Appendix A. Amended Plan of Operations and Reclamation Plan (Amended December 21, 2010)

Bishop Mill Project

Amended Plan of Operations and Reclamation Plan

Lease/Serial/Case File No.:
CACA 30866 CA-017-MN2-71

Submitted by:

0877887 BC Ltd.

Suite 305-369 Terminal Avenue
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December 21, 2010 (revision)

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1 Introduction and Scope of Report

In August 2009, Pruett Ballarat Inc. submitted an amended Plan of Operations (PoO) and Reclamation Plan for the Bishop Mill in order to comply with a U.S. Department of the Interior, Bureau of Land Management, Bishop Field Office (BLM) order and regulatory requirements for surface management of public lands under Title 43 Code of Federal Regulations, Section 3809 (43 CFR§ 3809). Since that time, ownership of the operation has been transferred to 0877887 BC Ltd., a wholly-owned subsidiary of CMC Metals Ltd. (Operator) of Vancouver, Canada.

The current Operator plans to re-activate the existing Bishop Mill as an independent mill, processing gold-bearing ores transported from off-site mining locations. The Operator intends to transport up to 75 tons of ore per day to stockpile at the site for processing. The ore will be processed through the existing gravity mill at an estimated throughput rate of 4 tons per hour (up to 96 tons per day). The waste derived from ore processing (tailings) will be deposited in the proposed new waste management unit (WMU) for Group A mining waste disposal to be constructed at the site of an existing, but inoperative, tailings impoundment. The mill and proposed WMU will be operated for a period of up to 5 years with a projected total of up to 32,000 tons of tailings deposited in the WMU based on the project design described herein.

This report (reference sections identified in bold below) contains information in support of § 3809.401(b) which demonstrates that the proposed operations will not result in unnecessary or undue degradation of public lands;

§ 3809.401(b)(1) Operator Information – **Section 2**

§ 3809.401(b)(2) Description of Operations – **Section 3.14 and Section 3.15**

§ 3809.401(b)(2)(i) – **Figures 1-1, 1-2, 3-1, 3-2, and 3-3**

§ 3809.401(b)(2)(i)(ii) – ***2010 Report of Waste Discharge, Bishop Mill Project, Inyo County, California*** **(SRK, 2010)** – submitted under separate cover.

§ 3809.401(b)(2)(i)(ii)(iii) – **Section 3.14 and Section 3.15**

§ 3809.401(b)(2)(iv) – **Section 3.16.2**

§ 3809.401(b)(2)(v) – **Section 3.2**

§ 3809.401(b)(2)(vi) – **Section 3**;

§ 3809.401(b)(2)(vii) – **Section 3.14 and Section 3.15**

§ 3809.401(b)(2)(viii) – **Section 3.19**

§ 3809.401(b)(3) – **Section 4**

§ 3809.401(b)(4) – **Section 3.16**

§ 3809.401(b)(5) – **Section 4.22**

§ 3809.401(b)(5)(c)(1) – **Section 3**

§ 3809.401(b)(5)(c)(2) – **Section 6**

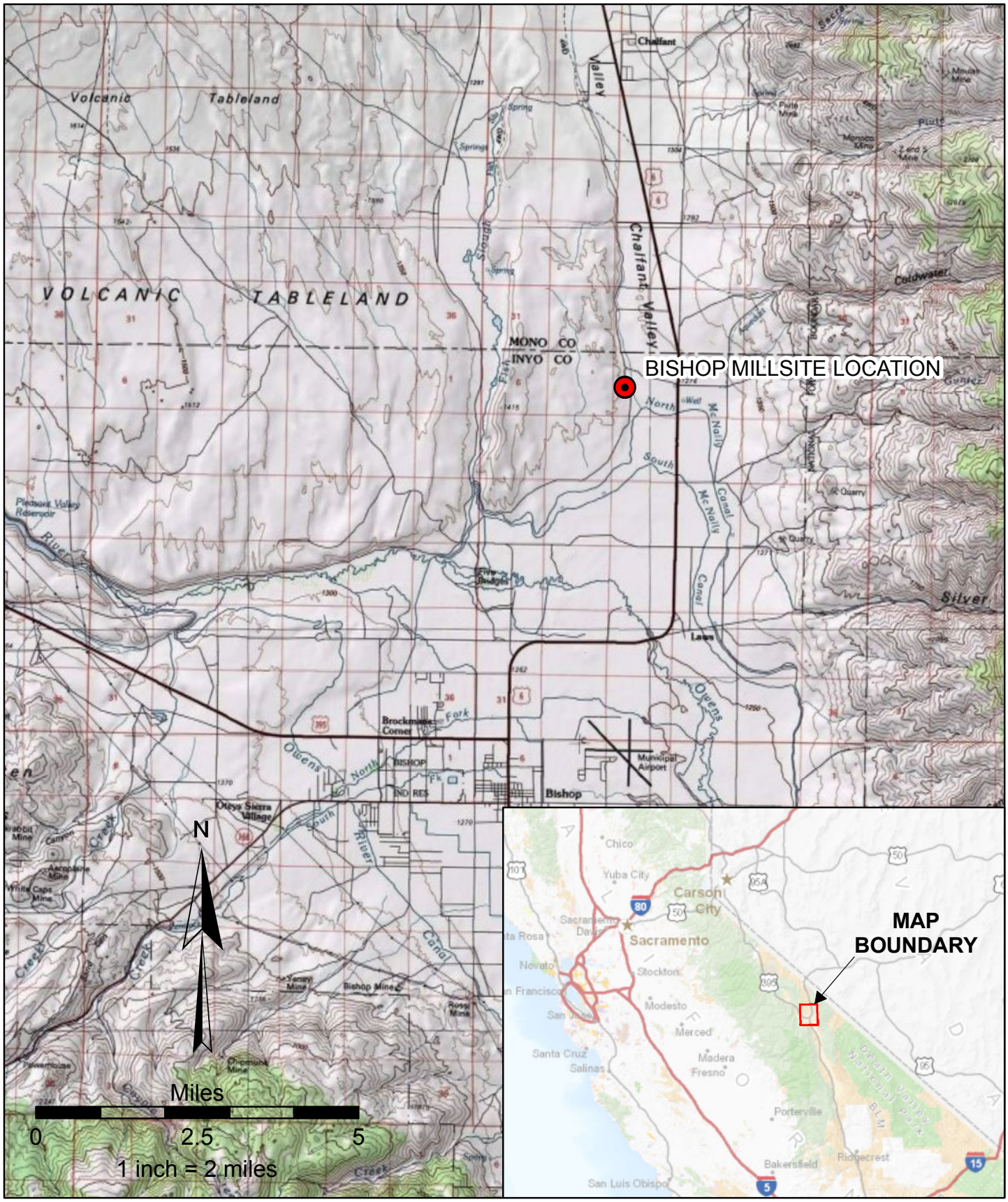
1.1 Location and Description

The Bishop Mill is located at Rudolph Road west and Highway 6, approximately 9 miles northeast of Bishop, California on public lands administered by the BLM. The project site is situated in the SW¼ of Section 4, Township 6 South, Range 33 East, Mount Diablo Meridian, on three mill-site claims controlled by the Operator.

Rudolph Road (an existing, improved dirt road) traverses westerly from Highway 6 for approximately one mile to the power line and mill-site access road. The mill-site access road traverses approximately ¼ mile southerly to the project entrance, see **Figure 1-1** Vicinity Map and **Figure 1-2** Location Map.

The primary land use in the immediate vicinity (five-mile radius) is ranching, mining, and milling of various mineral resources. Approximately four miles south of the project site is the small town of Laws, where the nearest residential development is situated.

The site facilities consist of: a main mill building, (formerly the concentrate treatment building), a garage, three wells (two monitoring wells and a production well), propane tank, historic tailings facilities constructed by previous operators, and old Mammoth Mine tailings (relocated and covered by previous operator). All facilities/equipment to be utilized for this project are enclosed by a chain-link perimeter fence.



0877887 BC Ltd.			BISHOP MILL AMENDED PLAN OF OPERATIONS INYO COUNTY, CALIFORNIA	DRAWING TITLE: VICINITY MAP	
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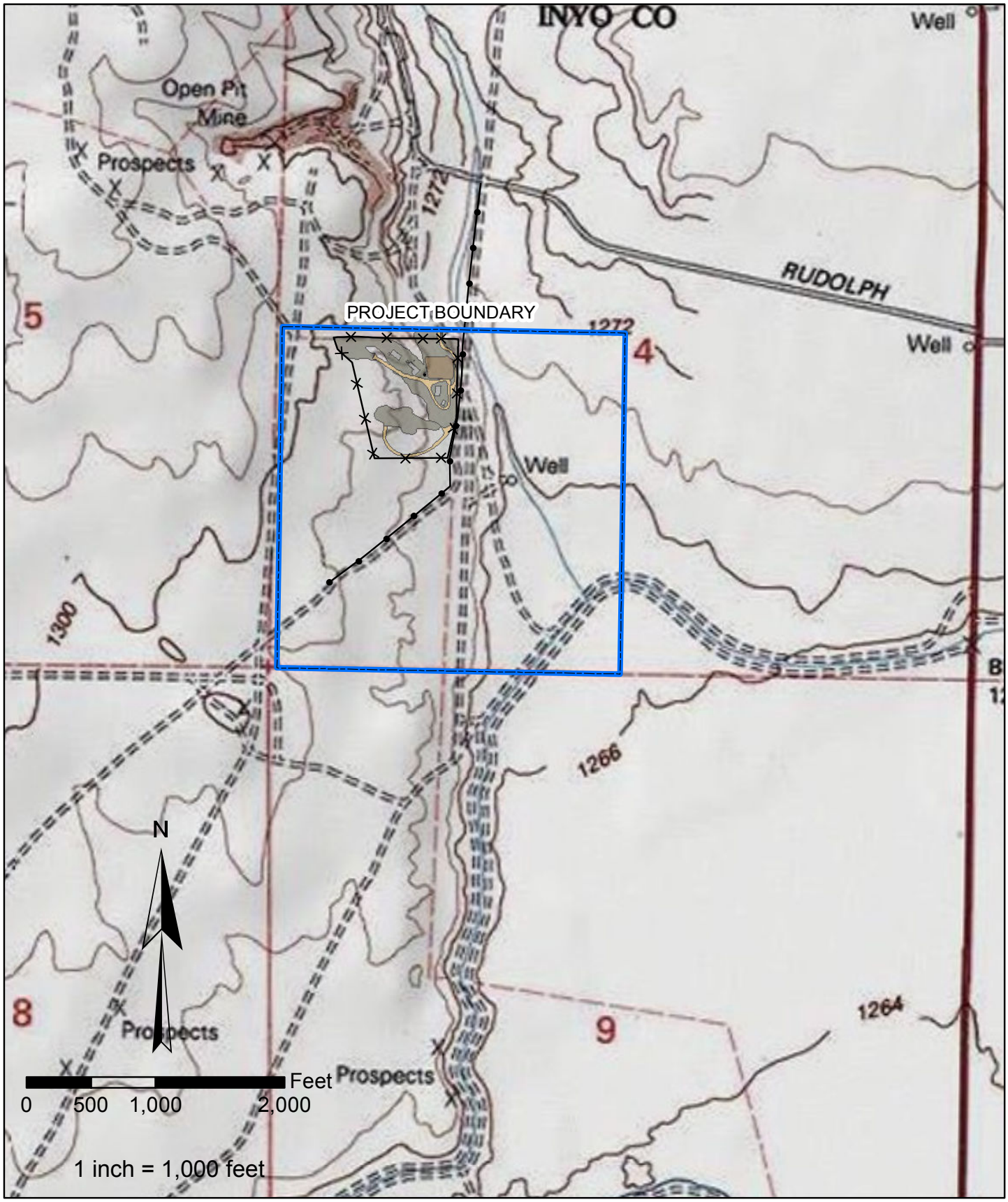

0877887 BC Ltd.	**BISHOP MILL** **AMENDED PLAN OF OPERATIONS** **INYO COUNTY, CALIFORNIA**	DRAWING TITLE: **PROJECT SITE LOCATION MAP**	
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2 General Operator Information

2.1 Claimant Information

The Project Operator/Applicant Is:

Mr. Don Wedman – President, CEO
0877887 BC Ltd.,
369 Terminal Avenue, Suite 305
Vancouver B.C. V6A 4C4
(604) 637-4673 – Work,
(604) 692-0117 – Mobile
cmcmetals@shaw.ca

2.2 Owner Information

The Project Owner Is:

Mr. Don Wedman – President, CEO
0877887 BC Ltd.,
369 Terminal Avenue, Suite 305
Vancouver B.C. V6A 4C4
(604) 637-4673 – Work,
(604) 692-0117 – Mobile
cmcmetals@shaw.ca

2.3 Partnership Information

N.A.

2.4 Manager Information

Mr. Don Wedman – President, CEO
0877887 BC Ltd.,
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Vancouver B.C. V6A 4C4
(604) 637-4673 – Work,
(604) 692-0117 – Mobile
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2.5 Authorized Field Representative Information

Mr. Don Wedman – President, CEO
0877887 BC Ltd.,
369 Terminal Avenue, Suite 305
Vancouver B.C. V6A 4C4
(604) 637-4673 – Work,
(604) 692-0117 – Mobile
cmcmetals@shaw.ca

2.6 Taxpayer ID Number

EIN 98-0677711

2.7 Topographic Map and Project Location

The proposed project is located in Inyo County in central California, approximately 10 miles north of the city of Bishop, California, as shown on **Figure 1-1**. The site facilities and topography are shown on **Figure 1-2**.

