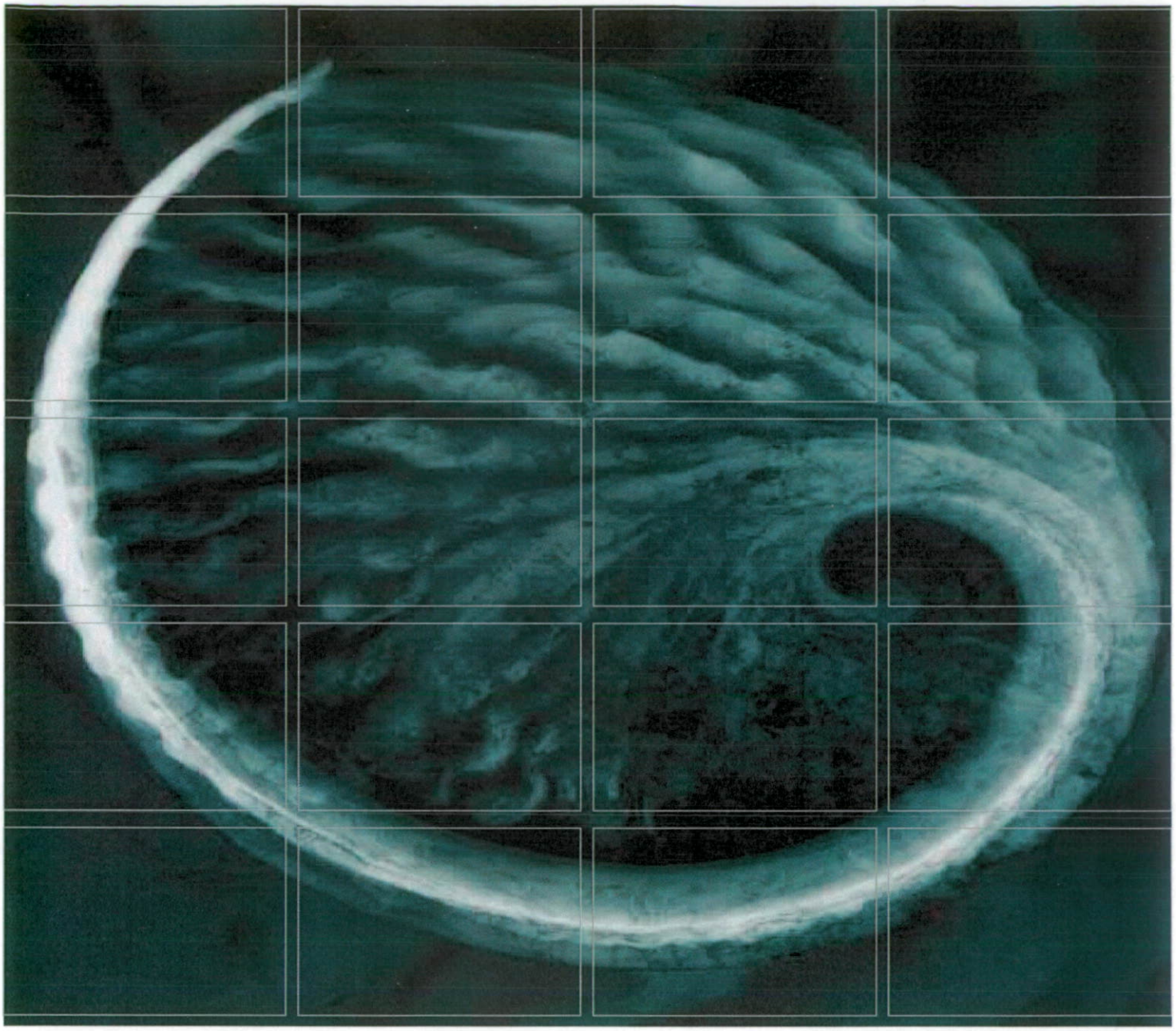

Updated Reclamation Plan and Financial Assurance

Richmond Hill Mine
Surface Mine Permit Nos. 445 and 460
Central City, South Dakota

May 28, 2015

Presented to:
LAC Minerals (USA), LLC
11457 Bobtail Gulch Street
Central City, South Dakota 57754

ENVIRONMENTAL RESOURCES MANAGEMENT
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FINAL REPORT

LAC Minerals (USA), LLC
11457 Bobtail Gulch Street
Central City, South Dakota 57754

Updated Reclamation Plan and Financial Assurance

Richmond Hill Mine
Surface Mine Permit Nos. 445 and 460
Central City, South Dakota

May 28, 2015

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LAC Minerals (USA) LLC (LAC Minerals) and its predecessors operated and reclaimed the Richmond Hill Mine in the Black Hills of South Dakota under Surface Mine Permit Nos. 445 and 460 (SMPs 445 and 460) from 1988 to present. Active mining occurred from 1988 to 1993 and following active mining, LAC Minerals began reclamation actions in 1994. Today, the majority of the affected acreage is reclaimed and reestablished as a viable wildlife habitat thus meeting the permitted post-mining land use of wildlife habitat.

Site erosion is controlled, and a self-sustaining and diverse vegetative cover has been established across the mine permit area. Site surveys have shown a thriving population of wildlife throughout the reclaimed areas. The water quality at the Richmond Hill Mine is meeting all applicable surface water quality standards at permitted discharge points, and applicable groundwater quality standards with the exception of sulfate, metals and pH in localized areas around the former Process Area, Pit Impoundment and Spruce Gulch. LAC Minerals actively manages water quality in these areas with two water management/treatment systems. Several years of surface water and groundwater monitoring results indicate that groundwater impacted from past mining operations is not migrating off of the permitted mine boundary or impacting permitted discharge points or downstream surface water quality.

Reclamation of the Richmond Hill Mine is governed by the South Dakota Board of Minerals and Environment (the Board) and the Department of Environment and Natural Resources (DENR) under SMPs 445 and 460. The South Dakota statutes, regulations, and LAC Minerals' mining permits, as amended through a 1994 permit amendment (Permit Amendment), technical revisions and DENR and Board approvals, establish approved post-mining land uses, reclamation obligations and reclamation release criteria that must be achieved prior to surety release.

The reclamation release criteria and post-mining land use have been achieved for approximately 78 percent or 265.94 acres of the 341.03 acres affected by Richmond Hill mining activities. As presented in the Petition for Release of Reclamation Obligations (the Petition), LAC Minerals is petitioning the Board to release the 265.94 reclaimed acres from further reclamation obligations. Of these 265.94 acres, 45.29 acres will not require postclosure monitoring and 220.65 acres will enter into a 100-year postclosure monitoring period. Once the acres are released, the permit will be managed in accordance with the Postclosure Plan and Financial Assurance (Postclosure Plan).

Approximately 22 percent or 75.09 affected acres are currently unreclaimed. Of the unreclaimed acreage, 73.33 acres are associated with water management activities and will be reclaimed at the conclusion of water treatment during the 100-year postclosure period. Reclamation of the water management facilities is addressed in the Postclosure Plan.

The remaining 1.76 acres are facilities that are no longer in use or will be replaced in the near future. The 1.76 acres will be reclaimed within the next five-year period as addressed in this Updated Reclamation Plan. Once the reclaimed acreage meets the reclamation release criteria and post-mining land use, the acreage will be either released with no postclosure monitoring or will be incorporated in the Postclosure Plan, as appropriate.

The Richmond Hill Mine facilities that will be reclaimed within the five-year period include the:

- Original Sludge Basin;
- Water Tank; and
- Upper Discharge Pond.

LAC Minerals will reclaim the 1.76 acres consistent with the existing mine reclamation and the requirements specified in SMPs 445 and 460, as amended through the Permit Amendment and technical revision. These are the same methods demonstrated to achieve successful reclamation of the majority of the mine as described in the Petition for Release of Reclamation Obligations (Petition).

The estimated costs to complete the reclamation activities described in this plan are summarized in the financial assurance cost estimate provided in Appendix A. The estimate includes labor, expense and administration unit costs in the event that DENR needed to contract with third parties to complete the work. Based on the acreage and reclamation activities to be conducted, the engineering cost estimate to complete the tasks described in the Updated Reclamation Plan is $61,100 with an inflation cost adjustment of 3% for five years.

The Petition, Postclosure Plan and this Updated Reclamation Plan are submitted as a comprehensive package to the Board for approval. A more detailed summary of Richmond Hill Mine reclamation performance criteria and of the reclamation completed to date is provided in the Petition. As part of the comprehensive package, LAC Minerals has also submitted a request to the Board to extend the reclamation period five

years from the date of the approval of the Updated Reclamation Plan and a request to retain roads and buildings needed for water management during the postclosure period.

1.0 INTRODUCTION

LAC Minerals (USA) LLC (LAC Minerals) and its predecessors operated and reclaimed the Richmond Hill Mine under Surface Mine Permit Nos. 445 and 460 (SMPs 445 and 460) from 1988 to present. During the active mining period (1988-93), a total of 172,294 ounces of gold and 212,610 ounces of silver were produced. LAC Minerals began reclamation actions at the Richmond Hill Mine in 1995.

Since 1995, the majority of the acreage disturbed during mining has been reclaimed and reestablished as a viable wildlife habitat thus meeting the permitted post-mining land use of wildlife habitat. Site erosion is controlled, and a self-sustaining and diverse vegetative cover has been established across the mine permit area. Site surveys have shown a thriving population of wildlife throughout the reclaimed areas.

Water quality at the Richmond Hill Mine is meeting applicable surface water quality standards at permitted discharge points, and applicable groundwater quality standards with the exception of sulfate, metals and pH in localized areas around the former Process Area, Pit Impoundment and Spruce Gulch. LAC Minerals actively manages water quality in these areas with two water management/treatment systems. Several years of surface water and groundwater monitoring results indicate that groundwater impacted from past mining operations is not migrating off the permitted mine boundary or impacting permitted discharge points or downstream surface water quality.

