamation Goals and Objectives*

Closure of the Jualin administrative and laydown areas will consist of no action for Parcels 15, 16, and the majority of Parcel 17 since these areas are located on private land. The post reclamation objective for the private land is to allow for future mineral exploration and potential development.

3.5.2 *Reclamation and Closure Tasks*

Parcel 15 & 16 – Jualin Laydown Area #2 and 3. Physical reclamation of the laydown areas is not planned. Coeur intends to forfeit the facilities to the private landowner. These areas will be maintained for future use by the landowner. Prior to closure, Coeur will evaluate conditions within the laydown areas to determine if any actions are required prior to releasing the area to the private landowner. The stormwater ponds at the southern end of Parcel 15 will remain to function as a long-term stormwater BMP.

Parcel 17 – Jualin Administrative Areas. The areas previously identified as Parcels 17A and 17B are combined in this reclamation plan. Parcel 17A has been incorporated into Parcel 11. The administrative buildings and camp facilities will be used during completion of the reclamation activities. Physical reclamation of the administrative facilities including demolition of buildings and other infrastructure is not planned. Coeur intends to return the facilities to the private landowner. These areas will be maintained for future use by the land owner.

A small area (0.6 acres) at the northern end of Parcel 17 is located on Forest Service Land. A stormwater BMP was constructed in this location. At closure this area will be regraded to create a wetland in the pond bottom having an area of approximately 0.1 acres. The pond dam will be graded to provide drainage from the pond. The steep slope on the southern edge of this area would be regraded to 2H:1V down to the boundary of the Forest Service land. The regraded area would be covered with a minimum of 12 inches of topsoil, and the area would be seeded to reintroduce native upland species using the seed mixture presented in Section 2.5.2.

Parcel 21 – Jualin Borrow Source #4. The borrow source planned at this location has not been constructed. The current borrow source #4 is included in Parcel 20.

Parcel 37 – Jualin Borrow Source #5. The borrow source planned at this location has not been constructed.

Parcel 38 – Jualin Land Application Area. This area has been used for land application of water collected during construction activities. The area used is located on private land on the western side of the Jualin Access Road. No physical disturbance occurred in the area, piping and drip lines were located on the surface for land application of water. The total area of the parcel is approximately 15.5 acres. The drip lines may be removed or left abandoned in-place if it is determined that they will no longer be needed.

Closure costs for Parcels 17 and 38 are presented in Section 4.1 and Appendix A (Table A- 3).

3.5.3 *Post-Closure Monitoring and Maintenance*

Post-closure activities for Parcel 17 will consist of monitoring the wetland area to evaluate the success in establishment of a long-term, self-sustaining wetland community. Post-closure monitoring and maintenance throughout the administrative areas will evaluate the need for additional stormwater BMPs in the reclaimed area.

Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.6 Tailings Facility Roads

The Tailings Facility Roads (Parcels 22, 23 and 27) provide access from the Jualin access road and mill site to the TTF and includes the alignment for the tailings slurry pipeline and reclaim water pipeline. The road is approximately 2.1 miles long, between the TTF dam and the Jualin road. The Tailings Pipeline alignment (Parcel 27) is located on the west side of Johnson Creek and is approximately 2.4 miles in length (see Figure 10).

3.6.1 *Reclamation Goals and Objectives*

The primary reclamation goal for the TTF roads is to close the roads to normal vehicle travel, to restore surface water hydrology by removing any remaining culverts and installing cross drains or water bars, and to the extent practicable the surface will be reshaped and stabilized. Continued access to the TTF will be required for post-closure monitoring and maintenance activities. Closure of Parcels 22 and 23 will reduce the footprint of the current roadway. After closure a single track road will remain to provide access to the TTF and dam for long-term monitoring and maintenance. A locked gate will be installed at the intersection of the TTF and Jualin roads. The tailings pipeline would be decommissioned as described below for the portion located within each parcel. The tailings line would be flushed with water prior to closure to remove tailings from the pipeline.

3.6.2 *Reclamation and Closure Tasks*

Closure may begin once the tailings slurry pipeline and reclaim water line are no longer needed and the tailings slurry pipeline has been flushed. The location of each parcel is identified on Figure 10. A summary of the disturbance and planned physical reclamation for each parcel follows:

Table 3.6.2-1 Tailings Facility Roads Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[1]	Uplands	Total
Parcel 22 TTF Access Road	9.6	2.5	5.4	7.9
Parcel 23 Lower TTF Access Road	9.1	4.0	4.2	8.2
Parcel 27 TTF Pipeline Road	20.7	5.4	15.3	20.7
Parcel 32 Jualin Borrow Source #6	3.5	2.2	1.3	3.5
Totals	42.9	14.1	26.2	40.3

[1] Figures 17 & 18 illustrate the areas that will be reclaimed as wetland sites.

Of the total area (42.9 acres), an area of 14.1 acres along the TTF Pipeline, the TTF access roads, and Borrow Source #6 will be reclaimed as wetlands. In order to provide long-term access to the TTF a single track road will be maintained along Parcels 22 and 23. The area of the road that will not be reclaimed is approximately 2.6 acres.

A summary of the closure tasks for each parcel is provided below.

Parcel 22 – TTF Access Road. Complete reclamation of this portion of the Tailings Facility Road is not planned since the road will remain in use during long-term monitoring and maintenance of the TTF. The road surface will be partially reclaimed in order to accommodate single lane traffic. Reclamation

activities will consist of removal of a portion of the wetland fill in the natural drainage between Spectacle and Upper Slate Lakes (0.1 acres). The culvert at this location will be removed and an armored stream crossing will be constructed. During closure the road surface will have water bars installed along the grade to minimize concentrated flow on the road surface. The road surface width would be reduced to allow for single lane traffic. The surface of the reclaimed road surface would be ripped to promote natural establishment of vegetation. The ripped area will be broadcast seeded with a wetland seed mixture. The lined stormwater ponds along the roadway will be restored and the drainage in these locations will be reestablished. The buried tailings slurry pipeline will be abandoned in-place unless it is removed during excavation. If exposed, the end of the pipeline will be removed, plugged below grade, and covered during final grading. Sections of pipe uncovered during grading would be removed and disposed of in accordance with the waste management plan.

Parcel 23 – Lower TTF Access Road. Complete reclamation of this portion of the Tailings Facility Road is not planned since the road will remain in use during long-term care and maintenance of the TTF facility (see Section 2.4.6). A locked gate will be installed at its intersection with the Jualin access road. The road surface will be reclaimed to provide single lane access with water bars as described for Parcel 22.

Parcel 27 – TTF Pipeline Road. Reclamation for Parcel 27 will consist of reclaiming the pipeline route along the entire length of the alignment in Parcel 27. The dam fill that crosses Snowslide Gulch would be removed and natural drainage across Snowslide Gulch will be restored. Excavated material will be placed in the road cut and the filled area will be reshaped and stabilized to support the post reclamation land use. A dozer will work in conjunction with an excavator to complete the work. Debris resulting from removal of the pipelines across snow slide gulch will be buried in the fill during regrading. Any culverts installed in the roadway will be removed and replaced with cross drains or war bars. Reclamation will avoid new disturbance of cut and fill slopes that had previously been stabilized during operation of the mine. Coeur will work with the Forest Service to identify reasonable mitigation measure to stabilize steep areas. The roadway surface would be broadcast seeded using the wetland seed mixture.

Parcel 32 – Jualin Borrow Source #6. This parcel will be partially backfilled with material excavated from wetland sites in Parcels 22, 23, and 27. The resulting surface will be graded, covered with one foot of topsoil, and seeded using the wetland seed mixture. The highwall area of the borrow pit will not be altered for reclamation.