2.7.1 Boundaries of Area of Operations

Figure 1-2 depicts the current project boundary. The project area includes the SW¼ of Section 4, Township 6 South, Range 33 East, Mount Diablo Meridian.

2.7.2 Surface Ownership within Area of Operations and Mining Claim Information

Proposed milling and related surface disturbance will be conducted on unpatented mill-site claims controlled by the /OwnerOperator on public lands administered by the BLM. The Owner controls the mineral and surface rights of the project through the claims listed in **Table 2-1**:

Table 2-1 Claim Information

Name of Claim	BLM Serial Number (NMC#)	Location
Bishop Millsite	CAMC#264196	T6 South R33 East MDM N1/2 NE1/4 NW1/4 SW1/4 Section 4
Bishop Millsite No. 1	CAMC#264197	T6 South R33 East MDM S1/2 NE1/4 NW1/4 SW1/4 Section 4
Bishop Millsite No. 2	CAMC#264198	T6 South R33 East MDM N1/2 NW1/4 NW1/4 SW1/4 Section 4
Bishop Millsite No. 5	CAMC#264200	T6 South R33 East MDM S1/2 NE1/4 NW1/4 SW1/4 Section 4

The surface land status and claim sites are shown on **Figure 2-1** Surface Ownership and Claim Map.

BISHOP MILL
AMMENDED PLAN OF OPERATIONS
INYO COUNTY, CALIFORNIA

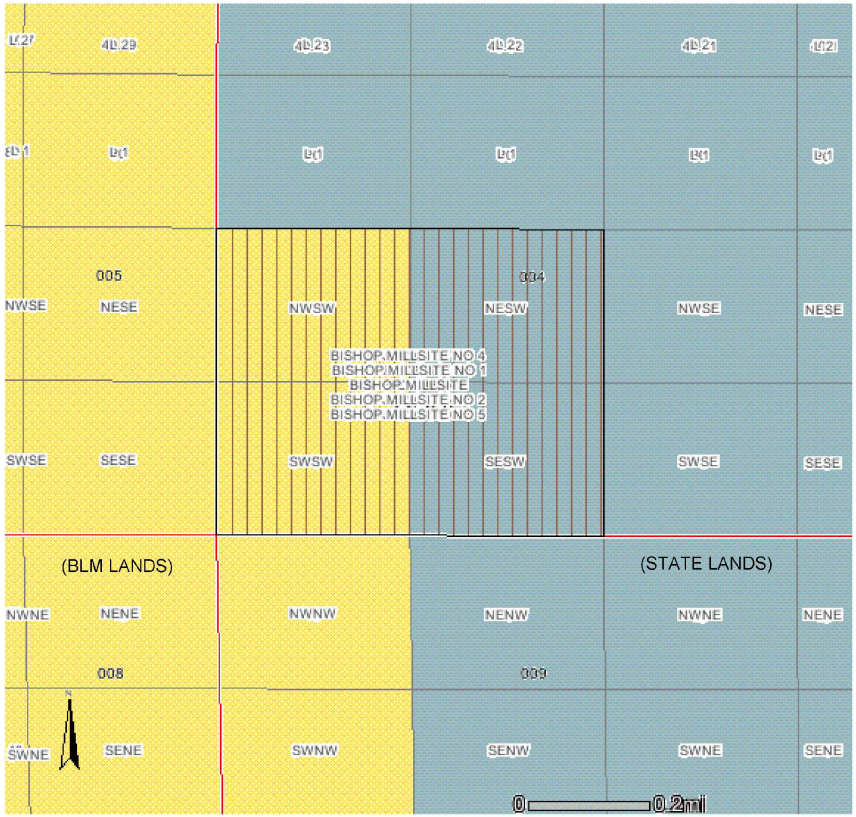

Figure 2-1 Surface Ownership and Claim Map

Legend

Downloadable PLSS Data

Townships(BLM)	Township Boundaries	Township Labels	Sections

Reference Themes

State Boundaries	Roads	Major Roads and Highways	County Boundaries
Lakes	Rivers	Urban Areas	National Forests

Base Maps

Shaded Relief	USGS Topos	Ortho Aerial Photography
Surface Management Agency	PLSS Principal Meridians	No Base Map

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No warranty is made by the BLM for the use of the data for purposes not intended by the BLM.

0877887 BC Ltd.		BISHOP MILL AMENDED PLAN OF OPERATIONS	DRAWING TITLE: SURFACE OWNERSHIP AND CLAIM MAP
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CHECKED: -	APPROVED: MB	DATE: 12/21/2010	DRAWING NO. FIGURE 2-1
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3 Description of Project Area

The project is located in Inyo County near the northern extent of the Owens Valley. The crest and eastern escarpment of the Sierra Nevada occupy the western half of the area and the western foothills of the White Mountains lie along the eastern margin. Between the Sierra Nevada and White Mountains is a structural trough that contains the Owens and Round Valleys and the Volcanic Tableland (Bateman, 1965).

The project area is located on the eastern edge of the Volcanic Tableland and drains to the east into the valley bottom which drains south eventually reaching into the Owens River. The primary land use in the immediate vicinity (five-mile radius) is ranching, mining, and milling of various minerals. Approximately five miles south of the project site, is the small town of Laws, where the nearest residential development is situated (Roger W. Smith Consulting Geologist, 2005).

3.1 Climate

Climatic conditions at the site are represented by data from the Bishop WSO Airport meteorological data station (Station ID No. 040822), which is located approximately 5.7 miles south of the project. The period of recorded data available for the Bishop WSO Airport station spans from 1948 through 2010. Data for the Bishop WSO Airport station were obtained from the Western Regional Climate Center website (www.wrcc.dri.edu). Average monthly climatic data are summarized in **Table 3-1**.

Based on the available data from the referenced meteorological data station, the climate is semi-arid with an average annual precipitation on the order of 5.28 (Bishop AP) inches.

Evaporation data are not recorded at the Bishop climate station. The closest and most representative station that records evaporation is the Topaz Lake, California meteorological station. Measured average annual pan evaporation at the Topaz Lake station is 69 inches for the period of record from 1957 to 2005. The Topaz Lake station is situated at an elevation of approximately 5,200 feet above mean sea level (amsl), similar to the elevation at the project site ~4,200 feet amsl.

Average daily temperatures at the Bishop Airport station range from a high of 97.7 degrees Fahrenheit (°F) in July to a low of 21.8 °F in January.

Wind in the area of the Bishop Mill is generally influenced by prevailing westerly winds which are directed by geographical features (Sierra Nevada and White Mountains). Wind speeds vary at the site. No wind monitoring equipment is available for the Bishop Mill area, but general wind direction and speed are controlled by up and down drafting influenced by day and night time heating and cooling over the adjacent landscape.

Table 3-1 Summary of Climatic Conditions

	Temperature (degrees F)[1]		Precipitation[2]		Evaporation[3]
Month	**Avg.**	**Max.**	**Max (inches)**	**Min (inches)**	**(inches)**
January	37.4	53.0	21.7	1.11	0.0
February	42.0	57.9	26.0	0.92	0.0
March	47.2	64.1	30.2	0.5	0.0
April	53.9	71.7	36.1	0.29	7.2
May	62.4	81.0	43.8	0.26	9.1
June	71.0	91.0	50.9	0.14	10.9
July	76.9	97.6	56.1	0.17	12.7
August	74.5	95.4	53.6	0.12	11.6
September	67.3	87.8	46.7	0.19	8.8
October	57.0	76.6	37.3	0.20	5.9
November	45.3	62.9	27.6	0.56	2.8
December	38.2	54.4	21.9	0.81	0.0
TOTAL				**5.26**	**69.0**
Period of Record	1948-2010		1948-2010		1957-2005
NOTES			[1] Temperature data from Bishop Airport, NOAA meteorological data station. [2] Precipitation data from Bishop Airport, NOAA meteorological data station. [3] Evaporation data from Topaz Lake at elev. 5200 ft amsl.		

3.2 Regional Geology

The project is located in the southern part of the Chalfant Valley, which joins the Owens Valley approximately five miles north of Bishop, California. Chalfant Valley is a narrow alluvial plain bounded on the east by the White Mountains and on the west by the Volcanic Tableland. The White Mountains are composed predominantly of granitic rocks partially overlain by metasedimentary and metavolcanic rocks. The Volcanic Tableland is comprised of pyroclastic deposits derived from the volcanic explosions in the Long Valley caldera. The White Mountains extend to more than 13,000 feet above mean sea level (amsl), while the Volcanic Tableland rises to 6,000 feet amsl.

The Chalfant Valley extends north from its junction with the Owens Valley to a geomorphic intersection with the Millner Creek alluvial fan, approximately 4.5 miles north of Chalfant. The Millner Creek alluvial fan dissects the valley and marks the separation of Chalfant Valley from Hammill Valley to the north. Several faults run through the valley, including the Fish Slough fault approximately 2-miles west of the project, and the White Mountain range front fault approximately 2- miles east of the site, Department of Conservation, Division of Mines and Geology (1997).

3.3 Soils

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (1996), soils at the site consist of Yaney-Yaney loam associated and Cambidic Haplodurids-Type Haplodurids association. The Yaney-Yaney loam is described as well drained and containing sand, sandy loam and sandy loam with various amounts of gravel. The parent material is described as "Volcanic ash and/or alluvium derived from mixed". The Cambidic soil is described as well drained and containing gravelly to extremely gravelly sandy loam with some cementation at 11 to 18-inces below ground surface. The parent material is described as "alluvium derived from mixed sources."

3.4 Water Resources

The project is located in the northern region of the Owens Valley Groundwater Basin, which is a subunit of the Lahontan Drainage Province. This sub-unit encompasses an area of approximately 1,030 square miles and is drained by the Owens River. The basin is bounded on the east by the White Mountains and on the west by the Volcanic Tableland. Recharge to the basin is derived from snow-melt and precipitation runoff from the adjacent highlands, and from direct precipitation onto the valley floor. Groundwater in the Chalfant Valley region generally occurs in unconsolidated to semi-consolidated alluvial deposits and flows towards the axis of the valley, Kleinfelder (1992). The static groundwater has been measured to about 40 feet below ground surface (bgs) (Roger W. Smith Consulting Geologist, 2005). Well completion logs are not available for on-site wells.

The capacity of the most limiting layer of each soil association identified in Section 3.3 to transmit water under saturated conditions (Ksat) ranges from 0.20 to 6.0 inches per hour according to the Dept. of Agriculture, Natural Resources Conservation Service (1996). Hydraulic conductivities for soil and bedrock underlying the site are unknown.

The groundwater flow direction within alluvial deposits in the site vicinity generally follows the axis of the topography southeast toward the axis of the valley and Bishop (Kleinfelder, 1992).

There is no perennial surface water in the project vicinity. The nearest perennial source of surface water is Pumice Creek, approximately 1.5 miles to the east, and Fish Slough, located approximately 2 miles to the west.

3.5 Vegetation

Site vegetation in the vicinity of the project consist of shadscale, black greasewood, four-wing saltbrush, Fremont dalea, desert needlegrass and Indian ricegrass. The percent cover ranges from 5 to 15%, according to the Dept. of Agriculture, Natural Resources Conservation Service (1996)

3.6 Existing Operations and Proposed Activities

The Operator plans to operate the existing Bishop Mill as an independent mill processing ores transported from underground mines located near, but not limited to, Ballarat, California. The Operator intends to transport up to 75 tons per day of ore to stockpile tote the site for processing. The

ore will be processed through the existing mill at a rate of 4 tons per hour (96 tons per day). The processed ore (tailings) will be deposited in a re-designed and reconstructed tailings impoundment (the proposed waste management unit). The mill will be operated for a period of up to 5 years, and have a maximum of 32,000 tons of tailings deposited in the WMU based on the project design.

3.7 Access Routes

The project area can be reached by travelling on Highway 6 north from Bishop, approximately 8 miles north, and turning left on Rudolf Road and travelling 0.9 miles west to intersection with an un-named dirt road and turning south. Follow the dirt road south for ¼ mile to the project entrance as shown in **Figure 1-1**. Access to the site is restricted by a locked gate.

3.8 Existing Disturbance

3.8.1 Existing Facilities

The following facilities and structures are located within the project boundaries:

1. Main mill building,
2. Warehouse,
3. Garage,
4. Trailer (office and laboratory),
5. Production well (PW-3),
6. Groundwater Monitoring Well (MW-1 and MW-2),
7. Propane tank,
8. Tailings disposal pond,
9. Historic Mammoth Tailings (relocated in 2006 from pond area),
10. Perimeter fence, and
11. Power line.