Reclamation of the Richmond Hill Mine is governed by the South Dakota Board of Minerals and Environment (the Board) and the Department of Environment and Natural Resources (DENR) under SMPs 445 and 460. The South Dakota statutes, regulations and LAC Minerals' mining permits, as amended through a 1994 permit amendment (Permit Amendment), technical revisions, and DENR and Board approvals, establish approved post-mining land uses, reclamation obligations and reclamation release criteria that must be achieved prior to surety release.

The reclamation release criteria and post-mining land use have been achieved for approximately 78 percent or 265.94 acres of the 341.03 acres affected by past mining activities. As presented in the Petition for Release of Reclamation Obligations (Petition), LAC Minerals is petitioning the Board to release the 265.94 reclaimed acres from further reclamation obligations. Of these 265.94 acres, 45.29 acres will not require postclosure monitoring and 220.65 acres will enter into a 100-year postclosure monitoring period. Once this acreage is released, the mine permit will be

managed in accordance with the Postclosure Plan and Financial Assurance (Postclosure Plan).

The remaining 22 percent or 75.09 affected acres are currently unreclaimed. Of the unreclaimed acreage, 73.33 acres are associated with water management activities and will be reclaimed at the conclusion of water treatment during the 100-year postclosure period. Reclamation of the water management facilities is addressed in the Postclosure Plan. The remaining 1.76 acres are facilities that are no longer in use or will be reclaimed in the near future. The 1.76 acres will be reclaimed within the next five-year period. Reclamation of the 1.76 acres is addressed in this Updated Reclamation Plan and Financial Assurance (Updated Reclamation Plan). Once the reclaimed acreage meets the reclamation release criteria and post-mining land use, the acreage either will be released with no postclosure monitoring or will be incorporated in the Postclosure Plan, as appropriate. The status of the Richmond Hill Mine reclamation is summarized in Table 1.

Table 1 – Summary of Permitted Affected, Disturbed and Reclaimed Acreage

Permitted Affected Acreage (Includes Mine Permit Nos. 445 & 460)	460.20
Total Acreage Affected as of December 31, 2014	341.03
Total Surface Mining Disturbed Acreage	205.68
Acreage Meeting Post-Mining Land Use, Water Quality Standards and Releasable without Postclosure Monitoring	45.29
Acreage Meeting Post-Mining Land Use and entering a100-year Postclosure Monitoring Period	220.65
Acreage that will be Reclaimed at the Completion of Water Treatment and during the 100-year Postclosure Period	73.33
Acreage that will be Reclaimed in the Short Term under the Updated Reclamation Plan	1.76

The Richmond Hill Mine facilities that will be reclaimed within the five-year period include the:

- Original Sludge Basin;
- Water Tank; and
- Upper Discharge Pond.

The Petition, Postclosure Plan and this Updated Reclamation Plan are submitted as a comprehensive package to the Board for approval. A more

detailed summary of Richmond Hill Mine reclamation performance criteria and the reclamation completed to date is provided in the Petition. As part of the comprehensive package, LAC Minerals has submitted a request to the Board to extend the reclamation period five years from the date of the approval of the Updated Reclamation Plan (LAC Minerals, July 2014). Additionally, LAC Minerals has submitted a request to retain roads and buildings needed for water management during the postclosure period (LAC Minerals, July 2014).

1.1 *DOCUMENT PREPARATION*

Environmental Resources Management (ERM) was retained by LAC Minerals to review and summarize the reclamation release criteria, the reclamation status for SMP's 445 and 460, and prepare the Petition, Postclosure Plan and Updated Reclamation Plan.

ERM's scope of work included conducting site visits to observe conditions within the permitted mine boundary, reviewing documents provided by LAC Minerals regarding its mining permits, permit amendment and technical revision requirements, and conducting a hydrogeologic investigation of the Pit Impoundment area (ERM, April 2010).

1.2 *SITE SETTING AND MINE FEATURES*

The Richmond Hill Mine lies within Lawrence County and is located approximately five miles west-northwest of Lead, South Dakota (Sections 10, 11, 14, 15, 22, 23 and 26, T5N, R2E, Black Hills Meridian). The mine is accessed via U.S. Highway 85 and 14A out of Lead, then west on Nevada Gulch Road (State Highway 473), then north on Richmond Hill Access Road into the permitted mine boundary.

A site location map is provided as Figure 1. The permit area, mine facilities and affected acreage that will be reclaimed within the five-year period are shown on Figure 2. A photo log of the mine site is provided as Appendix B.

The mine is largely surrounded by undeveloped pine forest with a few private residences along Richmond Hill Access Road, Spearfish Fire Trail, in the former Land Application area and in a new development in the Maitland area, two miles to the east. The Wharf Mine, an active Large Scale Surface Gold Mine, and the Golden Reward Mine, a reclaimed Large Scale Surface Gold Mine, both operated by Wharf Resources, are approximately two miles to the south. In 2014, new mining operations will begin at a portion of the Golden Reward Mine near Terry Peak under an expansion of the Wharf Mine permit. The nearest communities to the mine

are Central City, South Dakota (population approximately 143) and Lead, South Dakota (population approximately 3,136), which are approximately five miles to the east-southeast (City-Data.com, August 2013).

1.3 *MINE OWNERSHIP AND ENVIRONMENTAL STEWARDSHIP*

The Richmond Hill Mine was developed by St. Joe Gold Corporation in 1988, and was acquired by Bond Gold Corporation in 1988. Construction of the mine facilities began in April 1988, and production began in the fall of 1988 with the first bar of gold and silver dore' poured in December 1988. LAC Minerals acquired Bond Gold Corporation in November 1989. In 1994, LAC Minerals became a wholly owned-subsidiary of Barrick Gold Corporation (Barrick). Barrick is a leading gold producer engaged in gold mining and related activities including exploration, extraction, processing and reclamation with a portfolio of operating mines and projects located across five continents (Barrick, August 2013).

The Environmental Policy Statement adopted by Barrick, LAC Minerals' parent corporation, commits the company to implement environmentally sound management practices because they are in the best interests of its business, its employees, its shareholders and the communities in which it operates. LAC Minerals has both the technical expertise and financial resources necessary to properly complete the near-term reclamation activities and long-term postclosure obligations at the Richmond Hill Mine (Barrick, August 2013).

The facilities comprising the 1.76 acres that will be reclaimed in the next five years are as follows:

Original Sludge Basin

The original Sludge Basin was constructed in 1994 as a permanent disposal facility for sludge generated from water treatment at Spruce Gulch and the former Process Area in accordance with Technical Revision No. 32. The Sludge Basin lies in the northwestern portion of the former Process Area and is underlain by limestone bedrock, a geologically favorable environment to reduce the potential for contaminant migration. The Sludge Basin was constructed with an 80 mil HDPE primary liner and a geo-net composite to drain liquid from the sludge. The water gravity flows to the process ponds. The Sludge Basin capacity is approximately 6,550 cubic yards and the footprint is approximately 0.91 acre.

LAC Minerals has converted the Barren Pond into a Sludge Disposal Pond, and will close and reclaim the original Sludge Basin in accordance with Technical Revision No. 32. Under this technical revision, closure requirements include covering the Sludge Basin with a minimum of three feet of subsoil and grading (1.5 percent minimum slope) to promote drainage off the cover. The Sludge Basin cover will be capped with 6 inches of topsoil capable of sustaining vegetation, and will be seeded and fertilized to allow the vegetation to become established. The sludge is currently sufficiently dry to allow construction equipment to operate on the basin and place the cover material. No geogrids or other drainage enhancement approaches, such as wick drains, should be needed to facilitate closure.

Water Tank

An out-of-service water tank located at the northwest end of Leach Pads 1 and 2 will be removed during the five-year reclamation period. The tank footprint occupies 0.35 acre.

Upper Discharge Pond

The Upper Discharge Pond was constructed in 1997 to collect treated water from the treatment system and control the discharge through SWD Compliance Point #004 under the SWD Permit. The pond is constructed with a single 60-mil HDPE liner and has a footprint of approximately 0.5 acre.

3.0 PERMITTED POST-MINING LAND USE

South Dakota mine land reclamation statute SDCL 45-6B-45 requires agreement by the operator, landowner and the Board on the designated post-mining uses for affected lands. Additionally, mine land reclamation regulations (ARSD 74:29:07:01) require that all affected lands be rehabilitated to a condition that meets the permitted post-mining land uses.

The permitted post-mining use for the Richmond Hill Mine is wildlife habitat. To comply with the mine land reclamation requirements for wildlife habitat (ARSD 74:29:07:22), reclamation must optimize habitat diversity for game and non-game species, and provide vegetative cover appropriate for wildlife species that will benefit from the reclamation. Reclamation is considered complete when:

- Surviving vegetation is capable of supporting wildlife species identified in the Reclamation Plan;
- Understory is adequate to control erosion; and
- Stream fisheries approximate or exceed baseline conditions of the stream.

LAC Minerals and/or its predecessors have conducted the required baseline studies, and completed post-mining wildlife inventories, vegetative success evaluations, tree and shrub density surveys, and aquatic resources monitoring to document the achievement of wildlife habitat as a post-mining land use within the permitted mine boundary (Bar XX Environmental Service, LLC, 2013; Cedar Creek Associates, Inc., March 2009; GEI Consultants, Inc., April 2013; Gilbert, September 2010). The Petition provides a more detailed summary of these studies.

Reclamation of the 1.76 acres will therefore be consistent with the existing reclamation, which complies with South Dakota reclamation statutes, regulations and SMPs 445 and 460, as amended through the Permit Amendment and technical revisions.