Closure costs for Parcels 22, 23, 27 and 32 are presented in Section 4.1 and Appendix A.

3.6.3 *Post-Closure Monitoring and Maintenance*

Post-closure activities for Parcels 22, 23, 27 and 32 will consist of monitoring and maintenance of BMPs for erosion control and monitoring of seeded areas to evaluate revegetation success. Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.7 Tailings Treatment Facility (TTF)

After the conclusion of tailings deposition, the TTF will be reclaimed to a self-sustaining aquatic ecosystem. The original lakebed and surrounding terrestrial habitat will be filled with tailings to the 704 foot elevation (see Figures 11 and 12). The post-closure lake surface will be raised to the spillway elevation 732 feet. This will result in a water depth of 28 feet above the tailings deposit. As the lake level

is raised to its final elevation, approximately 13 acres of native soil will be flooded. It is expected that a productive benthic community will quickly colonize this native soil. This area will be similar to the area of productive sediment in the existing lake.

While slower colonization in tailings relative to submerged native soil would not jeopardize the reclamation goal (see below), it could be interpreted as indicating that the tailings may be less suitable for some species. The most likely limiting factors would be lack of organic matter or residual process water that drains from the tailings deposit during consolidation. Both of these potential stressors will be alleviated over time as organic matter settles on the lake bottom and as tailings consolidation slows. A tiered, adaptive approach to evaluate colonization of tailings is included in the facilities ecological monitoring plan.

The spillway for the first stage TTF dam will be constructed during 2010; therefore cost to construct the spillway is not included in the reclamation cost estimate. Cost for constructing the spillway for each dam stage will be included in the capital cost for each stage of construction. In the case of premature closure, prior to construction of the final dam stage, a budget is provided in the closure cost estimate to construct the final spillway. Design drawings for the final spillway are presented in Appendix C.

3.7.1 *Reclamation Goals and Objectives*

The reclamation goal for the TTF is establishment of a self-sustaining aquatic ecosystem that includes:

1. Rooted aquatic plants that are comparable in areal coverage to the baseline for Lower Slate Lake prior to TTF construction;
2. Dolly Varden that are equal in abundance and fitness to that in Lower Slate Lake prior to TTF construction based on statistical comparisons to the baseline population estimate and the average individual condition factor and size class;
3. Upper Slate Lake will provide Dolly Varden to Lower Slate Lake via Mid Slate Lake Creek. Dolly Varden should not be transplanted from any other source; and
4. Protection of water fowl through meeting water quality standards at closure.

After the final water level is reached in the TTF, reclamation will be dominated by natural processes. Rooted aquatic plants and Dolly Varden will be used to assess the status of reclamation because:

- they are reflective of a diverse and productive lake;
- they are readily quantifiable;
- their annual and season variability is low once they are established;
- they are a direct food source for wildlife; and
- they require high quality and productive benthic and water column habitat.

Other ecosystem components that will be monitored are not well suited for use in assessing the status of reclamation. For example, the benthic invertebrate community in the submerged native soil and tailings in the TTF after closure may differ from Lower Slate Lake baseline data and the Upper Slate Lake community as the process of species succession progresses. This difference would not affect the reclamation goal if Dolly Varden were to become established in the TTF despite taxonomic differences in the benthic invertebrate assemblage.

Closure of the TTF will include construction activities at the conclusion of tailings deposition to decommission the facility, water treatment during closure and care and maintenance of the facility during post-closure.

During operations Coeur will maintain a working water cover over the tailings deposit of approximately 9 feet. At the end of active operations the elevation of this cover is expected to be 713 feet in elevation. During final reclamation an additional water cover will be provided by flooding of the tailings and native soils to the spillway pool elevation of approximately 732 feet in elevation. This will submerge approximately 13 acres of native soils, which will replace the estimated 11 acres of productive native sediments originally in Lower Slate Lake. Figure 12 illustrates a section through the impoundment at the end of tailings placement and the depth to the submerged tailings surface. The final lake surface will be approximately 60.2 acres and will have a maximum depth of approximately 28 feet.

Restoration of the aquatic community will be accomplished by both passive and active measures. Surface flow from Upper Slate Lake via Mid-Lake Slate Creek will supply benthic invertebrates, phytoplankton, zooplankton, and threespine sticklebacks. Airborne adult stages of some aquatic invertebrate species will also introduce invertebrates to the lake. Additional measures for reestablishing an aquatic ecosystem would include plantings along the lake margin, placement of gravels in the littoral zone and management of the final lake elevation through the engineered spillway. If necessary, organic soil would be added as part of the capping plan presented later in this report. Planting of rooted aquatic plants will be completed after placement of the capping material (if required). A budget to complete these activities is included in the cost estimate.

The scientific literature demonstrates that sources of benthic invertebrates for the TTF will not be lacking, and they will rapidly colonize the TTF in seasonal pulses that correspond with their life cycles. This process of rapid benthic recruitment is well documented in newly created or disturbed reservoirs, lakes, and ponds (Paterson and Fernando 1969, Barnes 1983, Voshell and Simmons 1984, Niemi et al. 1990, Layton and Voshell 1991, Bass 1992, Hayward et al. 2001). Much of this literature demonstrates dense and diverse invertebrate colonization after weeks or months in new reservoirs and ponds.

3.7.2 *Reclamation and Closure Tasks*

Closure activities for the TTF facilities have been organized using Parcels that correspond with specific TTF areas or facilities. The location of each TTF parcel is identified on Figures 11 and 13. The acreage requiring reclamation associated with each of these locations and type of proposed reclamation is summarized in Table 3.7.2-1.

Of the total 86.0 acres included in the TTF areas an estimated area of 74.3 acres will be reclaimed as open water or wetland. This area includes the wetland water within the tailings lake less than 6.6 feet in depth. The deepwater area of the lake is estimated as 58.3 acres and consists of the portion of the lake estimated to be greater than 6.6 feet in depth.

Regrading and reclamation of surface disturbance will be required at the topsoil stock pile area, the dam plunge pool area, and in an area surrounding the lake that has been designated the TTF Lake Margin Working area. Activities included in each parcel are discussed in the following sections.

Table 3.7.2-1 Tailings Treatment Facility Reclamation Summary

Location/Parcel	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[3]	Deepwater[2]	Upland
Parcel 24 Tailings Treatment Facility (TTF)	23.5[1]	0	23.5	0
Parcel 25 TTF Lake Margin Working Area	49.8	11.3	34.8	3.7
Parcel 26 Tailings Dam Borrow Area	4.9	3.4	NA	1.5
Parcel 28 Tailings Dam Plunge Pool Area	5.4	0.7	NA	4.7
Parcel 36 TTF Topsoil Stockpile	0.6	0.6	NA	0
Totals	86.0	16	58.3	9.9

[1] The area reported for the TTF is the original lake having an area of 23.5 acres. At Closure the area of the lake is increased to 60.2 acres due to the incremental increase in the flooded area.

[2] Deepwater is defined as areas flooded to depths greater than 6.6 feet.

[3] Figure 19 illustrates the TTF areas that will be reclaimed as wetland sites.