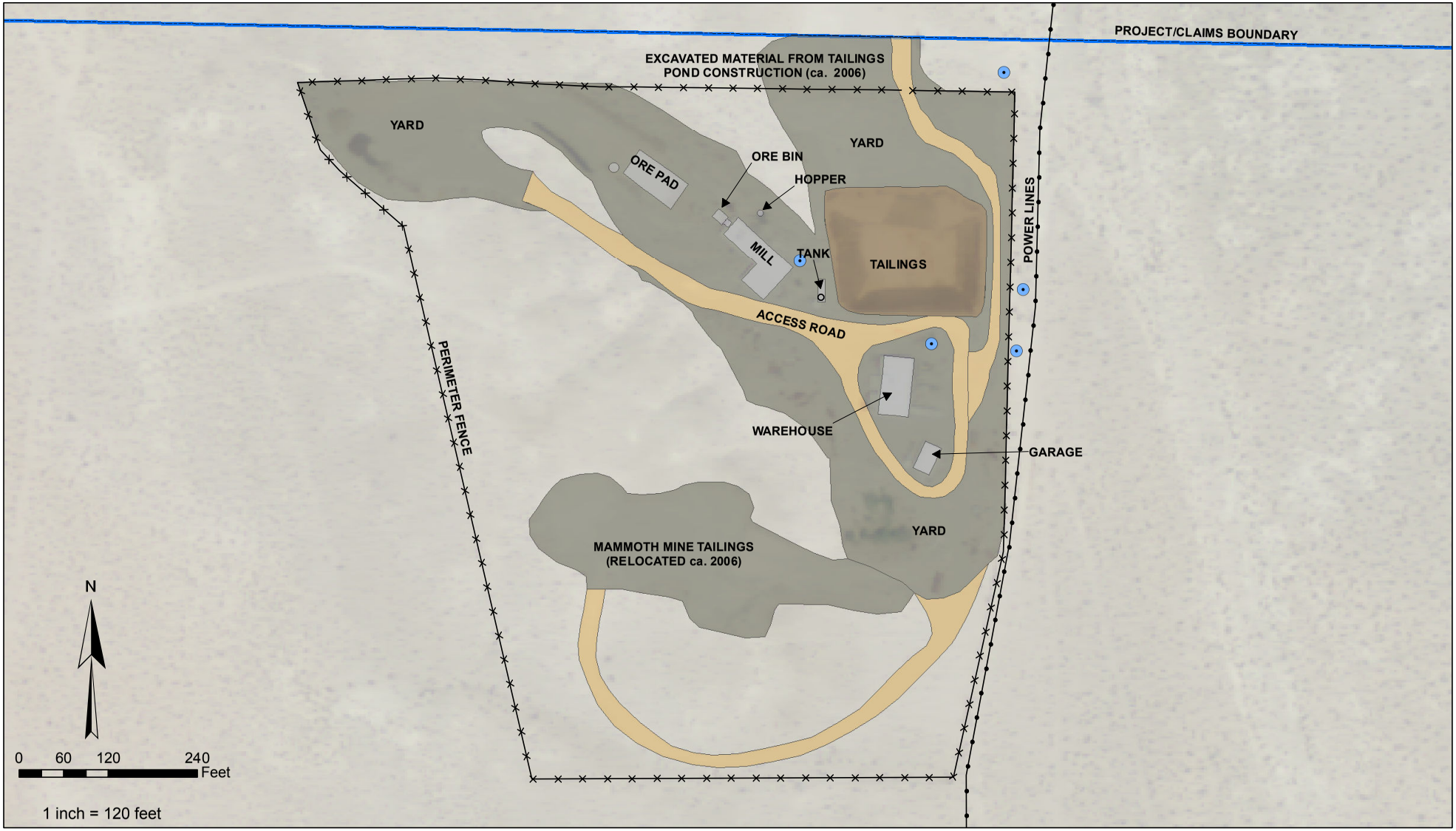
3.8.2 Existing Area Disturbance

The existing surface disturbance at the site is detailed in **Table 3-2** and shown on **Figure 3-1**. Note the Historic Mammoth Tailings were relocated in 2006 from the existing tailings pond area to the location on the hill above the existing mill building and covered by the previous operator. The disturbance footprint of the Historic Mammoth Tailings is 1.4 acres and has been included with the site Yards disturbance category herein (as this area will require revegetation by the current operator).

Table 3-2 Existing Disturbance

Facility	Public (ac)	Private (ac)	Total (ac)
Roads	1.05	0	1.05
Buildings	0.28	0	0.28
Yards*	5.96	0	5.96
Total	**7.29**	**0**	**7.29**

*Note: Includes Historic Mammoth Tailings (Relocated and Covered in 2006)



EXPLANATION

- Wells
- Project/Claims Boundary
- Power Line
- Fence
- Road
- Structure
- Tailings
- Yard

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BISHOP MILL
AMENDED PLAN OF OPERATIONS
INYO COUNTY, CALIFORNIA

DRAWING TITLE: SITE PLAN AND EXISTING DISTURBANCE

DRAWING NO. FIGURE 3-1

SRK JOB NO. 204600-010

REVISION NO. A

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3.9 Project Background and History of Mining

The mill was originally constructed by Mr. Don Beauregard (working for Mammoth Mountain Mining Company) in 1985 as a dependent mill site, in connection with claims on land administered by the U.S. Department of Agriculture, Forest Service (BLM, 2005). The mill operated for an unknown period of time utilizing the local ore. During that time, approximately 2,500 tons of tailings were deposited in an unlined tailings pond at the site in accordance with authorization from the BLM.

In approximately 1999, Mr. David McCoy (owner of Mammoth Mountain Mining Company) deeded all assets of the company (including the Bishop Mill site claims) to Mr. Gordon Stavish. In late 2005, Mr. Stavish submitted a 5-year Plan of Operations to the BLM. The proposed action was to process ore from the Gold Bug mine in Ballarat, California. Mr. Stavish, with authorization from the BLM and Lahontan Regional Water Quality Control Board (LRWQCB), relocated the 2,500 tons of existing Mammoth tailings to an area just south of the mill building. The tailings were covered with 1-foot of native soil. Mr. Stavish then constructed a new tailings pond using a 40-mil single layer of HDPE plastic (intended to be a Class C pond) and installed two (2) monitoring wells. Mr. Stavish operated the mill for a brief time, and deposited approximately 100 tons of tailings in this 'new' pond. Subsequent testing by the LRWQCB on the deposited tailings, however, revealed that they did not qualify for disposal in a Class C facility. In response, the BLM issued a cease and desist letter to Mr. Stavish to immediately halt operating the mill.

In September 2008, Mr. David Pruett of Pruett Ballarat, Inc. purchased the mill site claims from Mr. Stavish, only to subsequently transfer that ownership to 0877887 BC Ltd., a wholly-owned subsidiary of CMC Metals Ltd. of Vancouver, Canada.

3.10 Location of Existing Facilities

The location of all existing facilities within the project boundary shown on **Figure 1-2** as described in Section 3.8.

3.11 Areas Disturbed by Previous Operators and Inactive

All previously disturbed areas within the project boundary are currently active.

3.12 Areas Active on or After October 1, 1990

All areas within the project boundary are/were active after October 1, 1990.

3.13 Existing Activities

The project site is not currently authorized to conduct milling operations, and is currently in a condition of temporary care & maintenance, awaiting the authorization to resume operations.

Existing previously authorized activities at the project are discussed below. All existing disturbances and/or activities described below are shown on **Figure 3-1**.

3.13.1 Roads

Roads on the site consist of the main access road from the project gate to the facilities and various interconnected roads within the project boundary. Roads are approximately 25 feet wide and on flat or nearly flat slopes. The existing road disturbance on the site is 1.05 acres.

3.13.2 Yards

Yards are the miscellaneous flat surface disturbance on the site to accommodate parking areas, laydown areas, and building footprint and surrounding areas. The existing yard disturbance area of the site is 5.96 acres and includes the area of the Historic Mammoth Tailings (relocated and covered in 2006).

3.13.3 Miscellaneous Facilities

The existing miscellaneous facilities consist of:

Perimeter Fence
The perimeter fence is chain link and completely surrounds the project site. The length of the fence is 3,490 feet.

Propane Tank
The propane tank is a 1,000-gallon steel tank on a 10 × 30 feet concrete pad located approximately 50 feet southeast of the mill building.

Electrical Power
Facility power requirements are provided by existing overhead power lines on the east side of the property. The lines are owned by Southern California Edison. The power enters the property at the southeast corner and runs underground from the last Edison pole, 80 feet to a transformer on a concrete pad at the southeast corner of Bishop mill site, then underground 100 feet to the first of 5 overhead power poles, then north-westerly 500 feet by overhead poles to the mill building where it enters via the northeast corner.

Water Tank and Domestic Well
Domestic water and makeup water for the mill is supplied by an onsite well located 15 feet from the northeast corner of the Warehouse. The well is constructed of 8-inch PVC, and is cased to 130 feet deep. Historic well production capacity is reported to be 60 gallons per minute (gpm). Static water levels are reported to average 40 feet (bgs). Water is supplied to the mill, the office trailer site and the warehouses via underground PVC piping buried 1 ½ to 2 feet deep. The pipe to the mill and storage tank runs to the mill at the northeast corner. The pipe to the remaining structures is split with a line running to a hose bib at the northwest corner of warehouse and a line that runs due south to a hose bib on the southeast side of the garage, then to the office trailer site.

Concrete Ore Pad

A concrete ore pad measuring 40 ft × 80 ft is located approximately 80 feet northwest of the existing mill building. The north-western ½ of the pad is surrounded by an approximate 5-foot concrete wall. The pad is approximately 8 inches thick.

Monitoring wells

Two groundwater monitoring wells (MW-1 and MW-2) were installed at the site by Mr. Stavish. Well construction details are not available.

Pot Furnace

A pot furnace with a #200 silicon carbide graphite crucible is located on the concrete pad next to the propane tank.

3.13.4 Tailings Impoundment

There is one partially lined tailings impoundment at the site that is approximately 100 ft × 120 ft, and about 20 feet deep. The pond was designed and constructed with a single 40-mil HDPE liner, and currently contains approximately 100 tons tailings from ore processed by Mr. Stavish. The pond has side-slopes at approximately 1H:1V which are keyed into the existing ground on the northwest side, with a constructed embankment on the southeast side. The pond is connected to the mill building with a gravity feed pipe for tailings slurry and a return water line to convey reclaim water back to the mill during operations. A water pipe is also connected to the fresh water tank at the west end of the ore pad.

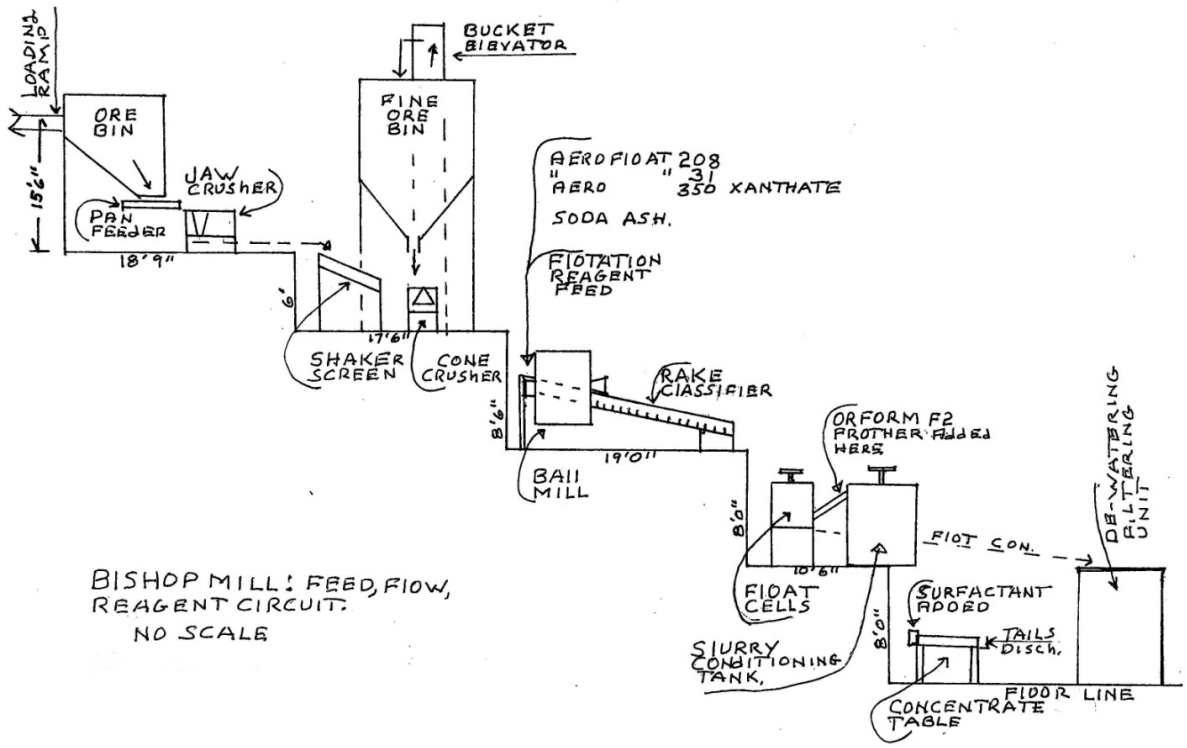
3.13.5 Mill Operation

Screening, grinding, flotation and gravity separation circuits are located within the mill building. The main components include a primary/secondary crusher, mills, classifier, flotation cells, and filtering system. Currently there is an electrolytic winning system, although it will not be used as part of the planned process. The mill process components are shown on the process flow diagram in **Figure 3-2**.