4.0 RECLAMATION RELEASE CRITERIA AND PLANNED RECLAMATION ACTIVITIES

LAC Minerals will reclaim the 1.76 acres consistent with the existing mine reclamation and the requirements specified in SMPs 445 and 460, as amended through the Permit Amendment and technical revision. These are the same methods demonstrated to achieve successful reclamation of the majority of the mine (Petition).

4.1 GENERAL RECLAMATION RELEASE CRITERIA AND ACTIVITIES

4.1.1 Grading

The affected acreage will be graded to achieve visually and functionally compatible contours with the surrounding landscape (ARSD 74:29:07:03), and final grades will be completed in a manner that controls erosion and sedimentation (ARSD 74:29:07:04). The final grades will therefore be compatible with the post-mining land use of wildlife habitat (SDCL 45-6B-37).

During reclamation, the original Sludge Basin will be graded (1.5 percent minimum slope) to promote drainage off the cover in accordance with Technical Revision No. 32. The Upper Discharge Pond will be regraded to achieve compatible contours with the surrounding landscape, and to control erosion and sedimentation. No regrading is required in the Water Tank area. During reclamation, topsoil will be spread over the Water Tank area and the area will be revegetated using the seed mix containing forbs that has been used during reclamation of other areas of the mine.

4.1.2 Revegetation

Graded areas will be revegetated with the grass mixture approved in Technical Revision No. 41, which modified the permitted seed mixture to improve the survival success rate by field fitting the plants in environments similar to their natural occurrence in the Black Hills. The seed mix is capable of providing a long-lasting vegetative and self-regenerating cover to increase stability and erosion control. The seed mixture was developed in consultation with the South Dakota Department of Game Fish and Parks (ARSD 74:29:07:06).

The 1.76 acres will be re-seeded with the following seed mixture:

- Western Wheatgrass (Agropyron smithii);

- Thickspike Wheatgrass (Agropyron dasystachyum);
- Slender Wheatgrass (Agropyron trachycaulum);
- Durar Hard Fescue (Festuca ovina var. Duriuscula);
- Kentucky Bluegrass (Poa pratensis);
- Timothy (Phleum pratensis);
- White Dutch Clover (Trifolium repens); and
- Nurse Crop (rye, oats, or barley).

The site-specific performance release criteria established in the mine permit Reclamation Plan and Technical Revision No. 41 apply to the 1.76 acres. The performance release criteria require the reclaimed areas to meet the following criteria:

- Achievement of at least 40 percent total live ground cover by grasses, legumes and forbs;
- Adequate understory to control erosion;
- Control of noxious weeds;
- Establishment of vegetative cover that is permanent and self-generating;
- Vegetation composition (i.e., cover, density, and diversity) shall be appropriate for post mine land use of wildlife habitat; and
- Surviving vegetative species composition is capable of supporting wildlife species identified in the Reclamation Plan.

4.1.3 *Disposal of Refuse*

All solid waste including trash, debris, building demolition waste and rubble that may be generated during reclamation will be transported off site and disposed of at permitted facilities in accordance with all local, state and federal regulations.

4.1.4 *Erosion and Sediment Control*

During the reclamation period, LAC Minerals will comply with the Richmond Hill Mine Surface Water Discharge (SWD) Permit and site-wide Storm Water Pollution Prevention Plan (SWPPP) to eliminate or minimize contact of storm water with materials or activities that may result in pollution of runoff. Where contact cannot be eliminated or reduced, the SWPPP specifies how storm water will be managed with Best Management Practices (BMPs) for erosion and sediment control.

The BMPs are identified in the SWPPP, which is updated when changes in facility layout or activities occur at the mine that could affect storm water quality. LAC Minerals has submitted a SWD Permit renewal on November 23, 2009 to the DENR Surface Water Quality Program and DENR's response is pending.

4.1.5 *Roads, Buildings and Structures*

LAC Minerals will utilize existing roads and remaining buildings to complete reclamation activities during the five-year reclamation period and 100-year postclosure period. Concurrent with the submittal of this Updated Reclamation Plan, LAC Minerals is submitting a Request to Retain the Water Management Access Roads and Buildings (LAC Minerals, July 2014). The request to retain the access roads and buildings is made in accordance with ARSD 74:29:07:12(10) and ARSD 74:29:07:13, which require reclaiming roads and dismantling and removing buildings and structures unless it can be demonstrated that these improvements will be consistent with the approved post-mining land use.

4.2 *FACILITY-SPECIFIC RECLAMATION RELEASE CRITERIA AND ACTIVITIES*

4.2.1 *Original Sludge Basin*

Closure requirements summarized in Technical Revision No. 32 specify that at the completion of sludge disposal activities, the original Sludge basin will be covered with a minimum of three feet of non-acid generating subsoil and graded (1.5 percent minimum slope) to promote drainage off the cover. Soil from the Upper Discharge Pond berm will be used as the source of the subsoil. The Sludge Basin cover will be capped with 6 inches of topsoil from existing stockpiles that is capable of sustaining vegetation, and will be seeded and fertilized to allow the vegetation to become established. The estimated earthwork and topsoil required for the reclamation of the original sludge basin are summarized in Attachment A, Table A2-3.

The sludge is sufficiently dry to allow placement of the cover material. No geogrids or other drainage enhancement approaches, such as wick drains, should be needed to facilitate closure.

4.2.2 *Water Tank*

All tank reclamation activities will follow applicable and appropriate safety precautions, which may include confined space entry. Any sludge that may have accumulated in the tank will be removed and disposed of in the Sludge Disposal Pond. The tank will subsequently be removed and possibly salvaged for use at another facility. The disturbed footprint will be graded, covered with topsoil and revegetated with the grass seed mix approved in Technical Revision No. 41. The estimated earthwork and topsoil required for the reclamation of the water tank are summarized in Attachment A, Table A2-3.

4.2.3 *Upper Discharge Pond*

The Upper Discharge Pond liner will be removed and soil from the pond berm will be used as the cover material for the original Sludge Basin. The disturbed footprint will be graded, covered with topsoil and revegetated with the grass seed mix approved in Technical Revision No. 41. The estimated earthwork and topsoil required for the reclamation of the Upper Discharge Pond are summarized in Attachment A, Table A2-3.

5.0 ENGINEERING COST ESTIMATE AND FINANCIAL ASSURANCE

A detailed engineering cost estimate has been prepared for the remaining reclamation activities described above. A description of the cost estimate and methodology used, the engineering cost estimate itself, proposed financial assurance instruments and periodic reviews to ensure adequate funds if LAC Minerals is unable to complete the required activities are described in the following sections.

5.1 ENGINEERING COST ESTIMATE

A detailed engineering cost estimate for the reclamation activities described above was prepared. The estimate includes labor, expense and administration unit costs in the event that DENR needed to contract with third parties to complete the work.

Standard engineering cost estimating methods were used for both unit costs and quantities (contractor labor hours, equipment rental hours, supplies, etc.). Reclamation cost estimates were input into the State of South Dakota's "BONDCALC" spreadsheet program as a framework to track each unit cost. An engineering cost estimate is presented in Appendix A. This appendix includes details of unit costs, volume/quantities, assumptions and contingencies. Based on the acreage and reclamation activities to be conducted, the engineering cost estimate to complete the tasks described in the Updated Reclamation Plan is $61,100 with an inflation cost adjustment of 3% for five years.

LAC Minerals will submit proposed financial assurance instrument(s) as part of the Petition, Updated Reclamation Plan, and Postclosure Plan submittal package to the Board.

5.2 PERIODIC UPDATES TO COST ESTIMATES AND FINANCIAL ASSURANCE INSTRUMENTS

The engineering cost estimate and financial assurance will be reviewed every five years, or as needed, to ensure a reasonable basis for any adjustments (increases or decreases) required by LAC Minerals, DENR or the Board. Such reviews shall consider the following information obtained during the previous observational period:

- Change in the reclamation release status of disturbed acreage;
- Need to implement the Contingency Plan based on monitoring data;

- Actual costs to date for implementing the Reclamation Plan activities;
- Significant changes to the engineering cost estimate; and
- Unusual inflation or other unanticipated potential under-funding of the financial assurance instruments.

6.0 REFERENCES

Bar XX Environmental Service, LLC, 2013. LAC Minerals (USA) LLC, Richmond Hill Mine Reclamation Success Monitoring.

Barrick, August 2013. Company Profile http://www.barrick.com/Company/Profile/default.aspx

Cedar Creek Associates, Inc., March 2009. Richmond Hill Mine, 2008 Revegetation Success Sampling – Bond Release Evaluation.

City-Data.com, August 2013. http://www.city-data.com/city/Lead-South-Dakota.html

Environmental Resources Management, Inc., July 2014. Petition for Release of Reclamation Obligations, Richmond Hill Mine, Surface Mine Permit Nos. 445 and 460, Lead, South Dakota.

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Environmental Resources Management, Inc., July 2014. Postclosure Plan and Financial Assurance, Richmond Hill Mine, Surface Mine Permit Nos. 445 and 460, Lead, South Dakota.

Environmental Resources Management, Inc., April 2010. Hydrogeologic Investigation of Bedrock Water Quality in Engineered Pit Backfill Facility Area, Richmond Hill Mine, Lead, South Dakota.

GEI Consultants, Inc., April 2013. 2012 Aquatic Biological Monitoring for Cleopatra Creek, Labrador Gulch, and Rubicon Gulch, South Dakota.

Gilbert, Steve, September 2010. 2010 Richmond Hill Mine Game Bird, Raptor, and Breeding Bird Surveys.

LAC Minerals (USA) LLC, July 2014. Request to Extend the Mine Reclamation Period.