Parcel 24 – Tailings Lake. Clearing of timber to above the ultimate spillway pool elevation (732 feet) was completed during the initial construction of the TTF dam. Prior to raising the lake to its final elevation, the area of native soils that may have been influenced from tailings deposited from the nine-foot water cover zone (between 704 and 713 elevation) will be assessed. The nine-foot zone represents the operational working water depth used during tailings deposition. As stated in the SEIS a 10 cm (4-inches) cover will be added, unless Coeur can demonstrate that the cap is not necessary. The SEIS indicated that Coeur would be required to demonstrate to the satisfaction of the EPA that the cap is not required. Coeur will be conducting a testing program to evaluate the need for cover over the tailings to enhance recolonization at closure. The closure cost estimate assumes that 41,250 cubic yards of material is required for this purpose at closure. This volume includes sufficient material to cover the surface area of the tailings deposit and the surrounding area up to the 713 foot contour elevation.

A protective cover would be constructed over the inboard face of the dam during stage 3 construction. The design of the protective cover will be known when the Stage 3 dam design is completed. Cost for constructing the Stage 3 dam will include placement of the protective layer on the dam face.

Appendix B presents consolidation testing and modeling of seepage from the tailings conducted by Knight Piesold. This testing indicates that at the end of operations after two years of consolidation, seepage at the tailing surface is predicted to be minimal over much of the facility. The total predicted seepage to the tailings surface after closure is estimated to be 6 gpm after 2 years and 4 gpm after 5 years. This equates to less than 0.0000045 gpm per square foot. Thus, the key potential limiting factor to recolonization may be lack of organic material in the tailings.

The reclamation cost estimate includes operation of the TTF WTP for 18 months during the closure period in order to meet closure water quality standards. Tailings lake water would be treated and discharged at Outfall 002. Assuming that the WTP operates at 1,000 gpm, the volume of treated water during the 18 month period is 2,420 acre-feet. If a 9-foot operational pool depth is maintained during this period, the lake volume is approximately 540 acre-feet. Therefore, the WTP treats approximately 4.5 times the lake volume at 1,000 gpm. During the following year a tailings consolidation seepage volume of approximately 9.7 acre-feet (assuming 6 gpm) may be anticipated as inflow to the lake in addition to 290 acre-feet of direct rainfall into the lake (58 inches average precipitation). These volumes indicate a dilution ratio of tailings water of 85 to 1 (relative to the consolidation seepage volume) if the lake is nine feet deep one year after the end of treatment. When the lake fills the volume increases to approximately 1,530 acre-feet. A dilution ratio for the sum of the lake volume and direct rainfall into

the lake to the seepage volume of 187 to 1 is estimated one year after the end of treatment. Coeur would monitor influent to the WTP during mining operations to characterize the TTF lake water quality. Results from this monitoring would be reviewed with ADEC, ADF&G, and the Forest Service in order to validate the proposed closure water treatment approach.

Filling of the TTF Lake to the spillway elevation would occur after Coeur receives agency approval to discontinue operation of the WTP. The filling process would utilize direct precipitation and runon into the lake and a portion of the diverted water from Upper Slate Lake would be discharged into the TTF Lake during filling. Coeur would manage the diverted water in order to maintain adequate flow in Slate Creek during filling. The time period required to fill the lake would vary depending on the volume of diverted water used to fill the lake and may range from 2-3 month during peak runoff up to a full year if fill at a slower rate. Coeur would coordinate with the ADEC and ADF&G regarding the minimum flow in East Fork Slate Creek. Prior to filling a plan describing the approach to managing flow in the East Fork of Slate Creek will be prepared and submitted to the agencies for approval.

During operations, Coeur will characterize the constituents contained in the tailings pore water. This information combined with operation of the water treatment plant, reestablishment of diverted flow into the tailings lake, and the decline in consolidation seepage volumes over time, all factor into the quality of water in the post-closure lake. Coeur will consider all of these factors in future revisions to the reclamation plan, the evaluation of potential lake water quality, and the assessment to determine if the tailings cap is needed.

The determination of the need to place the tailings cap would be made at the time when the final reclamation plan is approved in order to schedule the sequence of closure activities for the TTF. Placement of the tailings cap would occur prior to treating the TTF lake water. The tailings distribution pipeline could then be removed once the cap is placed.

The tailings cap, if necessary, is envisioned to be a four to six inch thick layer of native material stockpiled during construction of the TTF. This material may be placed over the tailings surface using the submerged diffuser and tailings discharge pipeline. Capping of the entire submerged tailings surface (52.3 acres) would be conducted unless Coeur demonstrates that the cap is not needed and receives approval to omit the cap. Capping materials were salvaged during construction of the TTF and dam. The stockpiled materials include topsoil and overburden soil excavated during construction of the TTF dam. Two stockpiles have been constructed in the TTF area within Parcels 25 and 36 that contain approximately 56,600 cubic yards of material. This volume is sufficient to provide the estimated volume of material that will be needed to construct the TTF cap (if required), and to complete reclamation within the other areas surrounding the TTF lake.

Processing of the capping material will include pre-screening and stockpiling of the soils to remove oversized material not capable of passing through the diffuser pipeline. Material processing and operation of the pugmill would occur near the soil stockpile area within the Lake Margin Working Area. The screened material would be mixed with lake water using a pugmill mixer and will be deposited in the lake using a pump and diffuser system. The consistency of the slurry will be controlled during placement to obtain the desired cover thickness. The pugmill and stockpiles will be located within Parcel 25. Oversized material would be incorporated into the reclaimed area along the lake margin.

Placement of the capping material using a submerged diffuser (see Appendix C) will require the diffuser barge to travel around the surface of the impoundment at a controlled rate in order to maintain the

nominal depth of cover placement. This operation will require a system of cables and anchors to facilitate moving the barge. An anchor cable would be placed at a sufficient distance away from the barge to allow the barge to swing along an arc. A system of side cables would be used to pull the barge along the arc. Upon completion of each arc the length of the anchor cable would be adjusted to position the barge for filling along the next arc. The delivery pipeline would be placed on floating barges and would include flexible sections to allow movement of the barge. Sections of delivery piping would be added or removed as necessary. Cap placement would be monitored by mapping the movement of the barge across the TTF surface using GPS mapping.

The sequence of reclamation and closure activities in the TTF area will begin with placing the tailings cap (if required), followed by post operations water treatment. Following treatment, the remaining facilities used during operation of the TTF would be removed. The following components of the tailings distribution system (if they exist) will also be decommissioned:

- Removal of the reclaim pipeline;
- Removal of the tailings delivery system pipeline;
- Removal of the tailings floating barge; and,
- Removal of the tailings lake turbidity barrier.

Surface reclamation may also be completed at this time in locations within the margin area not required for water treatment or other ongoing closure activities. Reestablishment of flow from Upper Slate Lake through the TTF may not occur until water quality objectives are met. If required, placement of the tailing cover layer will occur during the period when the TTF WTP is operated. Influent to the WTP will be monitored to determine if the TTF Lake water meets the water quality standards in AAC 70, including any site specific criteria that are in effect at the time of closure. The WTP will be decommissioned after these water quality standards are met for a period of four weeks upon agency approval. The treatment plant would remain in place and would be capable of being made operational for a period of 18 months after receiving approval from ADEC and the Forest Service to terminate active water treatment. The plant would not be permanently removed until approved by the Forest Service and ADEC.

The water level in the restored lake will need to be raised to the ultimate spillway pool elevation (732 feet) prior to removal of the Slate Creek Diversion system in order to maintain flow in Slate Creek below the TTF dam. Once flow through the lake to Lower Slate Creek occurs the Slate Creek Diversion system can be removed and the remaining areas will be reclaimed. The existing concrete structure is located above the final lake elevation. The current reconstructed channel located below the diversion structure would be flooded during lake filling. Removal of the diversion system will include the following:

- Removal of the Slate Creek Diversion inlet structure;
- Removal of the Slate Creek Diversion piping; and,
- Removal of the Slate Creek Diversion plunge pool.