Raw gold-silver-copper ore is imported to the site and stockpiled on the concrete Ore Patio, located just above the mill building. The concrete-lined Ore Patio measures 40 ft × 80 ft, and provides capacity for approximately 1,000 tons of ore storage, or equivalent to supply two weeks of mill feed at full production capacity.

The raw ore is loaded into the ore feed bin (25-tons capacity) by a front end loader, then gravity fed to the mill at the rate of approximately 4 tons per hour, or approximately 96 tons per 24-hour shift.

Figure 3-2 Mill Circuit



The ore is then fed to a primary jaw crusher (10-inch × 20-inch) and crushed to ½ inch diameter, then to a secondary cone crusher to further reduce the rock size to ¼- inch diameter. The ore is then transferred to the fine ore bin (40-ton capacity) via a bucket elevator. Ore is moved from the fine ore bin to a 4-ft × 8-ft Krupp screened discharged mill that reduces the ore feedstock to minus 10 mesh. The discharge will be gravity concentrated on a 10-inch × 12-inch duplex jig. Overflow from the jig will be sent to the rake classifier where the over size (plus #150 mesh) will go to the 5-foot × 4-foot ball mill for further size reduction to minus #150 mesh, and the application of the first flotation reagents in the process circuit.

A general collector, Xanthate 350, is drip fed into the ball mill at the rate of ½ milliliter (pre-diluted in water at ½ lb. per gallon) per ton of ore. Two additional reagents are drip fed into the ball mill at this time: Aero 208 (a free gold collector) and Aero 31 (a sulfide collector) at the rates of one milliliter per minute (pre-diluted at 2 cups per gallon) and ¾ milliliters per minute, respectively (60 and 40 milliliters per ton equivalent). Soda Ash is added to the ball mill as necessary to maintain the pH at +6.8 s.u.

The outflow from the ball mill goes to a rake classifier, which returns the oversize material back to the ball mill for additional grinding. Once all ore is reduced to an acceptable size and size classified in the rake classifier, it is transported to the conditioning tank where the flotation reagent chemicals are allowed to mix for 30 minutes, creating chemically charged ore slurry.

The chemically charged ore slurry is then conveyed to the No. 1 rougher/flotation cell where a frothing agent, Aero Froth, is introduced at the rate of 1/3 milliliter per minute (20 milliliters per ton equivalent), to facilitate the recovery of the metallic particles. The flotation cells, with the addition of frothing agents, create an agitated air-infused froth. The air bubbles collect the chemically charged metallic particles and bring them to the surface of the cell. Each cell in the system collects the frothed metallic particles and transports them to the concentrate/flotation cell. It is following this stage that the barren tailings solids are discharged to the impoundment while the concentrate containing the processing reagents and precious metals is piped to the thickener tank. The thickener tank de-waters the concentrate, allowing most of the additive chemicals to be re-circulated back into the processing system for recycling. The filtered and air dried concentrate is then loaded in drums and shipped off site for refining.

The tailings from the flotation cells are passed from the last flotation cell to the Launderer tray that feeds the Deister gravity recovery shaker table where metallic particles that were too large or heavy to be recovered by the flotation process are recovered in the table high-line concentrate. At the Launderer tray, the reagent Shaklee's Basic H is added at the rate of ½ gallon (diluted to 1/8 cup per gallon) per hour as a surfactant to reduce the water's surface tension and condition the ore for the gravity table. The Basic H breaks down any remaining floatation reagents, allowing the heavy metal particles to sink. The table concentrates are then air dried and shipped off site for refining.

From the table, the residual tailings are piped to the tailings pond (WMU) located adjacent to the mill building. Refer to **Figure 3-2** for a process flow diagram of the mill process.

Throughout the milling process, approximately 1,000 gallons of water is used per ton of ore, or up to 96,000 gallons per day at maximum capacity. A large portion of the processing water is recycled at the thickener tank and the remaining water is reclaimed from the tailings pond (WMU) after the tailings are allowed to settle out. Although most of the water will be recycled, there will be some loss due to evaporation - this will be replenished from the on-site production well, as needed.

3.14 Proposed Operations

The proposed facility operation includes stockpiling, processing via crushing and gravity separation, and disposal of tailings. No mining or chemical (i.e., cyanide) processing of ore will take place at the site, though some chemicals may be used during the gravity separation floatation process. Facility operations are described in this section. Proposed surface disturbances are shown on **Figure 3-3**. Design and construction details of the proposed WMU are provided in the document, *2010 Report of Waste Discharge, Bishop Mill Project, Inyo County, California* (SRK, 2010) – submitted under separate cover.

The proposed operations include the following activities:

1. Importation of ore from off-site sources, stockpiling (and potential pre-screening for oversize material) on the existing concrete Ore Patio;

2. Ore processing, including crushing, screening and flotation, of up to 96 tons of ore per day through the gravity separation mill;

3. Disposal of tailings via slurry deposition within a double-lined pond (WMU) with leachate collection and recovery system (LCRS).

Ore importation and stockpiling incoming ore will arrive in over-the-highway haul trucks and will be off-loaded at the existing concrete Ore Patio and/or the temporary ore stockpile area northwest of the Ore Patio. If larger diameter rocks are present, the ore may be processed through a grizzly screen with a front-end loader where large rocks would be saved for later mechanical breaking or removal from the site and transport back to the ore source location.

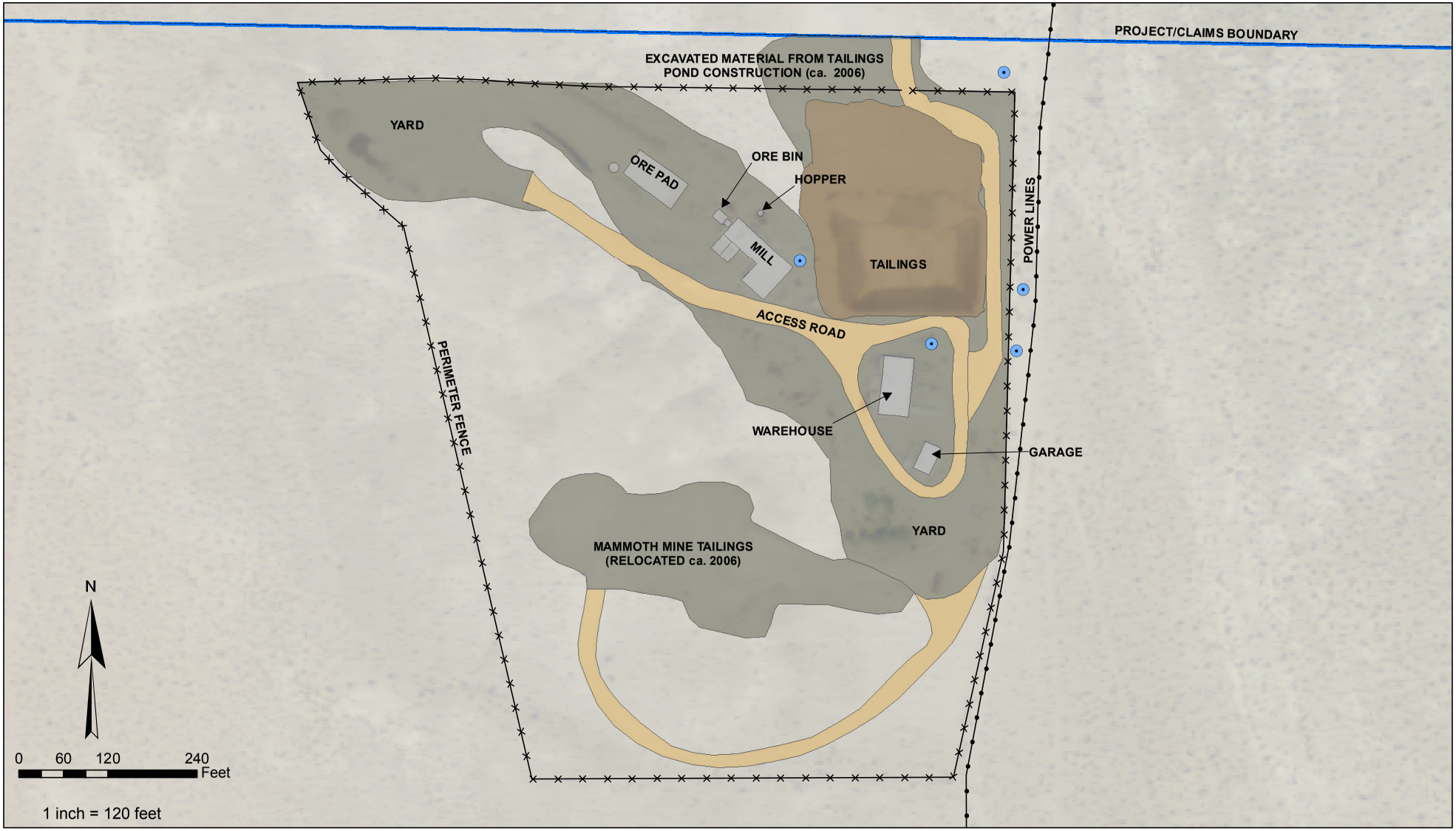
3.14.1 Estimated Acreage of the Proposed Disturbances

The estimated acreages of the existing and proposed surface disturbance is provided in **Table 3-3** and shown on **Figure 3-3**. No disturbances are proposed on private land.

Table 3-3 Estimated Proposed Disturbance

Facility	Existing Public (ac)	Proposed Public (ac)	Total (ac)
Roads	1.05	0.33	1.38
Buildings	0.28	0.008	0.29
*Yards	5.96	0.00	5.96
Tailings	0.00	1.47	1.47
Total	**7.29**	**1.80**	**9.10**

*Note: Includes area for Historic Mammoth Tailings (Relocated and covered in 2006).



EXPLANATION

- Wells
- Project/Claims Boundary
- Power Line
- Fence
- Road
- Structure
- Tailings
- Yard

0877887 BC Ltd.			
DESIGN: MB	DRAWN: ML/JQG	REVIEWED: -	
CHECKED: -	APPROVED: MB	DATE: 12/21/2010	
FILE NAME: PoO_Fig3-3_Proposed_Disturbance_JQG_20101221			

BISHOP MILL
AMENDED PLAN OF OPERATIONS
INYO COUNTY, CALIFORNIA

DRAWING TITLE: PROPOSED DISTURBANCE

DRAWING NO. FIGURE 3-3

SRK JOB NO. 204600-010

REVISION NO. A

Path: H:\CMC Metals (Bishop Mill)\204600-010_Bishop_Mill_Waste_Discharge_Permit\040_Drafting\PoO_Fig3-3_Proposed_Disturbance_JQG_20101221.mxd

3.14.2 Period of Operations

It is anticipated that once the ore is stockpiled onsite and the new tailings impoundment is constructed that the mill will operate 24 hours per day.

3.14.3 Mineralization Estimate

The sources of gold-bearing ore are likely to include the Gold Bug Mine and the Radcliffe Mine in the Ballarat Mining District, located in south-central Inyo County, California. The Gold Bug Mine Consists of a group of 23 Lode Claims which are owned and operated by Thomas Whitman, P.O. Box 1412, Bishop, California. The Radcliffe Mine of Ballarat, Inyo County is located entirely on private land, and is operated by Pruett Ballarat Inc. under a Reclamation Plan approved by Inyo County. The mines are located within approximately 3 miles of each other, and are accessing the same geologic units; the World beater complex. The district is underlain by schist, dolomatic limestone, and gneiss of Precambrian age, which in places have been cut by granitic dikes. The ore deposits consist of quartz veins containing free gold and occasionally abundant sulphides (Clark, 1970).

A sample of ore from the Gold Bug Mine was analyzed by Phelps Dodge Mining Company and the Sunshine Mining Company. The results were reported by Roger W. Smith Consulting Geologist (2005).

The Gold Bug Mine consists of two distinct vein systems and mineralogies. The lower vein system consists of two parallel iron stained white quartz veins with an average strike of N50E, and dips ranging from 20 to 64 degrees to the NW, in Precambrian quartz mica schist, host rock. These veins, through undulatory and faulted, parallel the slope and crop out continuously along the main east-west ridge of the claims. These dominant veins are then but by similar trending though steeper dipping (near vertical) quartz veins. Ore grade gold mineralization occurs in nearly all of the exposed vein quartz and consists of free gold in an iron stained white quartz with calcite and trace copper carbonates, manganese oxides and barite.

The upper vein system consists of several parallel veins striking due north with steep dips (70 to 90) to the west within a Precambrian marble. These veins, though higher topographically are lower stratigraphically than the “lower” vein system. The ore is sulphide in nature containing free gold, and silver, lead, copper and iron sulphides.

Because mining at the Radcliffe mine has not advanced into the gold-bearing material, no descriptions are currently available. It is expected that the gold-bearing ore will be similar to that described for the Gold Bug Mine.

There are no estimates for the mineralization at either mine developed at this time. The purpose of this mining and milling program is to develop information on the gold resources at the mines.

3.14.4 Open Pit Mining Methods

Not Applicable.

3.14.5 Mine Dewatering

Not Applicable.