LAC Minerals (USA) LLC, July 2014. Request to Retain the Water Management Access Roads and Buildings.

LAC Minerals (USA) LLC, November 2009. Surface Water Discharge Permit No. SD0026883 Renewal Application.

LAC Minerals (USA) Inc., July 1996. Technical Revision #41 to Richmond Hill Mine Permit #445, Request to Change the Permanent Reclamation Revegetation mixture.

LAC Minerals (USA) Inc., October 1994. Technical Revision #32 to Richmond Hill Mine Permit #445, Construct a Sludge Pond in Limestone Quarry No. 2.

LAC Minerals (USA), Inc., 1993. Richmond Hill Inc., Reclamation Plan Permit Amendment (Permit #445).

South Dakota Department of Environment and Natural Resources, June 2005. LAC Minerals (USA) Inc., Surface Water Discharge System Permit No. SD0026883.

South Dakota Department of Environment and Natural Resources, February 1995. LAC Minerals (USA) Inc., Large Scale Mine Permit #460.

South Dakota Department of Environment and Natural Resources, December 1993. LAC Minerals (USA) Inc., Mine Permit 445 Amendment Conditions.

South Dakota Department of Water and Natural Resources, March 1988. Mining Permit No. 445 for St. Joe Gold Corporation Richmond Hill Mine.

Table 1
Summary of Permitted Affected, Disturbed and Reclaimed Acreage
(Located in Section 1.0, Page 2)

Figure 1
Site Location Map

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FIGURE	DESIGNED / DRAWN / CHECKED / DATE / TIME	TFC / TFC / May 15, 2015 12:00 pm
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SITE LOCATION MAP

RICHMOND HILL MINE
UPDATED RECLAMATION PLAN AND FINANCIAL ASSURANCE
SURFACE MINE PERMIT NOS. 445 AND 460
CENTRAL CITY, SOUTH DAKOTA

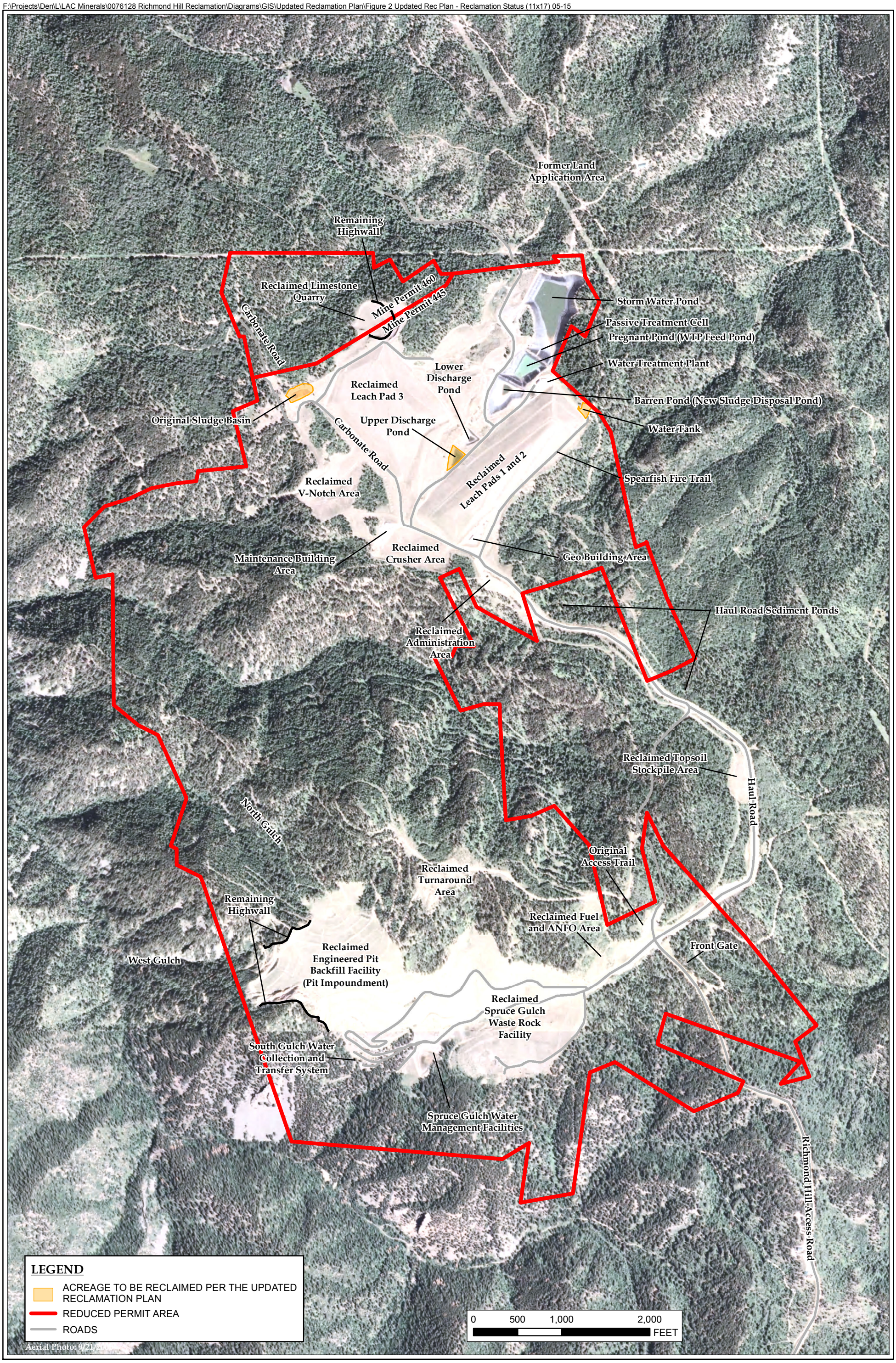
ERM
Environmental Resources Management
6455 S. Yosemite St., Suite 900
Greenwood Village, Colorado 80111
(303) 741-5050

N W E S

REVISION DESCRIPTION	DATE

Figure 2
Acreage to be Reclaimed per the Updated Reclamation Plan

F:\Projects\Den\L\LAC Minerals\0076128 Richmond Hill Reclamation\Diagrams\GIS\Updated Reclamation Plan\Figure 2 Updated Rec Plan - Reclamation Status (11x17) 05-15



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	CHECKED	
	DATE	May 15, 2015
	TIME	12:00 pm

ACREAGE TO BE RECLAIMED PER THE UPDATED RECLAMATION PLAN

RICHMOND HILL MINE
SURFACE MINE PERMIT NOS. 445 AND 460
CENTRAL CITY, SOUTH DAKOTA

Environmental Resources Management
6455 S. Yosemite St., Suite 900
Greenwood Village, Colorado 80111
(303) 741-5050

N W E S

REVISION	DESCRIPTION	DATE

Appendix A
Updated Reclamation Financial Assurance Cost Estimate

APPENDIX A

ASSUMPTIONS for the
RECLAMATION FINANCIAL ASSURANCE COST ESTIMATE
Richmond Hill Mine Surface Mine Permit Nos. 445 and 460
Central City, South Dakota

General Assumptions

1. The bond calculation covers the 0.91 acre Original Sludge Basin area, the 0.35 acre Water Tank area, and the 0.50 acre Upper Discharge Pond. A total of 1.76 acres will be reclaimed.

2. The calculations are based on the actual cost that would accrue to the state if it had to hire a third party contractor to reclaim the Original Sludge Basin, Water Tank, and Upper Discharge Pond areas.

3. Postclosure operation and maintenance costs for the Original Sludge Basin, Water Tank, and Upper Discharge Pond areas will be covered under the postclosure bond after reclamation liability has been released.

Reclamation Assumptions

1. The acreages used in the reclamation cost estimate are summarized in the Earthmoving Summary (Attachment A2, Table A3). The Earthmoving Summary also contains information on volumes of material to be moved and graded, topsoil application, and revegetation acreage.

2. Approximately 3,600 cy of subsoil will be required to place a soil cover over the Original Sludge Basin. The subsoil source will be the Upper Discharge Pond berm.

3. The following equipment and equipment and operator costs were used in the calculation:

Equipment Type	Equipment Cost	Operator Cost
Cat 16M grader	$112.07/hr.	$35/hr.
Cat D9T dozer	$143.18/hr.	$30/hr.
Cat 988 loader	$147.02/hr.	$35/hr.
50 ton truck	$120.07/hr.	$35/hr.

The equipment costs are based on average rates obtained from two Caterpillar dealers in the Black Hills area and do not include fuel. A fuel cost of $3.55/gallon was used in the calculation.

4. A cost of $5,000 was assumed for a construction foreman to supervise the reclamation activities in the Original Sludge Basin and Water Tanks areas.

5. The average density of subsoil cover material for the Original Sludge Basin and the average density of topsoil are 100 lb/ft^3. The density was obtained from the SME Mining Engineering Handbook.

6. The subsoil and topsoil haul distances were calculated by measuring the actual haul distances (not straight line distance) from the center of the topsoil or subsoil stockpile to the center of the regraded area. Fertilizer will be added to the topsoil.

7. All equipment will run at 80 percent efficiency. This is obtained from the Cat Handbook and other bond calculation references.

8. The following fertilizer application rates were used in the calculation:

   40-40-10 at 90 lb/acre
   25-10-10 at 45 lb/acre
   29-5-0 at 25 lb/acre

   Based on the fertilizer application rates, the following amounts of nitrogen, phosphorus, and potassium per acre were calculated:

   (0.40 x 90) + (0.25 x 45) + (0.29 x 25) = 54.5 lbs. nitrogen/acre
   (0.40 x 90) + (0.10 x 45) + (0.10 x 25) = 43 lbs. phosphorus/acre
   (0.10 x 90) + (0.10 x 45) + (0 x 25) = 13.5 lbs. potassium/acre

   The following costs per pound for nitrogen, phosphorus, and potassium were used in the calculation:

Nitrogen	$1.67/lb.
Phosphorus	$0.65/lb.
Potassium	$0.50/lb.