Closure activities to promote establishment of a self-sustaining aquatic ecosystem will include aquatic planting and placement of littoral gravel for fish spawning. Placement of littoral gravel intermittently in patches along the shoreline will be completed prior to flooding the lake to the 732 foot elevation. Gravel will be placed along a total of 430 feet of shoreline, will extend into the lake 10 feet, and will have thickness of approximately 10 inches. Approximately 150 yards of gravel will be required for this task. Locations for placement have not been defined at this time. Coeur will work with the ADF&G to determine locations for the gravel. Potential locations may include the inlet channel to the TTF Lake. Gravel placement would likely be most practical along the north and east shorelines where access from

the existing roadways is possible. This approach will minimize potential for new disturbance during construction. Rounded alluvial gravel will be obtained from a source that would be located in the Johnson Creek Drainage. Coeur will identify the borrow source location prior to the next reclamation plan update.

Once the final post-closure water level has been established in the lake, and placement of any cover material (if required) is completed, and water treatment has been discontinued, planting of rooted aquatic species may begin. The dominant rooted aquatic plants are water lily (Nuphar polysepalum), and pondweed (Potamogeton natans). The closure cost estimate has provided a budget for planting aquatic plants. This task assumes labor to complete the planting and assumes that local stock may be either harvested or grown locally. Coeur would identify the locations for harvesting aquatic plants from Upper Slate Lake and Spectacle Lake or other sources. The plan to harvest the aquatic plants would be submitted for agency approval.

Monitoring of the TTF would be completed in accordance with the Ecological Monitoring Plan (EMP). The ultimate introduction of Dolly Varden will consist of fish from Upper Slate Lake and would be coordinated with the ADF&G and the Forest Service.

Parcel 25 – TTF Margin Working Area. Disturbed areas associated with the diversion, reclaim water system, topsoil stockpile, WTP, access road, and tailings pipeline are included in the margin working area (see Figure 11). At the end of operations the margin area will be used for water treatment operation and construction of the tailings cap if required. The Slate Creek Diversion system is also located in the margin area. Reclamation in these locations will not occur until the second year of closure. Restoration of areas not needed for the TTF closure may begin during the first year after closure. The diversion system would remain in place until filling of the TTF Lake is completed. Complete removal of the margin area road is not planned. Single lane access on the road will be required to support post-closure monitoring and maintenance activities at the TTF and to provide access for dam safety inspections during the long-term monitoring period. The area of the road surface not needed for long-term access will be ripped and seeded.

Reclamation of the disturbed areas will consist of regrading to blend the reclaimed areas with surrounding topography. Areas where timber had been cleared and soil stripping had not occurred will be evaluated to determine if seeding and planting are needed. In some locations these areas may have naturally revegetated during operation of the TTF. In locations where seeding is required, in-place materials will be scarified along contour, if possible prior to seeding. Disturbed areas surrounding the lake will be planted to reestablish the existing woody and non-woody vegetation types.

During construction of the tailings storage facility topsoil salvage within the construction areas was stockpiled within Parcels 25 and 36. This material will be used for reclamation at closure and will include materials that would be used for capping the tailings unless capping is determined to not be necessary.

Operation of the WTP located in Parcel 25 would no longer be required once closure water quality standards in the lake are met. As described above, the treatment plant would remain in place until the Forest Service and ADEC approve removal. The equipment will be salvaged and transported to the Slate Creek Cove facility and removed from the site or may be relocated to private lands in the Jualin area.

Removal of the Mid Slate Lake Creek diversion may occur once the lake is filled to the final spillway elevation and flow into the tailings lake has been reestablished. Operation of the diversion pipeline is

required during filling of the lake in order to maintain minimum flows in Slate Creek below the TTF dam. Since the diversion pipeline was installed below grade, it will be abandoned in-place upon approval by the ADF&G. Exposed portions of the pipeline will be removed by cutting the pipe below grade, plugging the pipe, and burying the plugged pipe. Any pipe removed during excavation and reclamation activities would be disposed in accordance with the waste management permit.

Parcel 26 – Tailings Dam Borrow Area. Discharge from the lake is planned to occur from the Stage 3 dam primary spillway that would be located along the right abutment of the dam during the final stage of dam operation. The spillway channel is planned to be excavated within bedrock in Parcels 26 and 28. Preliminary design drawings for the spillway are presented in Appendix C.

Development of the borrow area to produce dam fill was halted after initial stripping and road building activities due to issues related to the GP material encountered in this location. A new source for the fill was required. Therefore, fill material for the initial phase of the dam construction was obtained from the Jualin Development Rock Facility. An alternative design for the final spillway has been evaluated and is presented in Appendix C. The Stage 1 spillway is located along the right abutment of the TTF dam. Costs to construct the ultimate spillway are part of the capital cost to construct the final dam stage and certificates to operate will require its installation. Construction of the emergency spillway for the current dam stage was completed during 2010.

Reclamation of the disturbed surface from the initial construction activities in Parcel 26 will be required. The reclamation cost estimate assumes that the disturbed area will be regraded, covered with topsoil and seeded. Restoration of the disturbance in Parcel 26 will likely occur during interim reclamation. The reclamation cost estimate includes a budget to complete this reclamation. Section 2.9.1 describes monitoring activities related to reclamation of this location.

Parcel 28 – Tailings Dam Plunge Pool Area. The tailings dam plunge pool includes the final dam surface that will not be submerged by the restored tailing lake and the area below the dam that will include the ultimate dam spillway. The GP deposit that was encountered in Parcel 26 also occurs in this area (see Figure 13). The location of the temporary GP material storage area is outlined on Figure 13. The reclamation cost estimate includes a budget to relocate and dispose this material and to remediate the area identified on Figure 13 (refer to Section 2.9.1). An area of approximately 0.9 acres adjacent to the ultimate dam will be remediated. The budget to treat this area includes removal of the GP material to bedrock, application of a dental concrete layer to seal the bedrock surface, placement of soil cover, and establishment of vegetation across the site. The soil cover will consist of diorite rock and fine grained fill that will be salvaged during removal of the GP material. This material will provide approximately 4 feet of cover over the dental concrete. Reclamation requirements in the other Parcel 28 areas will include:

- Removal of the tailings dam seepage collection system;
- Regrading of the site;
- Topsoil placement; and,
- Establishment of native vegetation.

Water quality monitoring of the tailings dam seepage collection system will be reviewed to determine if seepage water meets water quality standards. Agency review of this data and approval will be required prior to removing the seepage collection system and water treatment plant (see Section 2.9.1). Growth media placement will be required in the dam plunge pool area excluding the downstream dam face. For

costing purposes, it was assumed that 12 inches of growth media will be placed. Material will be obtained from stockpiles in Parcel 25.

Parcel 36 – TTF Topsoil Stockpile. This area was used for stockpiling of topsoil from road construction, and other construction activities in the TTF area. The total area of the parcel is approximately 0.6 acres and is located entirely within wetlands (see Figure 11). Topsoil stockpiled in Parcel 36 will be excavated during completion of reclamation activities around the TTF. Reclamation of the area after removal of the topsoil will include grading and seeding the site to restore native wetland species.

3.7.3 *Post-Closure Monitoring and Maintenance*

Post-closure care and monitoring of the TTF will consist of:

1. Monitoring for reclamation success within the reclaimed margin work area and other areas surrounding the restored tailings lake. This will include monitoring the stability of the reclaimed surfaces for erosion and sediment discharge.
2. Monitoring the progress in establishment of a sustaining aquatic ecosystem in the restored tailings lake. Monitoring will include water quality monitoring, rooted aquatic plants, and monitoring of the Dolly Varden population.
3. Dam safety inspections, monitoring, and maintenance in accordance with the ADNR requirements.

Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.8 Jualin Access Road

Physical reclamation of the Jualin Road is not planned since the road will remain in place as a permanent highway right-of-way owned by the State of Alaska. The road will remain in use during long-term care and maintenance of the TTF dam and to provide continual access to public and private land in the vicinity. Reclamation activities included for the Jualin Access Road include closure of three borrow sources, and two topsoil stockpile locations, and removal of several stormwater ponds along the access road is planned.

3.8.1 *Reclamation Goals and Objectives*

Closure for the Jualin road will consist of reclaiming the three borrow sources, one topsoil stockpile and stormwater ponds located along the roadway. Borrow Sources #1 and #2 will be reclaimed as upland habitat, and Borrow area #3 will be reclaimed to establish wetland habitat. The upland sites will be stabilized and protected from erosion. The reclaimed surface will be treated to establish long-term, self-sustaining vegetation communities.

3.8.2 *Reclamation and Closure Tasks*

Reclamation activities along the Jualin access road will commence at the conclusion of active mining. A summary of the disturbance and planned physical reclamation for each parcel follows:

Table 3.8.2-1 Jualin Access Road Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[1]	Uplands	Total
Parcel 13 Jualin Access Road	28.4	0.5	0	0.5
Parcel 18 Jualin Borrow Source #1	3.8	0.2	3.6	3.8
Parcel 19 Jualin Borrow Source #2	1.3	0.2	1.1	1.3
Parcel 20 Jualin Borrow Source #3	11.0	0.6	5.4	6.0
Parcel 31 Jualin Topsoil Stockpile Area	6.8	6.8	0	6.8
Parcel 34 Jualin Reclamation Materials Area	2.1	0	2.1	2.1
Totals	53.4	8.3	12.2	20.5

[1] Figures 18 and 20 illustrate the areas that will be reclaimed as wetland sites.

Of the total area (53.4 acres), an area of 8.3 acres is to be reclaimed as wetlands at closure. Specific reclamation activities for each parcel are described in the following sections.

Parcel 13 – Jualin Access Road. The closure cost presented in Appendix A, does not cover total removal of Parcel 13. However, sediment ponds along the road will be reclaimed by folding and burying their liners, regrading, placement of up to 12 inches of topsoil, and reseeding.

Parcels 18 & 19 – Jualin Borrow Sources #1 and 2. Reclamation of the borrow areas will include grading, contouring, stabilization and seeding. Fill excavated from wetlands in Parcels 29 may be disposed of within Parcel 18. Parcel 19 will be contoured prior to placement of topsoil. A minimum of 12 inches of growth media will be placed on the floor area of the pits. The site will be scarified along contours and seeded using the upland seed mixture presented in Section 2.5.2. Planting will include hydro seeding, and application of mulch and fertilizer.

Parcel 20 – Jualin Borrow Source #3 & #4. The Pit #4 area within Parcel 20 is being used as a temporary containment cell for GP material that was excavated from the TTF dam construction site. This material will be relocated into a stope in the underground mine for permanent disposal. At closure or once GP material has been removed reclamation activities for Parcel 20 may begin.

The excavated areas will be partially reclaimed as wetlands. The site will be contoured to smooth topography within the borrow area. Rock cut slopes will remain along the upland perimeter of the borrow source. It is anticipated that excavation from the borrow pit will result in areas that form depressions that will retain water and or result in saturated soils for much of the year. These areas will be treated with growth media and seeded with the wetland seed mix.

Reclamation activities to contour the borrow area will be completed during closure when the area is no longer need for support activities. The topsoil stock pile on the south side of the borrow source will be utilized during reclamation.

Coeur is in the process of conducting a geochemical evaluation of Pit #3. Coeur will review results of the evaluation with the ADNR and the Forest Service prior to the next environmental audit. Pit #3 will not be used as a construction borrow source until the geochemical review is completed and material is approved for construction by the agencies. If necessary, Coeur would reevaluate the proposed

reclamation plan for Pit #3 based on results from the geochemical analysis. Pit #3 monitoring requirements will be addressed during the environmental audit.

Parcel 31 – Jualin Topsoil Stockpile Area. This parcel will facilitate the long-term storage of topsoil. Approximately 6.8 acres of wetlands was filled when topsoil fill was placed in this area. Two ponds were constructed at the southern end of the parcel for sediment control. Topsoil stockpiles within Parcel 31 will be depleted during reclamation activities at the site. Reclamation of the surface after removal of the topsoil will include grading and seeding the site to restore native wetland species.

Parcel 34 – Jualin Reclamation Material Area. This parcel is used for storage of reclamation materials salvaged from the marine terminal area. The parcel area is approximately 2.1 acres. Topsoil from the stockpile will be used for reclamation in the marine terminal area. Once the pile is depleted the resulting surface will be graded and seeded using the upland seed mixture.

Closure costs for Parcels 13, 18, 19, 20, 31 and 34 are presented in Section 4.1 and Appendix A (Table A-3).

3.8.3 *Post-Closure Monitoring and Maintenance*

Post-closure activities will consist of monitoring of seeded areas for vegetation success and maintenance of BMPs for erosion and sediment control. Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.9 Slate Creek Marine Facility Area

Reclamation of the Slate Creek Marine Facility will be completed during the final phase of reclamation after work in the Jualin Process Area and TTF areas is substantially completed. The marine facility will be used to support the reclamation activities and used during demobilization of salvaged materials and mobile equipment used during reclamation. The marine facility will not be maintained and used for long-term monitoring and maintenance activities. Three separate parcels are included in the Slate Creek Marine Facility area. The location of each parcel is identified on Figure 16, and a summary of the disturbance and planned physical reclamation for each parcel follows:

Table 3.4-1 Slate Creek Marine Facility Reclamation Summary

Parcel/Location	Disturbed Area (acres)	Proposed Reclamation (acres)		
		Wetland[1]	Uplands	Total
Parcel 14 Jualin Laydown Area #1	0.9	0	0.9	0.9
Parcel 29 Slate Creek Cove Marine Terminal	4.1[2]	0.5	3.1	3.6
Parcel 30 Slate Creek Cove Snow Stockpile[3]	0	0	0	0
Totals	5.0	0.5	4.0	4.5

[1] Figure 20 illustrates the areas that will be reclaimed as wetland sites.
[2] The area that will not be reclaimed is the location of the Jualin road right of way within Parcel 29 that will remain to provide access to the shoreline.
[3] This area was not constructed and used for snow storage. Reclamation is not required.

3.9.1 *Reclamation Goals and Objectives*

Reclamation activities in the Slate Creek Facility will focus on removing the marine terminal infrastructure used during construction and active mining, and to return the land to a safe and stable condition. Removal of the terminal and reclamation will improve the viewshed along Slate Creek Cove and Berners Bay. The terminal and laydown areas will be stabilized and protected from erosion. The reclaimed surface will be treated to establish long-term, self-sustaining wetland and upland communities. The terminal infrastructure including the docks, piers, gangplanks and related foundations will be removed and salvaged. The Jualin access road will remain in-place as part of the post-mining closure landscape.

3.9.2 *Reclamation and Closure Tasks*

Specific reclamation activities for each parcel are described in the following sections.