3.14.6 Waste Rock Storage Areas

Not applicable.

3.15 Processing

The mill processing will be the same as described in Section 3.13.5. The only proposed changes to the existing process circuit is the installation of a Krupp Screen to the front end to increase the efficiency of the grinding process, and the removal of the electro-winning circuit, as only concentrates are currently proposed. The addition of the Krupp Screen will require the construction of a concrete pad on the southwest side of the existing mill building. Incoming ore will be staged on the ore patio pending processing. Once a sufficient amount has accumulated, the mill will be run 24-hours per day, processing at a maximum rate of four tons per hour.

3.15.1 Ore Storage

Incoming ore will be staged on the ore patio. If larger diameter rocks are present, the ore may be processed through a grizzly screen, and the larger rocks would be saved for later mechanical breaking. The capacity of the ore patio is approximately 1,000 tons, which is approximately 3-months supply to the mill.

In order to facilitate construction of a new tailings pond, the tailings in the existing pond (approximately 100 tons) will be excavated and temporarily stored on the Ore Patio. A section of the existing 40-mil liner in the tailings pond will be cut and used on top of the concrete prior to placing the tailings. Another section will be used to cover the tailings pending completion of the new impoundment. The plastic will be secured with ropes and or weights (i.e., tires). An earthen swale will be constructed around the Ore Patio to divert stormwater. Once the new tailings WMU has been constructed and approved for use, the old tailings will be reprocessed through the process circuit.

3.15.2 Crushing and Grinding

The mill utilizes a three stage crushing circuit. The raw ore is loaded into the ore feed bin by a front end loader and gravity fed to the mill at the rate of four tons per hour, or approximately 96 tons per 24-hour shift. The first stage is a 25-horsepower jaw crusher which feeds the crushed ore into a 20-horsepower cone crusher and then into a 30-horsepower ball mill. The final ore grind is 100 to 150 mesh, or approximately 0.0059 to 0.0037 inches in diameter.

At this point, a general collector, Xanthate 350, is drip fed into the ball mill at the rate of ½ milliliter (pre diluted in water at ½ lb. per gallon) per ton of ore. Two additional chemicals are drip fed into the ball mill at this time; Aero 208 (a free gold collector) and Aero 31 (a sulphide collector) at the rates of one milliliter per minute (pre diluted 2 cups per gallon) and ¾ milliliter per minute respectively (60 and 40 milliliters per ton equivalent). Soda Ash will be added to the ball mill as necessary to maintain the pH at +6.8 standard units (s.u).

3.15.3 Flotation and Regrind

The outflow from the ball mill goes to a rake classifier, which returns the oversize material back to the ball mill for additional grinding. Once all ore is reduced to an acceptable size, and classified in the rake classifier, it is transported to the conditioning tank where the flotation reagent chemicals are allowed to mix for 30 minutes, creating chemically charged ore slurry.

The chemically charged ore slurry is then conveyed to the No. 1 rougher/flotation cell where a frothing agent, Aero Froth, is introduced at the rate of 1/3 milliliter per minute (20 milliliters per ton equivalent), to facilitate the recovery of the metallic particles. The flotation cells, with the addition of frothing agents, create an agitated air-infused froth. The air bubbles collect the chemically charged metallic particles and bring them to the surface of the cell. Each cell in the system collects the frothed metallic particles and transports them to the concentrate/flotation cell. It is following this stage that the barren tailings solids are discharged to the impoundment while the concentrate containing the processing reagents and precious metals is piped to the thickener tank. The thickener tank de-waters the concentrate, allowing most of the additive chemicals to be re-circulated back into the processing system for recycling. The filtered and air dried concentrate is then loaded in drums and shipped off site for refining.

The tailings from the flotation cells are passed from the last flotation cell to the Launderer tray that feeds the Deister gravity recovery shaker table where metallic particles that were too large or heavy to be recovered by the flotation process are recovered in the table high-line concentrate. At the Launderer tray, the reagent Shaklee's Basic H is added at the rate of ½ gallon (diluted to 1/8 cup per gallon) per hour as a surfactant to reduce the water's surface tension and condition the ore for the gravity table. The Basic H breaks down any remaining floatation reagents, allowing the heavy metal particles to sink. The table concentrates are then air dried and shipped off site for refining.

From the table, the residual tailings are piped to the tailings pond (WMU) located adjacent to the mill building. Refer to **Figure 3-2** for a process flow diagram of the mill process.

3.15.4 Fresh Water Usage

Throughout the milling process, approximately 1,000 gallons of water is used per ton of ore, or up to 96,000 gallons per day at maximum operating capacity. A large portion of the processing water is recycled at the thickener tank and the remaining water is reclaimed from the tailings pond (WMU) after the tailings are allowed to settle out. Although most of the water will be recycled, there will be

some losses due to evaporation. These losses will be replenished from the on-site production well, as needed.

3.15.5 Tailings Waste Management Unit

The existing tailings facility will be removed and replaced by a new tailings facility designed to comply with California Title 27 regulations for a "Group A" mining waste unit. A schematic of the design elements of the tailings WMU is provided in the document, *2010 Report of Waste Discharge, Bishop Mill Project, Inyo County, California* (SRK, 2010) prepared for the Lahontan Regional Water Quality Control Board (LRWQCB) – and submitted under separate cover to the BLM. The anticipated construction activities associated with the new tailings impoundment are provided below:

1. Removed a section of the 40-mil liner for use at the ore patio to underlay and cover the relocated tailings;
2. Remove the existing tailings (100 tons) and place them on the ore patio;
3. Remove and dispose of the remaining 40-mil liner;
4. Excavate the existing pond area to construct a 100 ft × 190 ft × 10 ft with 3H:1V sideslopes pond with a leak detection and recovery system (LCRS) sump;
5. Moisture conditioning and compaction of exposed in situ liner subgrade to a minimum of 90 percent of maximum dry density at ±2 percent of optimum moisture content per ASTM D1557, modified Proctor testing;
6. Smooth rolling final compacted soil surface and removal of protrusions that could damage liner;
7. Excavation of liner anchor trenches around pond perimeter;
8. Placement of 60-mil GSE HDPE geomembrane secondary liner over compacted fill;
9. Placement of GSE Hypernet geogrid (or equivalent) over pond and sump base and sideslopes;
10. Placement of clean 6-inch diameter PVC pipe and drain gravel in sump;
11. Placement of a piece of geotextile over the gravel-filled sump (to protect primary liner);
12. Placement of 80-mil GSE HDPE geomembrane primary liner over top of sump and pond base and sideslopes;
13. Backfill and compaction of liner anchor trenches; and
14. Construction of a diversion and drainage facility around the tailings pond to divert the 25 year, 24-hour storm in compliance with Title 27 requirements.

3.16 Monitoring

The site monitoring program will consist of quarterly sampling and analysis of groundwater chemistry and periodic collection of off-site ore samples for analysis of leachable solutes to identify potential constituents of interest to area water resources. Monitoring of surface water resources is not applicable, and therefore, is not proposed. In addition, the WMU-LCRS will be periodically inspected for standing water. If water is present in the LCRS, it will be immediately pumped back into the WMU, at which time the Operator will take measures necessary to identify and repair any leaks in WMU primary liner system. Additional information pertaining to groundwater and offsite ore characterization is provided below.

3.16.1 Groundwater Monitoring

There are four (4) monitoring wells at the site (designated MW-1 thru MW-4) and one production well (PW-3). The monitoring wells will be sampled on a quarterly basis until the existing groundwater is sufficiently characterized to form a basis for future detection monitoring efforts, at which time the Operator may propose a shorter list of detection parameters at an alternative monitoring frequency.

Groundwater samples will be submitted to a California certified laboratory for analysis of the constituents identified by the California Department of Health Services Criteria of Inorganic Constituents of Hazardous Waste shown in **Table 3-4**.

Prior to initiation of operations, the Operator will adopt and/or develop standardized forms for the collection and reporting of inspection and monitoring data. For each inspection, measurement, or sample collected, the forms will include, at a minimum, the following information:

- Place, date, and time of inspection, observation, measurement, or sampling;
- Person(s) conducting the inspection, observation, measurement, and/or sample collection;
- Comments regarding any problems/repairs;
- Dates of analyses and name of analytical facility; and
- Analytical results.

These forms will be summarized and provided to the LRWQCB and BLM. The actual data forms will be maintained at the facility and made available for review upon request.

The above data will be summarized in an annual report, which will be submitted to the LRWQCB on or before the 28th day of February of each calendar year.

Table 3-4 Department of Health Services Criteria for Inorganic Compounds of Hazardous Wastes

Substance	Threshold Limit Concentration	
	Soluble (STLC) mg/L In Extract	Total (TTLC) Wet Wt. mg/kg
Antimony and/or Antimony Compounds	**15**	500
Arsenic and/or Arsenic Compounds	5.0	500
Barium and/or Ba Compounds (excl. Barite)	100	10,000
Beryllium and/or Beryllium Compounds	0.75	75
Cadmium and/or Cadmium Compounds	1.0	100
Chromium (VI) Compounds	**5**	500
Chromium and/or Chromium (III) Compounds	560	2,500
Cobalt and/or Cobalt Compounds	80	8,000
Copper and/or Copper Compounds	25	2,500
Fluoride Salts	180	18,000
Lead and/or Lead Compounds (inorganic)	5.0	1,000
Mercury and/or Mercury Compounds	0.2	20
Molybdenum and or Molybdenum Compounds	**350**	3,500
Nickel and/or Nickel Compounds	20	2,000
Selenium and/or Selenium Compounds	1.0	100
Silver and/or Silver Compounds	5	500
Thallium and/or Thallium Compounds	7.0	700
Vanadium and/or Vanadium Compounds	24	2,400
Zinc and/or Zinc Compounds	250	5,000

The Operator will submit quarterly reports on or before the 28th day of the calendar month following the reporting quarter. These reports will include the analytical results.

Analytical methods to be employed will conform to 40CFR§136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants*. Sample collection, handling, preserving, and transporting of samples will be conducted in conformance with established U.S. Environmental Protection Agency (EPA) protocols, as appropriate.

Hydrogen ion activity (pH) analyses will be performed in the field, as well as by the analytical laboratory, to accuracy reliable to 0.05 standard units (s.u.). The analytical method for constituents with maximum contaminant levels (MCL) shall have a detection level less than or equal to one-half of the MCL. All other analyses shall be reported in mg/L, reliable to two significant digits. A laboratory certified by the State of California will perform all analyses.

3.16.2 Geochemical Characterization of Off-Site Ore

Monitoring of the beneficiation process will include the routine characterization of the ore that is transported from off site to the Bishop Mill facility. Representative ore samples for each source and/or lithological variant of ore that is shipped to the site will be collected for analysis for the same constituents identified in **Table 3-4**, prior to processing. Each sample will be submitted to a certified laboratory for leachable solutes (Meteoric Water Mobility Procedure and Acid Base Accounting analyses or equivalent).

3.17 Exploration

No exploration at the site is proposed.

3.18 Work Force

Up to seven workers will be employed at the facility during full time operations.

3.19 Infrastructure

3.19.1 Electrical Power and Generator Backup

Electrical power is supplied by Southern California Edison via an existing power line. The mill operates on 440-volt, three-phase power. Other facilities on site operate on 220- and 110-volt power.

3.19.2 Water Supply

Water is supplied via an onsite production well PW-3.

3.19.3 Site Layout and Support Facilities

Support Facilities
No changes are proposed to the support facilities at the site.

Mill Reagent Storage Yard
All mill reagents are stored within the mill building and no reagent storage yard is proposed.

Warehouse
The existing warehouse is used for maintenance and storage of incidental equipment.

Growth Media Salvage and Stockpiles
There are no growth media stockpiles at the site.

Fuels and Reagents
All mill related reagents are stored within the mill building. A portable, stand-mounted 1,000-gallon tank will be placed at the site to contain diesel for use in the site equipment. The stand will be placed in an area with secondary containment (lined with plastic) to contain any leaks or spills. All reagents

used at the facility are listed in **Table 3-5** below. All chemicals not listed on this table will be removed from the site prior to commencing operation. If additional reagents are needed a revision of this list will be submitted to the LRWQCB and the BLM. Copies of the Material Safety Data Sheets (MSDS) for each chemical will be maintained onsite for inspection.

Table 3-5 Reagents, Volumes and Shipments

Reagents	Storage	Amount/Delivery	Trucks/Year	Reportable Quantities (40 CFR 302.4)
Aero Float 208 Promoter	55 gal. Drum	55 gal. Drum	6	
Aero Float 31 Promoter	55 gal. Drum	55 gal. Drum	6	
Xanthate 350	55 gal. Drum	55 gal. Drum	6	
Shaklee Basic “H”	500 lbs	500 lbs	6	
Sodium Carbonate (Soda Ash)	500 lbs	500 lbs	6	
Orfom F2 Frother	55 gal. Drum	55 gal. Drum	6	
Methyl Iso Butyl Cobonal	55 gal. Drum	55 gal. Drum	6	
Pine Oil	55 gal. Drum	55 gal. Drum	6	
Highway Diesel	500 Gallons	500 Gallons	12	25 gallons unless sheen on water
Propane	1,000 gal. Tank	1,000 gal.	12	
Motor Oil	50 quarts	50 quarts		
Used Oil	55-gal drum	55-gal drum	2	25 gallons unless sheen on water
Used Coolant	55-gal drum	55-gal drum	2	

3.20 Committed Practices

3.20.1 Air Emissions

Appropriate air quality permits will be obtained for project facilities and land disturbance requiring permits from the Great Basin Unified Air Pollution Control District. As per regulations, the project air quality permit to operate must be authorized by the in writing prior to project commissioning.