9. $500/acre was used for hydroseeding costs and $400/acre was used for hydromulch. These costs were obtained from other bond calculations.

10. A cost of $1,000 is assumed to hire a contractor to survey the Original Sludge Basin prior to placement of the soil cover.

ASSUMPTIONS for the
RECLAMATION FINANCIAL ASSURANCE COST ESTIMATE
Richmond Hill Mine Surface Mine Permit Nos. 445 and 460
Central City, South Dakota

11. A cost of $5,000 was assumed to remove the water tank from the mine site.

12. A cost of $500 was assumed for erosion control in the Original Sludge Basin and Water Tank areas.

13. The following indirect costs were added to the reclamation costs:

Mobilization	5%
Performance Bond	1%
Contractor Overhead	8%
State Excise Tax	2%
Contractor Profit	10%
Contingency	5%
Administration	10%
Engineering/Consulting	5%
Scope & Bid	5%
Total	51%

14. An inflation factor of 3% for five years was added to the total reclamation cost. No discount factor was applied since the DENR would reclaim the Original Sludge Basin, Water Tank, and Upper Discharge Pond areas immediately following bond forfeiture.

ATTACHMENT A1

FIVE-YEAR COST ESTIMATE

May 2015

Appendix A: Reclamation Financial Assurance Cost Estimate
Attachment A1: Five-Year Cost Estimate

Project Years (1-5)

Item	Year 1 Annual Cost	Year 2 Annual Cost	Year 3 Annual Cost	Year 4 Annual Cost	Year 5 Annual Cost	Total Years 1-5 Cost
Operation & Maintenace						
None	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Subtotal Operation & Maintenance	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Mobilization (5%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Contractor Overhead (8%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
State Excise Tax (2%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Contractor Profit (10%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Contingency (5%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Insp., Admin., & Maint. (10%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Engineering/Consulting (5%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Operation & Maintenance	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Reclamation Activities						
Original Sludge Basin	$0.00	$0.00	$0.00	$0.00	$17,608.00	$17,608.00
Water Tank	$0.00	$0.00	$0.00	$0.00	$6,718.00	$6,718.00
Upper Discharge Pond	$0.00	$0.00	$0.00	$0.00	$9,518.00	$9,518.00
Survey for Sluge Basin Cover	$0.00	$0.00	$0.00	$0.00	$1,000.00	$1,000.00
Subtotal Reclamation	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$34,844.00**	**$34,844.00**
Mobilization (5%)	$0.00	$0.00	$0.00	$0.00	$1,742.00	$1,742.00
Performance Bond (1%)	$0.00	$0.00	$0.00	$0.00	$348.00	$348.00
Contractor Overhead (8%)	$0.00	$0.00	$0.00	$0.00	$2,788.00	$2,788.00
State Excise Tax (2%)	$0.00	$0.00	$0.00	$0.00	$697.00	$697.00
Contractor Profit (10%)	$0.00	$0.00	$0.00	$0.00	$3,484.00	$3,484.00
Contingency (5%)	$0.00	$0.00	$0.00	$0.00	$1,742.00	$1,742.00
Insp., Admin., & Maint. (10%)	$0.00	$0.00	$0.00	$0.00	$3,484.00	$3,484.00
Engineering & Consulting (5%)	$0.00	$0.00	$0.00	$0.00	$1,742.00	$1,742.00
Scope and Bid Contingency (5%)	$0.00	$0.00	$0.00	$0.00	$1,742.00	$1,742.00
Total Reclamation	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$52,613.00**	**$52,613.00**
Total	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$52,613.00**	**$52,613.00**
Annual Inflation Rate	3.0%	3.0%	3.0%	3.0%	3.0%	
Project Year	1	2	3	4	5	
Escalation Factor	1.0300	1.0609	1.0943	1.1255	1.1621	
Escalated Amount	$0	$0	$0	$0	$61,141	**$61,141.00**
Annual Discount Rate	5%	5%	5%	5%	5%	
Present Worth Factor	0.9524	0.9070	0.8638	0.8227	0.7835	
Present Worth Amount	$0	$0	$0	$0	$47,906	**$47,906.00**

RECLAMATION COST SUMMARY (5-YEAR)

Inflation Rate = 3.0%
Interest Rate = 5%

Year	Closure Year No.	Annual Cost	Escalated Cost	Present Value
2016	1	$0	$0	$0
2017	2	$0	$0	$0
2018	3	$0	$0	$0
2019	4	$0	$0	$0
2020	5	$52,613	$61,141	$47,906
Total		**$52,613**	**$61,141**	**$47,906**

ATTACHMENT A1

FIVE-YEAR COST ESTIMATE

May 2015

Appendix A: Reclamation Financial Assurance Cost Estimate
Attachment A1: Five-Year Cost Estimate

Project Years (1-5)

Reclamation Activities	
Original Sludge Basin and Cover	$17,628
Water Tank Removal	$6,721
Upper Discharge Pond	$9,522
Survey for Original Sludge Basin Cover	$1,000
Subtotal Reclamation	**$34,871**
Mobilization (5%)	$1,744
Performance Bond (1%)	$349
Contractor Overhead (8%)	$2,790
State Excise Tax (2%)	$697
Contractor Profit (10%)	$3,487
Contingency (5%)	$1,744
Insp., Adm., & Maint. (10%)	$3,487
Engineering & Consulting (5%)	$1,744
Scope and Bid Contingency (5%)	$1,744
Total Reclamation	**$52,657**
Total with Inflation Cost Adjustment @ 3% for 5 Years	$61,044
ROUND TO	**$61,100**

ATTACHMENT A2

TABLES

May 2015

TABLE A2-1
ACREAGE CLASSIFICATION

Category	Area (acres)	Notes
Permitted Affected Acreage (Includes Mine Permits 445 & 460)	460.20	--
Total Acreage Affected as of December 31, 2013	341.03	--
Total Surface Mining Disturbed Acreage	205.68	--
Reclaimed Acreage Meeting Post-Mining Land Use, No Postclosure Monitoring Required	45.29	Includes: -Richmond Hill Access Road, Spearfish Fire Trail and reclaimed mine roads -Topsoil Stockpiles along Richmond Hill Access Road -Land Application Area; and -Limestone Quarry on SMP 460
Acreage Meeting Post-Mining Land Use and entering a 100-year Postclosure Monitoring Period	220.65	Includes: -Former Spruce Gulch Waste Rock Facility -Pit Impoundment -V-Notch -Process Area (Leach Pads 1, 2 and 3) -Passive Treatment Cell -Crusher -Carbonate Road -Turnaround Area; -Reclaimed Topsoil Stockpiles Areas on mine site -Administrative Area; and -Limestone Quarry on SMP 445 and Access Road
Acreage that will be Reclaimed at the Completion of Water Treatment and during the 30-year Postclosure Period	73.33	Includes: -Front Gate & Guard Shack -Original Water Treatment Plant (Chemical Precipitation and Selenium Treatment Circuit) -Spruce Gulch Water Management Facilities -South Gulch Water Collection and Transfer System -Process Area Water Management System including the operations building, Lower Discharge Pond, Barren (new Sludge Disposal Pond), Pregnant and Storm Water ponds -Areas west of the Process Area Water Management System -Fuel and ANFO Storage areas -Maintenance Building Area -Geo Building Area; and -Water Management Access Roads including portions of the main Haul Road unless the road is transferred to an interested third party.
Acreage that will be Reclaimed in the Short Term under the Updated Reclamation Plan	1.76	Includes: -Original Sludge Basin; -Water Tank; and Upper Discharge Pond

TABLE A2-2
RECLAMATION DETAIL

Site	Components	Sub Acres	Total Site Acres
Sludge Basin			
	Sludge Basin	0.91	
	Subtotal =		**0.91**
Water Tank			
	Water Tank Area	0.35	
	Subtotal =		**0.35**
Upper Discharge Pond			
	Upper Discharge Pond Area	0.50	
			0.50
		TOTAL =	**1.76**

TABLE A2-3
Reclamation Material Volumes and Earth Moving Summary (Non-Demolition)
LAC Minerals Richmond Hill Mine

Area	Topsoil Required (cy)	Grading Flats Grader (acres)	Ripping Dozer (acres)	Material Moved Dozer (cy)	Grading Slopes Dozer (acres)	Material Moved Scraper (cy)	Material Moved Loader (acres)	Material Moved Truck & Loader (cy)	Acres Revegetated
Original Sludge Basin									
Sludge Basin	734				0.91			734	0.91
Sludge Basin Cover				3,600				3,600	
Water Tank									
Water Tank	282	0.35	0.35					282	0.35
Upper Discharge Pond									
Upper Discharge Pond	403			5,278	0.50			403	0.50
Totals =	1419	0.35	0.35	8,878	1.41	0.00	0.00	5,019	1.76

ATTACHMENT A3

TOPSOIL, EARTHWORK, GRADING, AND REVEGETATION WORKSHEETS

May 2015

BONDCALC (COPYRIGHT 1995. STATE OF SOUTH DAKOTA)
Original Sludge Basin
INDEX

(Index Continued in Cell F 5)

GRADING FLATS

Grader Type:	Cat 16 M Grader
Blade Width (ft):	10.2
Man. Time (min):	0.35
Avg. Pass (ft):	1000
Avg. Speed (mph):	3
# of passes over area:	2
Acreage (acres):	0.00
Cost for Grader ($/hr):	$112.07
Cost for Oper. ($/hr):	$35.00