Parcel 14 – Jualin Laydown Area #1. The area of the parcel is approximately 0.9 acres. The laydown area will remain in use during reclamation to stage salvaged materials and equipment that will be transported from the site. The bulk of these items will be transported from the site using a large freight barge, and reclamation of the area may begin once the area is no longer needed.

Reclamation tasks for this parcel will include grading, topsoil placement, soil preparation, seeding and installation of stormwater BMPs around the reclaimed area. The reclaimed surface will be prepared and seeded to reintroduce native upland species.

Parcel 29 – Slate Creek Cove Marine Terminal. Closure of the marine terminal will consist of removal of the fuel storage containment area; demolition of improvements including foundations; and salvage of the docks, gangplanks, and piers. Parcel 29 has been subdivided into two areas (29A and 29B) in order to distinguish reclamation on Forest Service land and land controlled by the state of Alaska tideland lease program. Parcel 29A includes the area within Parcel 29 located above the mean high water elevation that is controlled by the Forest Service. Parcel 29B represents the portion of Parcel 29 located below the mean high water elevation and includes the off-shore components of the marine facility.

Parcel 29A (Forest Service Lands)
This area was expanded to the east to facilitate a revised design of the marine facilities approved by the Forest Service during 2005. The increased area for this parcel is now being accounted for in the closure cost estimate. The area to be reclaimed generally consists of a level pad that was used as a staging area for shipping containers and the access roadway to the Jualin area. The slope around the perimeter of the staging area consists of a bedrock cut. Fill was placed at the lower end of the area adjacent to Parcel 29B.

Closure of 29A will remove the fuel storage area, demolish any concrete foundations, minor grading of fill removed from the lower end of the parcel. The fuel storage area will be evaluated for potential hydrocarbon contamination. A contingency cost has been provided in the cost estimate for soil remediation in the event that contamination occurs. Should contaminated soils or liner be encountered, Coeur will determine the appropriate measures required for remediation. Otherwise, closure will consist of cutting and folding the liner system into the storage cell and backfilling the depression during site grading.

All unnecessary foundations and other structures remaining at the site will be demolished and buried in-place when the site is graded. A minimum of 12-inches of growth media will be placed on the graded site and the surface will be scarified along contour and seeded to establish native species. Silt fencing will be installed along the lower perimeter of the site for sediment control. Topsoil placement and seeding within Parcel 29A will occur across a 0.6 acre area. The area encompassing the Jualin Road right-of-way will not be reclaimed and will be maintained to provide safe access to the shoreline.

Parcel 29B (State of Alaska Tideland Lease Area)
Removal of the terminal facility will be completed using a large construction barge equipped with a large crane (approximately 100 tons) capable of picking the docks and gangplanks. Piles will be removed and salvaged either by jacking out with a crane, or cutting them off at the mudline.

Fill placed within the tideland lease area may be removed at closure. A determination of this requirement will be made and the extent of removal defined at the time when the final reclamation plan is prepared. For bonding purposes, this plan assumes removal of the fill. The excavated material will be incorporated into the regrading of Parcel 29A or 14. The surface of the area to be reclaimed will be ripped and graded. Topsoil and seeding is not required in Parcel 29B. Access from the shoreline to the Jualin Road will be maintained.

Closure costs for Parcels 14 and 29 are presented in Section 4.1 and Appendix A (Table A- 3).

3.9.3 *Post-Closure Monitoring and Maintenance*

One of the primary objectives in the marine terminal area is to provide for public safety by removing the terminal facility. Fill removal was planned to restore the original costal wetland topography. Monitoring and maintenance of BMPs for erosion control and monitoring of seeded areas to evaluate vegetation success will be completed. Section 4 describes the scope of anticipated monitoring and maintenance programs.

3.10 Summary of Wetland Reclamation

At the end of the active reclamation phase all areas of planned reclamation will have been completed. Areas that will not be reclaimed include the Jualin Access Road and some facilities located on private lands. The CWA Section 404 permit for the project, which was modified during 2009, identified 80.3 acres of total fill in Waters of the U.S. during construction and operation of the mine. In order to replace the wetlands lost, the reclamation plan has identified potential areas that can be reclaimed to restore wetlands that existed prior to development of the mine. These areas are identified on Figures 17 through 20. A total area of 112.7 acres is identified on the figures that may be reclaimed as either wetlands or wetlands in a wetland/upland mosaic. The wetland mosaic areas have been characterized as having approximately 25 percent wetlands. This indicates that the proposed reclamation will adequately replace the 80.3 acres of wetland that were previously filled.

The majority of the restored wetlands are located in the TTF Lake. The reclaimed TTF Lake will have a surface of approximately 60.2 acres when filled to the 732 foot elevation. This area includes the original lake area reported to be 23.5 acres and represents a net increase of 36.7 acres.

4.0 POST-CLOSURE MONITORING AND MAINTENANCE

During mine operation, inspections would be part of the normal mine operation and maintenance schedule. Therefore, important information necessary for developing detailed post-closure monitoring and maintenance schedules and costs and related financial assurance requirements would be collected during operations of the mine. The 30 year post closure monitoring period would begin once active water treatment is discontinued. Operational monitoring would continue after operations cease during the two year restoration period. This would include inspections during reclamation construction when stabilization activities are being completed and stormwater inspections and water quality monitoring required under APDES. The budget to perform the monitoring and laboratory analysis for water quality tests during the two year reclamation period is provided in the reclamation cost estimate. At the end of the active reclamation period when construction of all the final reclamation is completed, reclamation success monitoring and maintenance would be implemented. The current monitoring schedule includes monitoring activities on years 1, 2, 3, 4, 5, 10, 15, 20 and 30. Reclamation maintenance activities are planned through year ten. The inspection plan varies for each area of the project as described below.

The following post-closure monitoring activities would be completed during the 30 year long post-closure period:

- Reclamation success monitoring including stormwater inspections in reclaimed areas. Any necessary remedial work would be carried out as needed, based on site inspections;
- Water quality monitoring as required by APDES permits still in force (see Appendix G);
- Ecological monitoring;
- Dam safety inspections every three years, and an inspection of the TTF dam following any extreme event believed to exceed the 100-year, 24-hour storm event;
- Annual dam and spillway inspection and maintenance; and,
- Maintenance of the physical integrity of the TTF, mine portals, and roads required for post-closure monitoring.

4.1 Reclamation Success Monitoring

Reclamation success monitoring will evaluate site stability and vegetation cover. The evaluation of stability will screen the reclaimed areas for soil erosion and sediment discharge. Inspections and maintenance activities are planned during years 1, 2, 5, and 10 during the post-closure period. This program will focus on monitoring reclaimed areas for vegetation success and identifying and correcting any erosion problems. visual surveys will be completed during each year to evaluate revegetation success criteria until each area is determined to have achieved final stabilization. Areas identified that require maintenance activities will be reevaluated during the following inspection cycle.

During the two year active reclamation program, the stormwater maintenance will focus on areas where surface reclamation has occurred. Reseeding and other stabilization BMPs will be used to achieve final stabilization in areas where reclamation grading has been completed. Recent experience has shown that new vegetation can be rapidly established. Any problem areas identified during the reclamation period should be actively managed in order to achieve final stabilization as soon as practicable. This approach should reduce the need for extended stabilization practices during the post-closure period.

Once vegetation and surface stability reclamation success criteria are met, termination of the stormwater permit that covers reclamation construction activities will occur. As stabilization criteria are exceeded the scope for the following monitoring event should be modified to remove stabilized sites from the monitoring plan. This will allow future reclamation success monitoring activities to focus on areas where goals have not yet been achieved.

Each year during the post closure monitoring period, results from monitoring will be summarized and included in the annual report. The report would tabulate monitoring results and make comparisons to reclamation success criteria.