In general, dust control will provide for water application of roads and other disturbed areas. Fugitive emissions in the process area will be controlled at the crusher and conveyor drop points by using water sprays where necessary. Where required, pollution control devices installed by equipment manufacturers will control combustion emissions. Pollution control equipment will be installed, operated and maintained in good working order to minimize emissions.

3.20.2 Cultural Resources

A cultural resources survey has been performed over all of the project area. Avoidance is the BLM-preferred treatment for preventing effects to historic properties [a historic property is any prehistoric

or historic site eligible to the National Register of Historic Places (NRHP)] or unevaluated cultural resources.

If avoidance is not possible, or is inadequate to prevent adverse effects, the Operator will undertake data recovery at the affected historic sites in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, 48 CFR §44716 (September 29, 1983), as amended or replaced. If an unevaluated site cannot be avoided, additional information will be gathered and the site will be evaluated. If the site does not meet eligibility criteria, no further cultural work will be performed. If the site meets eligibility criteria, a data recovery plan or appropriate mitigation will be completed under the Programmatic Agreement. Once data recovery has been completed at a historic site, the BLM will issue a Notice to Proceed for work at that location.

3.20.3 Erosion and Sediment Control

Best Management Practices (BMPs) will be used to limit erosion and reduce sediment in precipitation runoff from project facilities and disturbed areas during construction, operations, and initial stages of reclamation. BMPs may include, but are not limited to, diversion and routing of stormwater using accepted engineering practices, such as diversion ditches, and the placement of erosion control devices such as sediment traps, and rock and gravel cover.

Revegetation of disturbed areas will reduce the potential for wind and water erosion. Following construction activities, areas such as cut and fill embankments and growth media stockpiles will be seeded as soon as practical and safe. Concurrent reclamation will be maximized to the extent practical to accelerate revegetation of disturbed areas. All sediment and erosion control measures will be inspected periodically, and repairs performed as needed.

3.20.4 Waters of the State

There are no Waters of the State within the project boundary.

3.20.5 Hazardous Materials

Hazardous materials will be transported, stored, and used in accordance with federal, state, and local regulations. Employees will be trained in the proper transportation, use, and disposal of hazardous materials. Used solvent, liquids drained from aerosol cans, accumulations of mercury fluorescent lights and used antifreeze may be regulated by Resource Conservation and Recovery Act (RCRA).

3.20.6 Solid Waste

The Operator does not currently operate a landfill at the project site. Instead, all solid waste is collected and transported to a permitted solid waste management facility for proper disposal. Regardless, employee training will include appropriate waste management practices, such as the definition of allowable wastes that can be placed in municipal landfills, management of used oil filters, oily rags, fluorescent light bulbs, aerosol cans, and other regulated waste.

3.20.7 Growth Media/Soil Salvage and Storage

There are no growth media stockpiles at the site. Excess material not needed for construction of the tailings WMU will be placed nearby for use after closure.

3.20.8 Wildlife

Operators will be trained to monitor the mining and process areas for the presence of larger wildlife such as deer and antelope as well as avian and other terrestrial wildlife. The Operator will operate in accordance with established wildlife protection policies that will prohibit feeding or harassment of wildlife.

3.20.9 Protection of Survey Monuments

To the extent practicable, the Operator will protect all survey monuments, witness corners, reference monuments, bearing trees, and line trees against unnecessary or undue destruction, obliteration or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, the Operator would immediately report the matter to the authorized officer. Prior to obliteration, destruction, or damage during surface disturbing activities, the Operator will contact the BLM to develop a plan for any necessary restoration or re-establishment activity. The Operator will bear the cost for the restoration or re-establishment activities including the fees for a Professional Land Surveyor.

3.20.10 Housing

No worker housing will be provided at the site. Housing is available nearby in the towns of Bishop, Laws, and Chalfant, CA, all within 10 miles of the site.

4 PROPOSED RECLAMATION

Reclamation of disturbed areas resulting from activities outlined below will be completed in accordance with BLM and California Surface Mining and Reclamation Act regulations. The purpose of Subpart 43 CFR 3809 – Surface Management is to prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws. Anyone intending to develop mineral resources on public lands (including mineral beneficiation on mill-site claims) must prevent unnecessary or undue degradation of the land and reclaim disturbed areas. This subpart establishes procedures and standards to ensure that operators and mining claimants meet this responsibility and provide for the maximum possible coordination with appropriate state agencies to avoid duplication and to ensure that operators prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws.

The project disturbance areas are summarized in **Table 3-3**. The areas proposed for disturbance can be divided into the following: roads, buildings, tailings and yard areas.

4.1 Measures Taken to Prevent Unnecessary and Undue Degradation

Surface management regulations 43 CFR §3809.420 establish the performance standards that apply to this Plan of Operations. Measures to be taken to prevent unnecessary and undue degradation at the proposed project are listed below. These measures will be implemented during the design, construction, operation, and closure of the project:

- All regulated components of the facility will be designed and constructed to meet or exceed LRWQCB and BLM design criteria;
- Roads will be constructed to the minimum necessary width;
- Regulated wastes will be managed according to relevant regulations;
- Surface disturbance will be minimized while optimizing the recovery of mineral resources;
- Fugitive dust and other air emissions from disturbed and exposed surfaces will be controlled in accordance with regulations and permits;
- The operator will comply with applicable federal and state water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 *et seq*.);
- Surface water drainage control will be accomplished by diverting stormwater, isolating facility runoff, and minimizing erosion;
- Where suitable as a growth media, surface soils will be managed as a growth media resource and removed, stockpiled, and replaced during reclamation;
- A reclamation plan will be implemented which addresses earthwork and recontouring, revegetation and stabilization, detoxification and disposal, and monitoring operations

necessary to satisfactorily reclaim the proposed disturbance including: roads, process ponds, tailings facilities, stockpiles, buildings and equipment.

4.1.1 Growth Media

Where possible, growth media will be salvaged prior to construction of any mine component. Growth media will be recovered, targeting minimum reclamation cover volumes for nearby components. Growth media will be hauled or otherwise placed to facilitate preservation through mining activities (e.g., stockpiles), and stockpiles will be strategically located to reduce reclamation costs associated with reuse.

Since all proposed activities are taking place on previously disturbed areas, it is not anticipated that minimal growth media will be available for salvage.

4.1.2 Revegetation, Seeding and Planting

Reclaimed surfaces will be revegetated to control runoff, reduce erosion, provide forage for wildlife and livestock, and reduce visual impacts. Seed will be applied with either a rangeland drill or with a mechanical broadcaster and harrow, depending upon accessibility. Seedbed preparation and seeding will take place in the fall after grading and top soiling (if necessary) of reclaimed areas. A final reclamation seed mix will be developed in coordinated with the BLM.

4.2 Proposed Reclamation Schedule

The proposed project will be active for up to five years of active milling. One year beyond that date may be anticipated for closure activities, final reclamation, and groundwater monitoring. This schedule may be modified based on the rate of milling and future commodities prices.

Concurrent reclamation will be ongoing over the life of the mine in areas that have reached their final configurations.

4.3 Post-Mining Land Use and Reclamation Goals

Major land uses occurring in the project area include mineral exploration and development (including milling), livestock grazing, wildlife habitat and dispersed recreation. Following closure, the project area will support the multiple land uses of livestock grazing, wildlife habitat and recreation. The operator will work with the agencies and local governments to evaluate alternative land uses that may provide long-term socio-economic benefits from the mine infrastructure.

The objectives of the reclamation program are as follows:

- To provide a stable post-mining landform that supports defined land uses.
- To minimize erosion damage and protect water resources through control of water runoff and stabilization of components.

- To establish post-reclamation surface soil conditions conducive to the regeneration of a stable plant community through stripping, stockpiling and reapplication of soil material.
- To revegetate disturbed areas with a diverse mixture of plant species in order to establish long-term productive plant communities compatible with existing land uses.
- To maintain public safety by stabilizing or limiting access to landforms that could constitute a public hazard.

4.4 Post-Mining Contours and Topography

The final grading plan for the project is designed in part to minimize the visual impacts of the disturbance proposed by the operator. Slopes will be regraded with mobile equipment (examples include, dozers, trucks, loaders, scrapers) to blend with surrounding topography, interrupt straight-line features and facilitate revegetation, where practical.

4.5 Final Gradient Slope Stability Technical Criteria

4.5.1 Open Pits

Not applicable

4.5.2 Waste Rock Storage Areas

Not applicable

4.5.3 Erosion Stability

Soils salvaged from facility components, as well as some of the near-surface alluvial material, may be used as soil cover materials during reclamation. Recent similar experience indicates that the use of erosion control BMPs during reclamation activities will greatly reduce the sediment migration from the facilities until vegetation can be established. The operator will maintain BMPs at the base and (where applicable) diversion at the head of those reclaimed slopes having excessive erosion until vegetation has established. Regraded slopes will include slight breaks in slopes to reduce overall slope lengths to reduce surface water flow velocities and erosion.

4.6 Reclamation of Pit Backfill

Not applicable

4.7 Reclamation of Dams for Tailings Ponds

4.7.1 Residual Un-Processed Ore

If stockpiled ore remains unprocessed after operations have terminated, the residual ore material will either be sold and transported off-site, or will be disposed of in the WMU and covered with a minimum of 24 inches of growth medium.

4.7.2 Neutralization of Leached Residues

The liner of the WMU will remain for reclamation and permanent closure of the facility. Water remaining in the WMU will be allowed to evaporate. The remaining tailings will be allowed to dry and will then be covered with a minimum of 24 inches of growth medium and seeded.

4.7.3 Tailings WMU Reclamation

Upon cessation of milling, any remaining water in the new tailings WMU will be allowed to evaporate. In accordance with 27CCR 22510(l) Tailings Pond Closure, a 24-inch foundation layer of cover material will be placed on the tailings. This will be overlain by a 60-mil Linear Low Density Polyethylene (LLDPE) membrane to create an impermeable layer over the tailings. An 8-ounce geotextile material will be placed over the entire surface, covered with a minimum of 18 inches of growth media, and the surface will be regraded to drain water away from the center of the WMU at a nominal 5% grade. The surface will be seeded with the reclamation seed mix. Soils salvaged from stockpiled excess soils from pond construction and the near-surface alluvial material may be used as soil cover materials during reclamation.

4.8 Reclamation of Impoundments

See discussion for tailings.

4.9 Reclamation of Process Ponds

No process ponds are proposed.

4.10 Constraints on Estimated Time to Complete Reclamation

The estimated time to complete reclamation assumes average precipitation occurs during the years following reseeding. Periods of drought could delay revegetation. Reclamation activities (regrading and revegetation) are expected to be completed within about one year.

4.11 Proposed Reclamation Techniques of Road Features

Roads without a defined post-mining use will be reclaimed concurrently as they are no longer needed for access. Where the original topography exceeds 3H:1V, the cross-section will be blended to ensure no steeper than 2.5H:1V slopes. Roads and safety berms will be recontoured or regraded to approximate the original contour using excavators or dozers as appropriate.

Some access roads will be needed to access monitoring points. As monitoring is completed and the facility is considered to be closed, the access road will be reclaimed. Upon completion of recontouring the surface will be seeded with the reclamation seed mix.

4.12 Measures to Minimize Loading of Sediment to Surface Waters

There are no lakes or perennial streams in the immediate vicinity of the project site and no specific measures to contain sediment are proposed, (other than successful surface stabilization via revegetation. During the establishment of vegetation, the Operator will construct sediment collection facilities as required to capture (for subsequent replacement), sediments eroded from the slopes.

The Operator proposes to convey runoff from reclaimed areas and upstream undisturbed areas through the project site in a manner which would protect the reclaimed areas and prevent degradation of downstream water quality. The drainage and sediment control plan is designed to require no maintenance. If present, natural drainages would be re-established, and existing natural channels would be used.

4.12.1 Revegetation

Areas requiring revegetation would be seeded by hand broadcasting. Seedbed preparation and seeding would take place in the fall after regrading on reclaimed areas.

Alternatively, seeding may be done with the Cat Challenger with a large cyclone broadcast seeder. The seed would then be covered using a wire harrow pulled by the Challenger. Seeding depths would range from ¼ to ¾ inches. Most grasses and forbs would not exceed ½ inch depth. Areas requiring additional seedbed preparation would be scarified with the wire harrow prior to seeding. Hand broadcast seed would be covered by harrowing, raking or other site specific appropriate methods.

4.12.2 Diversion Features and Swales

All diversion features and swales to control erosion after closure will be designed to limit erosion and scouring, and to discharge flows resulting from a 25 year, 24 hour storm. This design event was chosen because these facilities are considered to be temporary sediment control structures, which will only be required during mining activities and during the period required for establishing vegetation.