Travel Distance =	0	ft
Number of Passes =	0	passes
Total Time @ 80% eff =	0.0	hrs
Cost =	$0	

RIPPING FLAT AREAS

Dozer Type:	Cat D9T Dozer
Ripper Spacing (ft):	3
Avg. Speed (mph):	1
Avg. Pass (ft):	300
Man. Time (min):	0.25
Acreage (acres):	0.00
Cost for Dozer ($/hr):	$143.18
Cost for Oper. ($/hr):	$30.00

Travel Distance =	0	ft
Number of Passes =	0	passes
Total Time @ 80% eff =	0	hrs
Cost =	$0	

MATERIAL MOVING WITH DOZER (Spreading pit backfill)

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	250	
Vol. of Mat. (cy):	0.00	(estimation)
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Is mat. being moved to reduce slopes of heap, dump or other stockpile? Enter 1 if yes, 2 if no:	2	

Production =	432	cy/hr
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

GRADING TOPSOIL ON SLOPES WITH DOZER

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	300	
Acreage (acres):	0.91	
Mat. Thickness (ft.):	0.5	
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Production =	480	cy/hr
Total Time @ 80% Eff. =	1.9	hrs
Cost =	$329	

TOPSOIL REAPPL. (SCRAPER)

Scraper Type:	Cat 637E	
Scraper Capacity (cy):	31	
Avg. Haul Dist. (ft):	4800	
Total Resistance (%):	10	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	0.33	
Cost for Scraper ($/hr):	$86.00	
Cost for Oper. ($/hr):	$35.00	
Time to Load =	0.80	mins/trip
Time to Man. & Spread =	0.70	mins/trip
Time to Travel Loaded =	5.20	mins/trip
Time to Travel Empty =	3.10	mins/trip
Total Cycle Time =	9.80	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (FRONT END LOADER)

Loader Type:	Cat 988H Loader	
Bucket Capacity (cy.):	8.25	
Avg. Haul Dist. (ft):	100	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	1.5	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Hydraulic Cycle Time =	0.20	mins/trip
Travel Time (one way) =	0.15	mins/trip
Total Cycle Time =	0.50	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

MATERIAL MOVING (Truck & Front End Loader)

Unit Wt. Mat. (lb/cu ft):	100	
Vol. of Material (cy):	734.00	
Loader Type(1:980,2:988)	2	
Bucket Capacity (cy):	8.25	
Load-Dump-Man. Time(min):	0.6	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Truck Type (1:35T,2:50T):	2	
Truck Capacity (cy):	37	
Avg. Truck Speed (mph):	10	
Man. & Dump Time (min):	2	
Avg. Haul Dist. (ft):	3600	
Cost for Truck ($/hr):	$120.17	
Cost for Oper. ($/hr):	$35.00	
# Buckets to Fill Truck =	4	buckets
Loader Time/Truckload =	2.4	min/truck
No. of Truckloads =	20	loads
Time per Truckload =	12.6	min
Optimum No. of Trucks =	5	trucks
Time/Truck @ 80% Eff. =	1.1	hrs/truck
F.E.L. Time @ 80% Eff. =	1.1	hrs
Cost =	$1,054	

SEED COSTS

SEED TYPE	APPL.	RATE	COST
Western Wheatgrass		8.00 lbs/acre	$8.50 /lb
Thickspike Wheatgrass		6.00 lbs/acre	$7.38 /lb
Slender Wheatgrass		4.00 lbs/acre	$4.88 /lb
Hard Fescue		2.00 lbs/acre	$3.00 /lb
Kentucky Bluegrass		4.00 lbs/acre	$2.88 /lb
Timothy		4.00 lbs/acre	$1.98 /lb
White Dutch Clover		4.00 lbs/acre	$3.25 /lb
Acreage (acres):		0.91 acres	
Cost =		$155	

SEED COSTS (CONTINUED)

SEED TYPE	APPL.	RATE	COST
Regreen (nurse crop)		20.00 lbs/acre	$2.60 /lb
Acreage (acres):		0.91 acres	
Cost =		$47	

FORB COSTS

FORB TYPE	APPL.	RATE	COST
Black-eyed Susan		0.25 lbs/acre	$19.88 /lb
Rocky Mountain Penstemon		0.25 lbs/acre	$42.50 /lb
Blanket Flower		1.00 lbs/acre	$27.25 /lb
Acreage (acres)		0.91 acres	
Cost =		$39	

SEEDING COSTS

Acreage (acres):	0.91
Cost ($/acre):	500
Total Cost =	$455

HYDOMULCH (WOOD FIBER)

Acreage (acres):	0.91
Cost ($/acres):	400
Total Cost =	$364

FERTILIZER

N Appl. Rate (lbs/acre):	54.5
P Appl. Rate (lbs/acre):	43
K Appl. Rate (lbs/acre):	13.5
N Cost ($/lb):	$1.67
P Cost ($/lb):	$0.65
K Cost ($/lb):	$0.50
Acreage (acres):	0.91
Total Cost =	$114

POND LINER REMOVAL

No. of Ponds:	
Hours per Pond (assumed):	8
No. of Laborers (assumed):	6
Cost per Laborer:	$10.00
Cost for Supervisior	$20.00
Total Cost =	$0

TREE COST

TREE TYPE	NUMBER	COST	
Black Hills Spruce		$2.75	/stem
Paper Birch		$2.75	/stem
Ponderosa Pine		$2.75	/stem
Aspen		$2.75	/stem
Trees/acre			
* Includes planting and herbivore protection			
Total Cost =	$0		

FUEL COSTS

Cost of fuel ($/gal):		$3.55 /gal	
EQUIPMENT	HOURS		CONSUMP.
Cat D9T Dozer	1.9	14.0	gal/hr
Cat 637E Scraper	0.0	11.5	gal/hr
Cat 16M Grader	0.0	9.0	gal/hr
Cat 980 Loader	0.0	8.4	gal/hr
Cat 988H Loader	1.1	16	gal/hr
Cat 773 Truck	5.5	14.5	gal/hr
Cat 770 Truck	0.0	13.5	gal/hr
Total Cost =	$440		

MISC. COSTS

Erosion Control	$500
Sludge Pond Cover	$9,130
Construction Foreman	$5,000

TOTAL COST = $17,628

Press "Alt" and "C" to clear worksheet.
(This will bring all costs to 0.)

Press "Alt" and "P" to print worksheet with a header.
Press "Alt" and "A" to print worksheet without a header.

BONDCALC Program

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Original Sludge Basin Cover
INDEX

(Index Continued in Cell F 5)

GRADING FLATS

Grader Type:	Cat 16 M Grader
Blade Width (ft):	10.2
Man. Time (min):	0.35
Avg. Pass (ft):	1000
Avg. Speed (mph):	3
# of passes over area:	2
Acreage (acres):	0.00
Cost for Grader ($/hr):	$112.07
Cost for Oper. ($/hr):	$35.00
Travel Distance =	0 ft
Number of Passes =	0 passes
Total Time @ 80% eff =	0.0 hrs
Cost =	$0

RIPPING FLAT AREAS

Dozer Type:	Cat D9T Dozer
Ripper Spacing (ft):	3
Avg. Speed (mph):	1
Avg. Pass (ft):	300
Man. Time (min):	0.25
Acreage (acres):	0.00
Cost for Dozer ($/hr):	$143.18
Cost for Oper. ($/hr):	$30.00
Travel Distance =	0 ft
Number of Passes =	0 passes
Total Time @ 80% eff =	0 hrs
Cost =	$0

MATERIAL MOVING WITH DOZER (Spreading pond cover material)

Dozer Type:	Cat D9T Dozer
Blade Type:	Universal
Avg. Doze Dist. (ft.):	300
Vol. of Mat. (cy):	3600.00 (estimation)
Cost for Dozer ($/hr):	$143.18
Cost for Oper. ($/hr):	$30.00
Is mat. being moved to reduce slopes of heap, dump or other stockpile? Enter 1 if yes, 2 if no:	2
Production =	345.6 cy/hr
Total Time @ 80% Eff =	13 hrs
Cost =	$2,251

GRADING TOPSOIL ON SLOPES WITH DOZER

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	300	
Acreage (acres):	0.00	
Mat. Thickness (ft.):	0.5	
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Production =	480	cy/hr
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (SCRAPER)

Scraper Type:	Cat 637E	
Scraper Capacity (cy):	31	
Avg. Haul Dist. (ft):	4800	
Total Resistance (%):	10	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	0.33	
Cost for Scraper ($/hr):	$86.00	
Cost for Oper. ($/hr):	$35.00	
Time to Load =	0.80	mins/trip
Time to Man. & Spread =	0.70	mins/trip
Time to Travel Loaded =	5.20	mins/trip
Time to Travel Empty =	3.10	mins/trip
Total Cycle Time =	9.80	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (FRONT END LOADER)

Loader Type:	Cat 988H Loader	
Bucket Capacity (cy.):	8.25	
Avg. Haul Dist. (ft):	100	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	1.5	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Hydraulic Cycle Time =	0.20	mins/trip
Travel Time (one way) =	0.15	mins/trip
Total Cycle Time =	0.50	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

MATERIAL MOVING (Truck & Front End Loader)
(Haul cover material to pond)