4.2 Water Quality Monitoring

Post-closure monitoring includes activities that are incorporated in specific plans in the Kensington Gold Project Plan of Operations, including:

1. Surface water quality related to non-point source discharges as outlined in the Freshwater Monitoring Plan (FWMP) for the Kensington Gold Project (Appendix 4 of the Plan of Operations). Refer to Appendix G for a list of post-closure surface water monitoring locations that are included in the site-wide surface water monitoring program.

2. Discharge from point sources including the Kensington WWTP, the TTF WTP included in the APDES Permit for the project Number AK-005057-1. Certain monitoring requirements for non-point source discharges required under this permit overlap with the FWMP and are therefore addressed in the FWMP.

Water quality monitoring activities included in this closure plan will be completed on the following schedule:

Table 4.2-1 Summary of Water Quality Monitoring

Monitoring Activity	Surface Water TTF	Kensington WWTP Wetland Site	Surface Water Site-wide
Year 1		X[2]	X[3]
Year 2	X[1]	X[2]	X[3]
Year 3	X[1]		
Year 4	X[1]		
Year 5		X	X
Annual Year 10	X	X	X
Annual Year 15	X	X	X
Annual Year 20	X	X	X
Annual Year 30	X	X	X

[1] TTF surface water quality monitoring to be completed bi-annually during years 2 to 4.
[2] Quarterly monitoring at Kensington wetland site to be completed during years 1 and 2.
[3] Site-wide surface water quality monitoring to be completed quarterly during years 1 and 2.

4.3 TTF Ecological Monitoring

The TTF and other receiving waters associated with the Kensington Gold project will require post-closure ecological monitoring. The ADF&G (2011) completed a review of the post-closure monitoring that would need to be completed during the 30 year post-closure monitoring period. The monitoring recommended by the ADF&G is outlined below:

Table 4.3-1 Summary of Ecological Monitoring

Locations	Frequency	Scope
Aquatic Life in reclaimed TTF		
TTF Lake	Annual Years 1-10	1. Survey invertebrates, fish, and aquatic plants during the summer to document resource colonization until productivity requirements are satisfied. 2. Measure whole body metal concentration for AL, Cd, Cu, Pb, Hg, Ni, Se, Zn and Ag during **late-winter**. 3. Monitor temperature, pH, conductivity, and dissolved oxygen during late-winter at various depths throughout the TTF until productivity requirements are satisfied. This monitoring should occur in Jan or Feb with holes drilled in the ice. For the monitoring, ADF&G suggested 10-20 holes with sample points in each hole (bottom, middle, top).
Benthic invertebrate community composition		
Upper Slate Creek, Middle Slate Creek, Lower Slate Creek, Upper Johnson Creek, and Lower Sherman Creek	Years 1, 5, 10, 20 and 30	Sample benthic invertebrates using established methods at established sites. Monitoring should be done during May prior to peak runoff from snow pack.
Sediment quality and metal toxicity		
Upper Slate Creek, Middle Slate Creek,	Years 1, 5, 10, 20 and 30	Sample stream sediment using established methods at established sites.

Lower Slate Creek		
Periphyton biomass and community composition		
Sherman Creek, Slate Creek, and Johnson Creek	Years 1, 5, 10, 20 and 30	Complete biomass and community compositions surveys using established procedures at established sites. Samples would be collected during July or August.

The cost estimate prepared for the reclamation closure plan includes a budget for the activities that are planned during the post-closure period.

4.4 TTF Dam Safety Inspections

TTF dam safety inspections and post-closure maintenance is required by the ADNR Dam Safety Permit, Dam Safety Program. Since the TTF dam will be constructed in stages, specific requirements will be determined for each stage of construction. Dam safety inspections, monitoring, and maintenance will be completed on an annual basis during reclamation years 1-3. Following the reclamation period dam safety inspections will be completed every third year. TTF dam and spillway inspection and maintenance will be completed on an annual basis and includes brush/shrub, tree, and debris removal from embankment and spillway. A budget is provided in the reclamation cost estimate to complete the dam safety inspections, monitoring, and maintenance for reclamation years 1-3 and during the 30-year post closure monitoring period. Dam safety inspections are to be completed by a professional engineer registered in the state of Alaska and experienced in embankment dam inspections. Annual dam and spillway inspections and maintenance will be completed by two laborers with appropriate equipment for cutting and removing brush, debris, and small trees from the embankment and spillway. As discussed above in Section 3.7, the proposed TTF final closure configuration has a spillway, constructed in bedrock, to reestablish the natural runoff and flows from the restored TTF. Maintaining the long-term integrity of the TTF and protecting long-term water quality is a key component of the post-closure monitoring program.

5.0 RECLAMATION ASSURANCES

5.1 Summary of Estimated Reclamation Costs

The estimated direct cost to reclaim the Kensington Gold Project, to complete the physical reclamation is approximately $11,964,429. The cost breakdown tables and supporting assumptions are presented in Appendix A. The estimates are based on unit costs developed using third-party costs for reclamation and reflect current pricing conditions. The following table provides a summary of direct closure cost estimated for each mine area discussed in Section 3.

Table 5.1-1 Summary of Direct Closure Cost

Location	Estimated Cost $
Mobilization/Support and Water Treatment Operations/Power Generators	$8,060,273
Comet Beach Camp and Kensington Road	$230,077
Kensington Area Facilities – Kensington Side	$806,764
Jualin Process Area – Jualin Side	$1,077,972
Jualin Administrative/Laydown Areas – Jualin Side	$37,881
TTF Roads– Jualin Side	$361,923
TTF Area – Jualin Side	$2,514,985
Jualin Access Road and Borrow Areas – Jualin Side	$698,370
Slate Creek Marine Facility Area – Jualin Side	$516,501
Total	$14,304,747

Cost estimated for reclamation of Parcel 29B is presented separately for the tideland lease on Table A-4. Estimated cost to remove the marine terminal docks, gangplanks and piers was based on discussions with marine salvage contractors. The cost estimated to remove the facilities is US $231,520. This sum includes direct costs for the large construction barge and crane required for removing the facilities and transporting them from the site, removal of the fill on the tideland lease.

The state of Alaska has found that there is a lag time between the time the state assumes financial responsibility for a site and the time when actual site reclamation can begin. In order to account for this factor the closure cost estimate includes a budget for one year of care and maintenance of the mine facilities. This budget includes cost for equipment, staff to maintain the facilities and operate the water treatment plants, and to perform compliance monitoring. The budget for this item is presented as Task 0.04 on Table A-3.

5.2 Post-Closure Monitoring and Maintenance Program Cost

A budget for the post-closure monitoring and maintenance program is included in the reclamation and closure plan cost estimate. Specific objectives for each facility and parcel are discussed above in Section 3. Estimated cost for the program is presented in Appendix D.

The overall cost estimated for the site-wide monitoring and maintenance program over a 30 year period is $1,696,745. Costs included in the reclamation bond for the post-closure period are outlined on five tables presented in Appendix D and are summarized in Table 5.2-1.

Estimated cost for monitoring of surface water and dam safety inspections is presented on Table D-1. Post-closure monitoring for the TTF Lake ecosystem is described in the TTF Ecological Monitoring Plan. The cost for monitoring wildlife, fisheries, invertebrates, aquatic plants, and lake habitat are summarized in Table D-2. Estimated cost for site-wide water quality is presented on Table D-3. Monitoring for reclamation success and periodic maintenance (Table D-4) is planned for years 1, 2, 5 and 10. The cost estimated for this program assumes that a crew with equipment will be mobilized to the site to complete the monitoring and maintenance. A two week period to complete the maintenance during years 1 and 2, and one week during years 5 and 10 is planned. Table D-5 presents the budget estimate for water quality monitoring at the Kensington restored wetland site.