4.12.3 Sediment Traps

Sediment traps are considered to be temporary sediment control structures, which will only be required during operations, reclamation activities and the period required for establishing vegetation. These facilities will be designed to safely accommodate flows generated by a 25 year - 24 your design storm. During operations, these facilities will be periodically maintained. Although unnecessary for sediment control after revegetative success, the sediment traps will provide a means of minimizing sediment migration from natural upgradient erosion until full, where after natural regrowth is expected to stabilize the surface.

4.12.4 Springs

There are no springs within the project boundary.

4.13 Disposition of Buildings and Ancillary Facilities

All buildings and facilities associated with the project would be removed from the site during the salvage and site demolition phase. Those building materials that are suitable for salvage, and meet the solid waste disposal criteria, would be disposed of in a Class III landfill located in Bishop. Concrete foundations and stem walls would be demolished to natural grade, broken up to allow drainage through slab foundations and buried in place. Fill would be used to fill subgrade portions of the foundations.

Prior to demolition the mill facility would be rinsed with fresh water to remove any residual ore and reagents. The rinse water would be directed to the tailings pond and allowed to evaporate. The reclamation cost estimate, however, includes costs associated with the demolition and disposal of all buildings and ancillary facilities to establish a land use similar to adjacent undisturbed lands. All reagents, chemicals and other hazardous or toxic chemicals will be removed from the site. Any above surface pipelines will be removed. Underground pipelines will be capped and left in place. Power poles will be cut off at ground level and removed. Perimeter fences will also be removed.

4.14 Surface Facilities or Roads not Subject to Reclamation

As determined by BLM, any roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions will not be reclaimed at mine closure. Narrower access roads may remain on large haul roads after they have been re-contoured.

4.15 Reclamation of Open Pit Mine

Not applicable

4.16 Reclamation of Underground Mines

Not applicable

4.17 Post-Reclamation Monitoring and Maintenance

Following mine closure, berm and sign maintenance, site inspections, and any other necessary monitoring for the period of reclamation responsibility, will be conducted. Monitoring of revegetation success will be conducted annually until the revegetation standards have been met and will include noxious weed monitoring and abatement as necessary.

Post-mining groundwater quality will be monitored according to the requirements established by LRWQCB with the goal of demonstrating the site poses no potential to degrade waters of the state.

Revegetation monitoring will be conducted for a minimum of three years following implementation of revegetation activities or until revegetation success has been achieved. Revegetation monitoring will occur based on seasonal growth patterns, precipitation, and weather conditions.

Noxious weed monitoring and control will be implemented for a three-year period.

4.18 Reclamation for Instream Mining

Not applicable.

4.19 Statement of Effect of Proposed Reclamation of Future Mining

Site reclamation will have little effect on future mining in the area, although plant facilities would have to be recommissioned or rebuilt if post-reclamation mining (milling) were to occur.

4.20 Drill Hole Plugging and Water Well Abandonment

Mineral exploration and development drill holes, monitoring, and production wells will be abandoned in accordance with applicable rules and regulations. Boreholes will be sealed to prevent cross contamination between aquifers and the required shallow seal will be placed to prevent contamination by surface access.

Monitoring wells will be maintained until the operator is released of this requirement by the LRWQCB. These wells will then be plugged and abandoned according to the requirements of the State Engineer.

4.21 Concurrent Reclamation

All areas of the site will remain active during operation. Concurrent reclamation is not anticipated at this time.

4.22 Measures to be taken during Extended Periods of Non-operation

The Operator does not anticipate planned closures of the project. In the event that continuous, full-scale production is interrupted due to economic considerations or unforeseen circumstances, interim reclamation may be initiated. Interim reclamation is outlined below:

- Power Lines: The power line would be inspected regularly and maintained as necessary.
- Roads: The main access road would receive maintenance, as necessary.
- Erosion Control Measures: All erosion control measures and BMPs would be regularly inspected and maintained.
- Buildings: All building, equipment and support facilities would be protected from public access and maintained as necessary.

- Mobile equipment not needed elsewhere would be stored on site for occasional use for maintenance of facilities (erosion control, road maintenance etc.).

The operator will notify the BLM in writing within 90 days after any project suspension that is anticipated to last longer than 120 days. The operator will identify the nature and reason for the suspension, the duration of the suspension, and the events expected to result in either resumption of mining or the abandonment of the project.

5 Assumption of Reclamation Responsibility

The applicant, 0877887 BC Ltd., hereby agrees to assume responsibility for the reclamation of any surface area affected by the mining operations at the Bishop Mill.

6 Estimate of Reclamation Cost

Appendix A contains a reclamation cost estimates for the Bishop Mill Site, including the estimate for reclamation of the anticipated full operation which is the amount that CMC will post to obtain authorization for resumption of milling. The estimates have been calculated using the Nevada Standardized Reclamation Cost Estimator (SRCE) version 1.1.2. The total direct and indirect costs for reclamation of the Bishop Mill is **$158,269**.

7 Acknowledgments

A. It is Understood that should the Nature of the Operation Change a Modified or Supplemental Plan of Operations and Reclamation may be required.

B. It is understood that Approval of this Plan of Operation and Reclamation does not Constitute: (1) Certification of Ownership to Any Person Named Herein; and (2) Recognition of the Validity of any Mining Claim Herein.

C. It is Understood that a Bond Equivalent to the Actual Cost of Performing the Agreed upon Reclamation Measures will be Required before this Plan can be approved. Bonding and Any Bond Reduction Amounts will be Set on a Site-Specific Basis by the Lead Agency in Coordination with the Cooperating Agencies.

D. It is Understood that Approval of this Plan does not Relieve me of my Responsibility to comply with any other Applicable State or Federal Laws, Rules or Regulations.

E. It is Understood that any Information Provided with this Plan that is Marked Confidential will be Treated by the Agency in Accordance with that Agency's Laws, Rules and Regulations.

I/We have Reviewed and Agree to Comply with all Conditions in the Plan of Reclamation and Operations, including the Recommended Changes and Reclamation Requirements. I/We Understand that the Bond will not be Released until the BLM or the State Agency in Charge gives written Approval of the Reclamation Work.

Operator (or Authorized Official)

Dec. 21, 2010
Date

8 Bibliography

Bateman, P. C. (1965). *Geology and Tungsten Mineralization of the Bishop District California.* U.S. Geological Survey .

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Dept. of Agriculture, Natural Resources Conservation Service. (1996). *Soil Survey of Benton-Owens Valley Area, California, Parts of Inyo and Mono Counties.* National Cooperative Soil Survey.

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9 Appendices

Appendix A - Reclamation Bond Cost Calculation

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 1.1.2 (updated 03 February, 2008)

COST DATA FILE INFORMATION

File Name:	Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Cost Data File:	cost_data-std-nv2010.xls
Cost Data Date:	August 1, 2010
Cost Data Basis:	Standardized Data
Author/Source:	Nevada Division of Environmental Protection (NDEP) & NV BLM

PROJECT INFORMATION

Project Name:	Bishop Mill Project
Date of Submittal:	December 21, 2010
Select One:	☐ Notice or Sm Exploration Plan ☐ Lg Exploration Plan ☒ Mine Plan of Operations
Select One:	☐ Private Land ☒ Public or Public/Private
Cost Basis Category:	Southern Nevada
Cost Basis Description:	**Clark, Esmeralda, Lincoln and Nye Counties**

This version has been validated and verified by the NDEP and BLM for use in Nevada as of 04 February 2008.

NEVADA STANDARDIZED RECLAMATION BOND CALCULATION - SUMMARY

Project Name: Bishop Mill Project
Project Date: December 21, 2010
Model Version: Version 1.1.2 (updated 03 February, 2008)
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls

A. Earthwork/Recontouring	Labor (1)	Equipment (2)	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$239	$153	$0	$392
Well Abandonment*				$0
Pits			N/A	$0
Underground Openings	$0	$0	$0	$0
Process Ponds	$0	$0	$0	$0
Heaps	$0	$0	$0	$0
Waste Rock Dumps	$0	$0	$0	$0
Landfills	$0	$0	$0	$0
Tailings	$440	$1,374	$0	$1,814
Foundation & Buildings Areas	$975	$2,035	$0	$3,010
Yards, Etc.	$597	$935	$0	$1,532
Drainage & Sediment Control	$0	$0	$0	$0
Other** ***Well Abandonment (User Sheet 2)***	***$2,471***	***$6,885***	***$607***	$9,963
Subtotal	$4,722	$11,382	$607	$16,711
Mob/Demob* ***NV Worksheet (User Sheet 1)***	$724	$724	$724	$2,173
Subtotal "A"	**$5,446**	**$12,107**	**$1,331**	**$18,884**

B. Revegetation/Stabilization	Labor (1)	Equipment (2)	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads				$0
Roads	$116	$100	$417	$633
Well Abandonment				N/A
Pits				$0
Underground Openings				N/A
Process Ponds				$0
Heaps				$0
Waste Rock Dumps				$0
Landfills				$0
Tailings	$131	$113	$475	$719
Foundation & Buildings Areas	$420	$361	$150	$930
Yards, Etc.	$500	$430	$1,803	$2,733
Drainage & Sediment Control	$0	$0	$0	$0
Other**				$0
Subtotal "B"	**$1,167**	**$1,004**	**$2,845**	**$5,015**

C. Detoxification/Water Treatment/Disposal of Wastes**	Labor (1)	Equipment (2)	Materials	Total
Process Ponds/Sludge*				$0
Heaps*				$0
Dumps (Waste & Landfill)*				$0
Tailings*				$0
Surplus Water Disposal*				$0
Monitoring*				$0
Miscellaneous*				$0
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$625
Hazardous Materials				$1,559
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
Other**				$0
Subtotal "C"	**$0**	**$0**	**$0**	**$2,184**

D. Structure, Equipment and Facility Removal	Labor (1)	Equipment (2)	Materials	Total
Foundation & Buildings Areas	$36,006	$24,045	$0	$60,051
Other Demolition	$1,013	$1,289	$0	$2,302
Equipment Removal	$0	$0	$0	$0
Fence Removal	$10,470	$3,316		$13,786
Fence Installation				$0
Pipe & Culvert Removal				$0
Powerline Removal	$3,412			$3,412
Transformer Removal				$0
Rip-rap, rock lining, gabions				$0
Other Misc. Costs				$0
Other**				$0
Subtotal "D"	**$50,901**	**$28,650**	**$0**	**$79,551**

E. Monitoring	Labor (1)	Equipment (2)	Materials	Total
Reclamation Monitoring and Maintenance	$3,724	$167	$285	$4,176
Ground and Surface Water Monitoring	$3,135	$520	$2,970	$6,625
Subtotal "E"	**$6,859**	**$687**	**$3,255**	**$10,801**

F. Construction Management & Support	Labor	Equipment (2)	Materials	Total
Construction Management			N/A	$0
Construction Support	$0	$0	$0	$0
Road Maintenance	$0	$0		$0
Other**				$0
Subtotal "F"	**$0**	**$0**	**$0**	**$0**

G. Operational & Maintenance Costs	Labor (1)	Equipment (2)	Materials (3)	Total
Subtotal A through F	**$64,372**	**$42,447**	**$7,431**	**$116,435**

* Costs estimated outside of standardized model - additional documentation required.
** Other Operator supplied costs - additional documentation required.

NEVADA STANDARDIZED RECLAMATION BOND CALCULATION - SUMMARY

Project Name: Bishop Mill Project
Project Date: December 21, 2010
Model Version: Version 1.1.2 (updated 03 February, 2008)
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls

Indirect Costs				Include?	Total
1. Engineering, Design and Construction (ED&C) Plan (7)					
2. Contingency (8)					$11,644
3. Insurance (9)		$966			$966
4. Performance Bond (10)					$3,493
5. Contractor Profit (11)					$11,644
6. Contract Administration (12)					$11,644
7. BLM Indirect Cost (13)					$2,445
Subtotal Add-On Costs					**$41,834**
Grand Total					**$158,269**

Administrative Cost Rates (%)					
	Cost Ranges for Indirect Cost Percentages				
	<=	<=	<=	>	
1. Engineering, Design and Construction (ED&C) Plan (7)	$1,000,000	$25,000,000		$25,000,000	Notice Level
Variable Rate	8%	6%		4%	0%
	<=	<=	<=	>	
2. Contingency (8)	$500,000	$5,000,000	$50,000,000	$50,000,000	Notice Level
Variable Rate	10%	8%	6%	4%	0%
3. Insurance (9)	1.5%	of labor costs			
4. Bond (10)	3.0%	of the O&M costs if O&M costs are >$100,000			
5. Contractor Profit (11)	10%	of the O&M costs			
	<=	<=	<=	>	
6. Contract Administration (12)	$1,000,000	$25,000,000		$25,000,000	
Variable Rate	10%	8%		6%	
7. BLM Indirect Cost (13)	21%	of Contract Administration			

RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES

1. Federal construction contracts require Davis-Bacon wage rates for contracts over $2,000. Wage rate estimates may include base pay, payroll loading, overhead and profit. To avoid double counting of any of the identified administrative costs the operator must itemize the components of their labor cost estimates or provide BLM with a signed statement, under penalty of USC 1001, that identifies what specific administrative costs are included in the quoted hourly rate.