Unit Wt. Mat. (lb/cu ft):	100	
Vol. of Material (cy):	3600.00	
Loader Type(1:980,2:988)	2	
Bucket Capacity (cy):	8.25	
Load-Dump-Man. Time(min):	0.6	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Truck Type (1:35T,2:50T):	2	
Truck Capacity (cy):	37	
Avg. Truck Speed (mph):	10	
Man. & Dump Time (min):	2	
Avg. Haul Dist. (ft):	3400	
Cost for Truck ($/hr):	$120.17	
Cost for Oper. ($/hr):	$35.00	
# Buckets to Fill Truck =	4	buckets
Loader Time/Truckload =	2.4	min/truck
No. of Truckloads =	97	loads
Time per Truckload =	12.1	min
Optimum No. of Trucks =	5	trucks
Time/Truck @ 80% Eff. =	4.9	hrs/truck
F.E.L. Time @ 80% Eff. =	4.9	hrs
Cost =	$4,694	

SEED COSTS

SEED TYPE	APPL.	RATE	COST
Western Wheatgrass		8.00 lbs/acre	$8.50 /lb
Thickspike Wheatgrass		6.00 lbs/acre	$7.38 /lb
Slender Wheatgrass		4.00 lbs/acre	$4.88 /lb
Hard Fescue		2.00 lbs/acre	$3.00 /lb
Kentucky Bluegrass		4.00 lbs/acre	$2.88 /lb
Timothy		4.00 lbs/acre	$1.98 /lb
White Dutch Clover		4.00 lbs/acre	$3.25 /lb
Acreage (acres):		0.00 acres	
Cost =		$0	

SEED COSTS (CONTINUED)

SEED TYPE	APPL.	RATE	COST
Regreen (nurse crop)		20.00 lbs/acre	$2.60 /lb
Acreage (acres):		0.00 acres	
Cost =		$0	

FORB COSTS

FORB TYPE	APPL.	RATE	COST
Black-eyed Susan		lbs/acre	/lb
Rocky Mountain Penstemon		lbs/acre	/lb
Blanket Flower		lbs/acre	/lb
Acreage (acres)		acres	
Cost =		$0	

SEEDING COSTS

Acreage (acres):	0.00
Cost ($/acre):	500
Total Cost =	$0

HYDOMULCH (WOOD FIBER)

Acreage (acres):	0.00
Cost ($/acres):	400
Total Cost =	$0

FERTILIZER

N Appl. Rate (lbs/acre):	18
P Appl. Rate (lbs/acre):	46
K Appl. Rate (lbs/acre):	0
N Cost ($/lb):	$1.67
P Cost ($/lb):	$0.65
K Cost ($/lb):	$0.50
Acreage (acres):	0.00
Total Cost =	$0

POND LINER REMOVAL

No. of Ponds:	
Hours per Pond (assumed):	8
No. of Laborers (assumed):	6
Cost per Laborer:	$11.00
Cost for Supervisior	$21.00
Total Cost =	$0

TREE COST

TREE TYPE	NUMBER	COST	
Black Hills Spruce		$2.75	/stem
Paper Birch		$2.75	/stem
Ponderosa Pine		$2.75	/stem
Aspen		$2.75	/stem
Trees/acre			

* Includes planting and herbivore protection

Total Cost = $0

FUEL COSTS

Cost of fuel ($/gal): $3.55 /gal

EQUIPMENT	HOURS	CONSUMP.
Cat D9T Dozer	13.0	14.0 gal/hr
Cat 637E Scraper	0.0	11.5 gal/hr
Cat 16M Grader	0.0	9.0 gal/hr
Cat 980 Loader	0.0	8.4 gal/hr
Cat 988H Loader	4.9	16 gal/hr
Cat 773 Truck	24.5	14.5 gal/hr
Cat 770 Truck	0.0	13.5 gal/hr

Total Cost = $2,186

MISC. COSTS

TOTAL COST = $9,130

Press "Alt" and "C" to clear worksheet.
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BONDCALC Program

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Water Tank
INDEX

(Index Continued in Cell F 5)

GRADING FLATS

Grader Type:	Cat 16 M Grader	
Blade Width (ft):	10.2	
Man. Time (min):	0.35	
Avg. Pass (ft):	1000	
Avg. Speed (mph):	3	
# of passes over area:	2	
Acreage (acres):	0.35	
Cost for Grader ($/hr):	$112.07	
Cost for Oper. ($/hr):	$35.00	
Travel Distance =	2989	ft
Number of Passes =	3	passes
Total Time @ 80% eff =	0.3	hrs
Cost =	$44	

RIPPING FLAT AREAS

Dozer Type:	Cat D9T Dozer	
Ripper Spacing (ft):	3	
Avg. Speed (mph):	1	
Avg. Pass (ft):	300	
Man. Time (min):	0.25	
Acreage (acres):	0.35	
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Travel Distance =	5082	ft
Number of Passes =	17	passes
Total Time @ 80% eff =	1.3	hrs
Cost =	$225	

MATERIAL MOVING WITH DOZER

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	250	
Vol. of Mat. (cy):	0.00	(estimation)
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Is mat. being moved to reduce slopes of heap, dump or other stockpile? Enter 1 if yes, 2 if no:	2	
Production =	432	cy/hr
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

GRADING TOPSOIL ON SLOPES WITH DOZER

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	300	
Acreage (acres):	0.00	
Mat. Thickness (ft.):	0.5	
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Production =	480	cy/hr
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (SCRAPER)

Scraper Type:	Cat 637E	
Scraper Capacity (cy):	31	
Avg. Haul Dist. (ft):	4800	
Total Resistance (%):	10	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	0.33	
Cost for Scraper ($/hr):	$86.00	
Cost for Oper. ($/hr):	$35.00	
Time to Load =	0.80	mins/trip
Time to Man. & Spread =	0.70	mins/trip
Time to Travel Loaded =	5.20	mins/trip
Time to Travel Empty =	3.10	mins/trip
Total Cycle Time =	9.80	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (FRONT END LOADER)

Loader Type:	Cat 988H Loader	
Bucket Capacity (cy.):	8.25	
Avg. Haul Dist. (ft):	100	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	1.5	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Hydraulic Cycle Time =	0.20	mins/trip
Travel Time (one way) =	0.15	mins/trip
Total Cycle Time =	0.50	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

MATERIAL MOVING (Truck & Front End Loader)

Unit Wt. Mat. (lb/cu ft):	100	
Vol. of Material (cy):	282.00	
Loader Type(1:980,2:988)	2	
Bucket Capacity (cy):	8.25	
Load-Dump-Man. Time(min):	0.6	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Truck Type (1:35T,2:50T):	2	
Truck Capacity (cy):	37	
Avg. Truck Speed (mph):	10	
Man. & Dump Time (min):	2	
Avg. Haul Dist. (ft):	2700	
Cost for Truck ($/hr):	$120.17	
Cost for Oper. ($/hr):	$35.00	
# Buckets to Fill Truck =	4	buckets
Loader Time/Truckload =	2.4	min/truck
No. of Truckloads =	8	loads
Time per Truckload =	10.5	min
Optimum No. of Trucks =	4	trucks
Time/Truck @ 80% Eff. =	0.4	hrs/truck
F.E.L. Time @ 80% Eff. =	0.4	hrs
Cost =	$321	

SEED COSTS

SEED TYPE	APPL. RATE	COST
Western Wheatgrass	8.00 lbs/acre	$8.50 /lb
Thickspike Wheatgrass	6.00 lbs/acre	$7.38 /lb
Slender Wheatgrass	4.00 lbs/acre	$4.88 /lb
Hard Fescue	2.00 lbs/acre	$3.00 /lb
Kentucky Bluegrass	4.00 lbs/acre	$2.88 /lb
Timothy	4.00 lbs/acre	$1.98 /lb
White Dutch Clover	4.00 lbs/acre	$3.25 /lb
Acreage (acres):	0.35 acres	
Cost =	$60	

SEED COSTS (CONTINUED)

SEED TYPE	APPL. RATE	COST
Regreen (nurse crop)	20.00 lbs/acre	$2.60 /lb

Acreage (acres):	0.35 acres
Cost =	$18

FORB COSTS

FORB TYPE	APPL. RATE	COST
Black-eyed Susan	0.25 lbs/acre	$19.88 /lb
Rocky Mountain Penstemon	0.25 lbs/acre	$42.50 /lb
Blanket Flower	1.00 lbs/acre	$27.25 /lb

Acreage (acres)	0.35 acres
Cost =	$15

SEEDING COSTS

Acreage (acres):	0.35
Cost ($/acre):	500
Total Cost =	$175

HYDOMULCH (WOOD FIBER)

Acreage (acres):	0.35
Cost ($/acres):	400
Total Cost =	$140

FERTILIZER

N Appl. Rate (lbs/acre):	54.5
P Appl. Rate (lbs/acre):	43
K Appl. Rate (lbs/acre):	13.5
N Cost ($/lb):	$1.67
P Cost ($/lb):	$0.65
K Cost ($/lb):	$0.50
Acreage (acres):	0.35
Total Cost =	$44

POND LINER REMOVAL

No. of Ponds:	
Hours per Pond (assumed):	8
No. of Laborers (assumed):	6
Cost per Laborer:	$10.00
Cost for Supervisior	$20.00
Total Cost =	$0

TREE COST

TREE TYPE	NUMBER	COST	
Black Hills Spruce		$2.75	/stem
Paper Birch		$2.75	/stem
Ponderosa Pine		$2.75	/stem
Aspen		$2.75	/stem
Trees/acre			

* Includes planting and herbivore protection

Total Cost = $0

FUEL COSTS

Cost of fuel ($/gal): $3.55 /gal

EQUIPMENT	HOURS	CONSUMP.
Cat D9T Dozer	1.3	14.0 gal/hr
Cat 637E Scraper	0.0	11.5 gal/hr
Cat 16M Grader	0.3	9.0 gal/hr
Cat 980 Loader	0.0	8.4 gal/hr
Cat 988H Loader	0.4	16 gal/hr
Cat 773 Truck	1.6	14.5 gal/hr
Cat 770 Truck	0.0	13.5 gal/hr