Transportation to the site during post-closure activities assumes that a helicopter will be used for the water quality monitoring activities. TTF Lake Ecological Monitoring assumes that a crew will be deployed to the site using a landing craft and will travel between the lake and the Jualin facilities using small utility terrain vehicles (UTVs). Since the monitoring will occur over a period of several weeks the estimate assumes that the field personnel will utilize the Jualin Camp. Similar assumptions are made for the personnel completing reclamation success monitoring and maintenance.

Table 5.2-1 Summary of Post-Closure Monitoring and Maintenance Cost

Table	Item	Duration[1]	Budget
Post Closure Monitoring and Maintenance (30 years)			
D-1	Post Closure Quarterly Surface Water Monitoring at TTF	2-4	$55,149
D-1	Post Closure Annual Surface Water Monitoring at TTF	10, 15, 20 and 30	$55,544
D-1	Reclamation Period TTF Dam Safety Inspections, Monitoring and Maintenance (years 1-3)	yrs 1 to 3	$53,829
D-1	Post-Closure TTF Dam Safety Inspections, Monitoring, and Maintenance (every third year) [2]	yrs 0 to 30	$280,802
D-2	TTF Annual Monitoring - Fish, Plants and Invertebrates	yrs 1 to 10	$172,340
D-2	TTF Temperature, pH, Oxygen Profiling and Whole Body Metal Analysis	yrs 1 to 10	$439,150
D-3	Annual Benthic Invertebrates, Sed, and Metals Toxicity Sampling	yrs 1, 5, 10, 20 and 30	$137,985
D-3	Periphyton Biomass and Community Composition	Years 1, 5, 10, 20 and 30	$100,850
D-4	Reclamation Period - Quarterly Water Quality Monitoring	1.5 years	$37,980
D-4	Post-Closure Quarterly Water Quality Monitoring	yrs 1 and 2	$43,584
D-4	Post Closure Annual Water Quality Monitoring	yrs 5, 10, 15, 20, and 30	$38,495
D-5	Post Closure Soil and Vegetation Monitoring and Maintenance	yrs 1 and 2	$117,845
D-5	Post Closure Soil and Vegetation Monitoring and Maintenance	yrs 5 and 10	$47,367
D-6	Post Closure Quarterly Wetland Quality Monitoring	yrs 1 and 2	$21,720
D-6	Post Closure Annual Wetland Quality Monitoring	yrs 5, 10, 15, 20, and 30	$13,575
D-7	Annual Road Inspections	Yrs 2-3, 5-6, 8-9, 11-12, 14-15, 17-18, 20-21, 23-24, 26-27, 29-30	$80,530
	Total During Post-Closure Monitoring Period		$1,696,745

[1] The duration indicates the year for each activity during the post-closure monitoring and maintenance period.
[2] Dam safety inspection after year 30 will be covered by the Long-term monitoring program trust.

5.3 Mobilization/Demobilization

Task number 0.01 (see Table A-3) includes cost estimated for barges and landing craft to mobilize construction equipment to the site. Task 0.02 includes cost for personnel transportation (ferry boat) and periodic deliveries (landing craft). Demobilization cost is included for several of the parcel and includes cost for removing salvaged equipment and materials, and demobilization of construction equipment. Cost has also been included to remove the marine terminal docks and piers (Task 29.13). Estimated cost for post-closure activities includes any related transportation and mobilization costs.

5.4 Indirect Costs and Inflation

Indirect costs have been included in the cost estimate as line items. The approach used in estimating each indirect cost is discussed below.

5.4.1 *Contractor Overhead and Profit*

A contractor overhead rate of 5 percent was used and a profit of 10 percent. These values are consistent with the range of values recommended in the Handbook for Calculation of Reclamation Bond Amounts (U.S. Department of Interior, Office of Surface Mining, 2000).

5.4.2 *Contingency*

A 10 percent scope contingency and a 4 percent bid contingency was applied to all direct and post-closure costs.

5.4.3 *Other Indirect Costs*

Other indirect costs were estimated as a percentage of the total estimated direct and post-closure cost.

Table 5.4.3-1 Summary of Percentages used to Calculate Indirect Cost

Category	**Percentage of Estimate**
Scope Contingency	12
Bid Contingency	4
Engineering	5
Liability Insurance	1.5
Performance Bond	1.5
Payment Bond	1.5
Agency Contract Administration	7
Contractor Overhead	5
Contractor Profit	10

The total direct cost and cost estimated for each indirect category is as follows:

Table 5.4.3-2 Summary of Direct, Post-closure and Indirect Closure Cost

Cost Item	**Amount US$**
Total Direct and Post-Closure Costs	$16,001,492
Indirect Costs	

Scope Contingency	$1,920,179
Bid Contingency	$640,060
Engineering	$800,075
Liability Insurance	$240,022
Performance Bond	$240,022
Payment Bond	$240,022
Agency Contract Administration	$1,120,104
Contractor Overhead	$800,075
Contractor Profit	$1,600,149
Total Direct and Indirect Costs	**$7,600,709**

5.5 Inflation Cost

Inflation was added to the total direct and indirect cost to account for the potential period for time that could elapse between updating the reclamation plan and completing reclamation activities. A five year term is used for calculating inflation based on the approach outlined in the ADNR Guidelines for mine closure and reclamation cost estimation (ADNR 2009). A construction cost inflation rate of 3.5 percent was used to calculate the inflation cost ($4,429,810). The inflation rate was based on a ten year average of the construction cost index data monitored by the U.S. Army Corps of Engineers, 2009. Additional information on the inflation cost calculation is presented in Appendix A.

The total estimated reclamation cost including direct and indirect cost, inflation, and Long-Term Dam Safety Inspections and Maintenance is approximately $28,727,011.

5.6 Post-Closure Financial Assurance

For the purposes of reclamation bonding, there will be three distinct phases of closure:

- Phase I will cover the period after operations cease and reclamation is actively under way. This period would include any lag time between the end of operations and the two year reclamation period.
- Phase II will cover the period after final reclamation has been completed; monitoring and maintenance would be ongoing. Phase II would cover the 30 year post-closure period. Phase II bonding would still be provided by the reclamation bond.
- Phase III will cover the period when all agencies accept the reclamation effort and release the bonds. Phase III would include the dam safety inspections required after the end of Phase II. Phase III financial assurance would be provided in accordance with the terms of the ROD and is addressed in Long Term Care and Maintenance Plan.

Coeur will provide an acceptable financial assurance as a condition of the approved Plan of Operations, Record of Decision and this reclamation and closure plan. Coeur anticipates applying for partial release of reclamation surety bond monies in subsequent years, as allotting credit for successfully completed discrete reclamation procedures reduces the final reclamation costs. A full release of the surety would be requested when all requirements of the final reclamation and closure plan have been met. The funds for long-term monitoring costs, however, would still be guaranteed by establishment of a trust agreement.

In the event a new operator assumes control of the project, the new operator or landowner would agree to assume full responsibility for the reclamation and maintenance of all affected land and structures that are the subject of these principles. The new owner/operator would also be required to assume all related permit conditions that may apply to the overall reclamation process. The new operator would transfer to its name all applicable state and federal permits and provide evidence that a surety acceptable to the agency covering the reclamation of disturbed land, including post-closure monitoring and maintenance, is filed.

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