Total Cost = $179

MISC. COSTS

Erosion Control	$500
Water Tank Removal	$5,000

TOTAL COST = $6,721

Press "Alt" and "C" to clear worksheet.
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BONDCALC Program

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Upper Discharge Berm & Liner Removal
INDEX

(Index Continued in Cell F 5)

GRADING FLATS

Grader Type:	Cat 16 M Grader
Blade Width (ft):	10.2
Man. Time (min):	0.35
Avg. Pass (ft):	1000
Avg. Speed (mph):	3
# of passes over area:	2
Acreage (acres):	0.00
Cost for Grader ($/hr):	$112.07
Cost for Oper. ($/hr):	$35.00
Travel Distance =	0 ft
Number of Passes =	0 passes
Total Time @ 80% eff =	0.0 hrs
Cost =	$0

RIPPING FLAT AREAS

Dozer Type:	Cat D9T Dozer
Ripper Spacing (ft):	3
Avg. Speed (mph):	1
Avg. Pass (ft):	300
Man. Time (min):	0.25
Acreage (acres):	0.00
Cost for Dozer ($/hr):	$143.18
Cost for Oper. ($/hr):	$30.00
Travel Distance =	0 ft
Number of Passes =	0 passes
Total Time @ 80% eff =	0 hrs
Cost =	$0

MATERIAL MOVING WITH DOZER (Removing pond berm)

Dozer Type:	Cat D9T Dozer
Blade Type:	Universal
Avg. Doze Dist. (ft.):	300
Vol. of Mat. (cy):	5278.00 (estimation)
Cost for Dozer ($/hr):	$143.18
Cost for Oper. ($/hr):	$30.00
Is mat. being moved to reduce slopes of heap, dump or other stockpile? Enter 1 if yes, 2 if no:	2
Production =	345.6 cy/hr
Total Time @ 80% Eff. =	19.1 hrs
Cost =	$3,308

GRADING TOPSOIL ON SLOPES WITH DOZER

Dozer Type:	Cat D9T Dozer	
Blade Type:	Universal	
Avg. Doze Dist. (ft.):	300	
Acreage (acres):	0.50	
Mat. Thickness (ft.):	0.5	
Cost for Dozer ($/hr):	$143.18	
Cost for Oper. ($/hr):	$30.00	
Production =	480	cy/hr
Total Time @ 80% Eff. =	1.1	hrs
Cost =	$190	

TOPSOIL REAPPL. (SCRAPER)

Scraper Type:	Cat 637E	
Scraper Capacity (cy):	31	
Avg. Haul Dist. (ft):	4800	
Total Resistance (%):	10	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	0.33	
Cost for Scraper ($/hr):	$86.00	
Cost for Oper. ($/hr):	$35.00	
Time to Load =	0.80	mins/trip
Time to Man. & Spread =	0.70	mins/trip
Time to Travel Loaded =	5.20	mins/trip
Time to Travel Empty =	3.10	mins/trip
Total Cycle Time =	9.80	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

TOPSOIL REAPPL. (FRONT END LOADER)

Loader Type:	Cat 988H Loader	
Bucket Capacity (cy.):	8.25	
Avg. Haul Dist. (ft):	100	
Acreage (acres):	0.00	
T'soil Reapp. Depth (ft):	1.5	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Hydraulic Cycle Time =	0.20	mins/trip
Travel Time (one way) =	0.15	mins/trip
Total Cycle Time =	0.50	mins/trip
No. of Trips =	0	trips
Total Time @ 80% Eff. =	0	hrs
Cost =	$0	

MATERIAL MOVING (Truck & Front End Loader)

Unit Wt. Mat. (lb/cu ft):	100	
Vol. of Material (cy):	403.00	
Loader Type(1:980,2:988)	2	
Bucket Capacity (cy):	8.25	
Load-Dump-Man. Time(min):	0.6	
Cost for Loader ($/hr):	$147.02	
Cost for Oper. ($/hr):	$35.00	
Truck Type (1:35T,2:50T):	2	
Truck Capacity (cy):	37	
Avg. Truck Speed (mph):	10	
Man. & Dump Time (min):	2	
Avg. Haul Dist. (ft):	3600	
Cost for Truck ($/hr):	$120.17	
Cost for Oper. ($/hr):	$35.00	
# Buckets to Fill Truck =	4	buckets
Loader Time/Truckload =	2.4	min/truck
No. of Truckloads =	11	loads
Time per Truckload =	12.6	min
Optimum No. of Trucks =	5	trucks
Time/Truck @ 80% Eff. =	0.6	hrs/truck
F.E.L. Time @ 80% Eff. =	0.6	hrs
Cost =	$575	

SEED COSTS

SEED TYPE	APPL.	RATE	COST
Western Wheatgrass		8.00 lbs/acre	$8.50 /lb
Thickspike Wheatgrass		6.00 lbs/acre	$7.38 /lb
Slender Wheatgrass		4.00 lbs/acre	$4.88 /lb
Hard Fescue		2.00 lbs/acre	$3.00 /lb
Kentucky Bluegrass		4.00 lbs/acre	$2.88 /lb
Timothy		4.00 lbs/acre	$1.98 /lb
White Dutch Clover		4.00 lbs/acre	$3.25 /lb
Acreage (acres):		0.50 acres	
Cost =		$85	

SEED COSTS (CONTINUED)

SEED TYPE	APPL.	RATE	COST
Regreen (nurse crop)		20.00 lbs/acre	$2.60 /lb
Acreage (acres):		0.50 acres	
Cost =		$26	

FORB COSTS

FORB TYPE	APPL.	RATE	COST
Black-eyed Susan		0.25 lbs/acre	$19.88 /lb
Rocky Mountain Penstemon		0.25 lbs/acre	$42.50 /lb
Blanket Flower		1.00 lbs/acre	$27.25 /lb
Acreage (acres)		0.50 acres	
Cost =		$21	

SEEDING COSTS

Acreage (acres):	0.50
Cost ($/acre):	500
Total Cost =	$250

HYDOMULCH (WOOD FIBER)

Acreage (acres):	0.50
Cost ($/acres):	400
Total Cost =	$200

FERTILIZER

N Appl. Rate (lbs/acre):	18
P Appl. Rate (lbs/acre):	46
K Appl. Rate (lbs/acre):	0
N Cost ($/lb):	$1.67
P Cost ($/lb):	$0.65
K Cost ($/lb):	$0.50
Acreage (acres):	0.50
Total Cost =	$30

POND LINER REMOVAL

No. of Ponds:	1
Hours per Pond (assumed):	12
No. of Laborers (assumed):	6
Cost per Laborer:	$11.00
Cost for Supervisior	$21.00
Total Cost =	$1,044

SHRUB COST

SHRUB TYPE	APPL.	RATE	COST
Serviceberry		1.00 lbs/acre	$105.00 /lb
Chokecherry		1.00 lbs/acre	$29.25 /lb
Snowberry		1.00 lbs/acre	$97.50 /lb
Woods Rose		1.00 lbs/acre	$51.00 /lb
Acreage (acres)		0.00 acres	

Total Cost = $0

FUEL COSTS

Cost of fuel ($/gal): $3.55 /gal

EQUIPMENT	HOURS	CONSUMP.
Cat D9T Dozer	20.2	14.0 gal/hr
Cat 637E Scraper	0.0	11.5 gal/hr
Cat 16M Grader	0.0	9.0 gal/hr
Cat 980 Loader	0.0	8.4 gal/hr
Cat 988H Loader	0.6	16 gal/hr
Cat 773 Truck	3.0	14.5 gal/hr
Cat 770 Truck	0.0	13.5 gal/hr

Total Cost = $1,192

MISC. COSTS

Remove Sludge to Sludge Basin	$1,600
Erosion Control	$1,000

TOTAL COST = $9,522

Press "Alt" and "C" to clear worksheet.
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BONDCALC Program

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Appendix A: Reclamation Financial Assurance Cost Estimate
Attachment A3: Tables

Table A3-1 Seed Costs

SEED TYPE	APPL. RATE	COST
Western Wheatgrass	8.00 lbs/acre	$8.50 /lb
Thickspike Wheatgrass	6.00 lbs/acre	$7.38 /lb
Slender Wheatgrass	4.00 lbs/acre	$4.88 /lb
Hard Fescue	2.00 lbs/acre	$3.00 /lb
Kentucky Bluegrass	4.00 lbs/acre	$2.88 /lb
Timothy	4.00 lbs/acre	$1.98 /lb
White Dutch Clover	4.00 lbs/acre	$3.25 /lb
Regreen (nurse crop)	20.00 lbs/acre	$2.60 /lb
Forbs		
Black-eyed Susan	0.25 lbs/acre	$19.88 /lb
Rocky Mountain Penstemon	0.25 lbs/acre	$42.50 /lb
Blanket Flower	1.00 lbs/acre	$27.25 /lb
Shrubs		
Serviceberry	1.00 lbs/acre	$105.00 /lb
Chokecherry	1.00 lbs/acre	$29.25 /lb
Snowberry	1.00 lbs/acre	$97.50 /lb
Woods Rose	1.00 lbs/acre	$51.00 /lb

Table A3-2 Equipment, Labor and Fuel Costs

Equipment Type	**Cost/hr.**
Cat 16 M Grader	$112.07 /hr
Cat D9T Dozer	$143.18 /hr
Cat 988H Loader	$147.02 /hr
Cat 772 (50 ton truck)	$120.17 /hr
Labor	
Dozer Operators	$30.00 /hr
All Other Operators	$35.00 /hr
Fuel	$3.55 /gal

Appendix B
Photolog of the Short-Term Reclamation Areas

1. Original Sludge Basin.

2. Water Tank.

3. Upper Discharge Pond.