2. The reclamation cost estimate must include the estimated plugging cost of at least one drill hole for each active drill rig in the project area. Where the submitted Notice or approved Plan of Operations calls for drill holes to be plugged, but doesn't specifically require the drill holes be plugged before the drill rig has been moved from the drill pad, the reclamation cost estimate must include the plugging cost for those drill holes. For all drill holes and wells scheduled to be left open, the estimated plugging cost must be included in the reclamation cost estimate. Where the approved Plan of Operations proposes immediate mining through an area where the drilling is to occur, and the cost of the post-mining reclamation is included in the reclamation cost estimate, the cost estimate does not need to include the plugging costs for those drill holes.

3. Miscellaneous items should be itemized on accompanying worksheets.

4. Fluid management should be calculated only when mineral processing activities are involved. Fluid management represents the costs of maintaining proper fluid management to prevent overflow of solution ponds through premature cessation or abandonment of operations. Calculate a minimum six month direct cost estimate which includes power, supplies, equipment, labor and maintenance.

5. Handling of hazardous materials includes the cost of decontaminating, neutralizing, disposing, treating and/or isolating all hazardous materials used, produced, or stored on the site.

6. Any mitigation measures required in the Plan of Operations must be included in the reclamation cost estimate. Mitigation may include measures to avoid, minimize, rectify and reduce or eliminate the impact, or compensate for the impact.

7. Engineering, design and construction (ED&C) plans are often necessary to provide details on the reclamation needed to contract for the required work. To estimate the cost to develop an ED&C plan use 4-8% of the O&M cost. Calculate the ED&C cost as a percentage of the O&M cost as follows: up to and including $1 million, use 8%; over $1 million to $25 million, use 6%; and over $25 million, use 4%. Inclusion of a line item for the development of an ED&C plan may not be necessary for small operations, such as notice-level exploration. With small, uncomplicated reclamation efforts contracting may be able to proceed without developing an ED&C plan. [ED&C is automatically eliminated if "Notice" is selected on the Property Information Sheet]

8. A contingency cost is included in the reclamation cost estimation to cover unforeseen cost elements. Calculate the contingency cost as a percentage of the O&M cost as follows: up to and including $500,000, use 10%; over $500,000 to $5 million, use 8%; over $5 million to $50 million, use 6%; and greater than $50 million, use 4%. As with the ED&C cost, inclusion of a contingency cost may not be necessary for small operations, such as notice-level exploration.

9. Insurance premiums are calculated at 1.5% of the total labor costs. Enter the premium amount if liability insurance is not included in the itemized unit costs.

10. Federal construction contracts exceeding $100,000 require both a performance and a payment bond (Miller Act, 40 USC 270et seq.). Each bond premium is figured at 1.5% of the O&M cost. Enter the sum of both premium costs on this line.

11. For Federal construction contracts, use 10% of estimated O&M cost for the contractor's profit.

12. To estimate the contract administration cost, use 6 to 10% of the operational and maintenance (O&M) cost. Calculate the contract administration cost as a percentage of the O&M cost as follows: up to and including $1 million, use 10%; over $1 million to $25 million, use 8%; and greater than $25 million use 6%.

13. BLM's indirect cost rate is 21% of BLM's contract administration costs.

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Roads - Cost Summary

		Labor	Equipment	Materials	Totals
	Grading Costs			N/A	
	Cover Placement Cost			N/A	**$0**
	Ripping Cost	$239	$153	N/A	**$392**
	Subtotal Earthworks	***$239***	***$153***		***$392***
	Revegetation Cost	$116	$100	$417	**$633**
	TOTALS	**$355**	**$253**	**$417**	**$1,025**

Color Code Key	
User Input - Direct Input	***Direct Input***
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

Maximum grade allowed for dozer: 30.0 %

Roads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each road

	Facility Description		Physical (1)						User Overrides		Growth Media		
	Description (required)	ID Code	Underlying Ground Slope % grade	Ungraded Slope _H:1V	Cut Slope degrees	Road Width ft	Road Length ft	Slope Replacement Percent %	Regrade Volume (if calculated elsewhere) cy	Disturbed Area (if calculated elsewhere) acres	Growth Media Thickness in	Distance to Growth Media Stockpile ft	Slope from Road to Stockpile % grade
1	***Site Roads***		***2.0***	***3.0***	***70.0***	***2,400***	***25***	***100%***		***1.38***			

(1) All Physical parameters must be input even if manual overrides for volume or area are used.

Roads - User Input (cont.)

		Haul Road Safety Berms				
	Description (required)	Berm Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Number of Berms (2) (1 or 2 sides)
1	***Site Roads***					

(2) Enter 1 if berm on only one side of road, 2 if both sides of road are bermed.

Roads - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each road

		Grading				Growth Media		Revegetation				
	Description (required)	Dozing Material Condition (select)	Cut Material Type (select)	Recontouring Equipment Fleet(3) (select)	No. of Excavators if grade >30% (select)	Growth Media Material Type (select)	Cover Placement Equipment Fleet (select)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarifying/ Ripping? (select)	Ripping Fleet (select)
1	***Site Roads***							**Mix 1**			**Yes**	**Small Dozer**

(3) If original slope >30% "optimize" option will only select among the excavator options.

Roads - Calculations

Regrading Volume and Footprint Volume

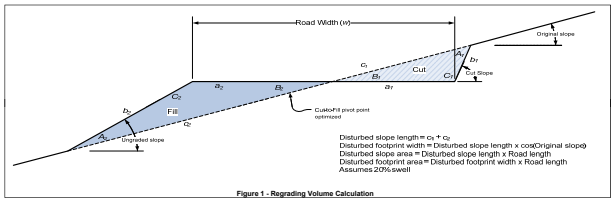


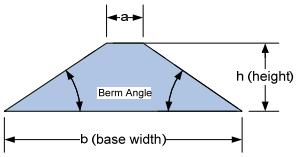
Figure 1 - Regrading Volume Calculation

Will not allow dozer for slopes greater than 30%
For dozer regrading push distance = road width
Assumes dozer push is uphill
Assumes minimum push distance of 100 ft

Safety Berm Volume Calculation

Cross Sectional Area = $\frac{(a+b)}{2} \times h$

Berm Volume = Berm Length x Cross Sectional Area x No. Sides



Total berm volume doubled if both sides of road are bermed.
If length of berm on each side of road is different, input total length of both berms and input 1 for number of sides

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per area
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Road length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
For dozer regrading assumes push distance = 3 x road width

Revegetation Calculations

Minimum of 1 acre crew time per area

Roads - Regrading Costs

	Description (required)	Regrading Volume cy	Recontouring Fleet	Fleet Productivity cy/hr	Total Fleet Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	***Site Roads***	15,105	**Select Fleet**					
		15,105						

Roads - Growth Media Costs

	Description (required)	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Topsoiling Cost $
1	***Site Roads***								

Roads - Scarifying/Revegetation Costs

	Description (required)	Surface Area acres	Final Slope Length ft	Ripping Hours hrs	Ripping Equipment Cost $	Ripping Labor Costs $	Total Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	***Site Roads***	1.38	2,400	2.2	$239	$153	$392	$116	$100	$417	$633
		1.38		2.2	**$239**	**$153**	**$392**	**$116**	**$100**	**$417**	**$633**

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Tailings - Cost Summary

		Labor	Equipment	Materials	Totals
	Tailings Surface Grading Cost			N/A	$0
	Cover Placement Cost			N/A	$0
	Topsoil Placement Cost	$440	$1,374	N/A	$1,814
	Ripping Costs			N/A	$0
	Subtotal Earthworks	*$440*	*$1,374*	*$0*	*$1,814*
	Revegetation Cost	$131	$113	$475	$719
	TOTALS	$571	$1,487	$475	$2,533

Color Code Key	
User Input - Direct Input	*Direct Input*
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

Tailings - User Input

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

			Physical					Cover (lower layer)				Growth Media (upper layer)			
	Description (required)	ID Code	Final (Regraded) Embankment Slope _ H:1V	Final Embankment Height ft	Final Tailings Surface Area acres	Mid-Embankment or Ripping Length ft	Surface Regrade Volume (calculated elsewhere) cy	Embankment Cover Thickness in	Tailings Surface Cover Thickness in	Distance from Cover Borrow ft	Slope from Tailings to Borrow % grade	Embankment Growth Media Thickness in	Tailings Surface Growth Media Thickness in	Distance from Growth Material Stockpile ft	Slope from Tailings to Stockpile % grade
1	*Tailings Pond - WMU*		*3.0*	*10*	*1.47*	*100*	*0*						*24*	*200*	*0*

Notes:

Tailings - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

Revegetation		Grading		Cover		Growth Media		Revegetation								
	Description (required)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Seed Mix Embankment Slope (select)	Seed Mix Tailings Surface (select)	Mulch Embankment Slopes (select)	Mulch Tailings Surface (select)	Fertilizer Embankment Slopes (select)	Fertilizer Tailing Surface (select)	Embankment Slope Scarify/ Rip? (select)	Tailings Surface Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	*Tailings Pond - WMU*	Small	No			Alluvium	optimize	Mix 1	Mix 1					No	No	

Tailings - Calculations

Surface Area Calculations

Top Surface Area provided by user

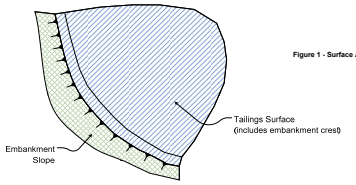


Figure 1 - Surface Areas

Final Slope Area and Footprint Area Calculations

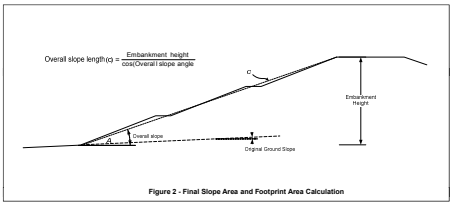


Figure 2 - Final Slope Area and Footprint Area Calculation

Grading Calculations

Grading assumed on impoundment surface only, not embankment
Average push distance assumed to be 2/3 of the 600 feet maximum from Catepillar Handbook or 400 feet
Material assumed to be loose stockile (1.2 productivity factor)
Dozing density correction based on dry sand = 2300/2400 = 0.96
Slope assumed to be 0 to 5% (1.0 productivity factor)

Ripping/Scarifying/Revegetation Calculation

Minimum 1 hr ripping/scarifying per area
Minimum 1 acre revegetation crew time per area

Regrading Volume Calculation

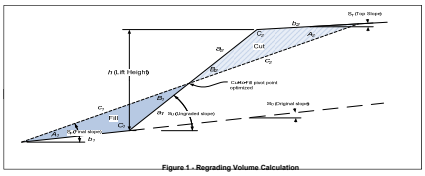


Figure 1 - Regrading Volume Calculation

Regrading Push Distance Calculation

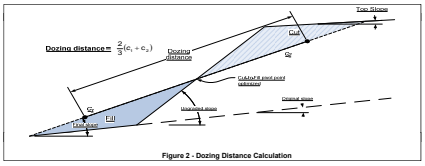


Figure 2 - Dozing Distance Calculation

Tailings - Surface Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Uncorrected Dozer Productivity cy/hr	Grade Correction	Density Correction	Dozing Material	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	*Tailings Pond - WMU*												

Tailings - Cover and Growth Media Costs

		Cover Placement								Growth Media Placement							
	Description (required)	Cover Volume cy	Cover Placement Fleet	Cover Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Cover Placement Cost $	Growth Media Volume cy	Growth Media Placement Fleet	Growth Media Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Topsoil Placement Cost $
1	*Tailings Pond - WMU*									4,743	andem Scrape	2,274	2	2.1	$440	$1,374	$1,814
										4,743				2.1	$440	$1,374	$1,814

Tailings - Scarifying/Revegetation Costs

	Description (required)	Embankment Slope Area acres	Tailings Surface Area acres	Total Surface Area acres	Final Slope Length ft	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Cost $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Cost $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	*Tailings Pond - WMU*	0.1	1.47	1.57	32						$131	$113	$475	$719
		0.1	1.47	1.57							$131	$113	$475	$719

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Buildings & Foundation Demolition Cost Summary

	Labor	Equipment	Materials	Totals
Building Demolition Cost	$22,313	$20,825	N/A	**$43,138**
Wall Demolition Cost	$12,091		N/A	**$12,091**
Slab Demolition	$1,602	$3,220	N/A	**$4,822**
Subtotal Demolition	***$36,006***	***$24,045***	***$0***	***$60,051***
Cover Placement Cost			N/A	**$0**
Growth Media Placement Cost	$975	$2,035	N/A	**$3,010**
Ripping Cost			N/A	**$0**
Subtotal Earthworks	***$975***	***$2,035***	***$0***	***$3,010***
Revegetation Cost	$420	$361	$150	**$930**
TOTALS	**$37,401**	**$26,441**	**$150**	**$63,991**

Color Code Key

User Input - Direct Input	***Direct Input***
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

Minimum thickness of cover over unbroken slab: 5.0 ft

Buildings & Foundation - User Input

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

			Physical Characteristics								Foundation Cover [1]			Growth Media [1] (entire footprint)		
	Description (required)	ID Code	Length ft	Width ft	Eve Height ft	Slab Thickness in	Wall Thickness in	Foundation Wall Height ft	Average Flat Area Long Dimension (ripping distance) ft	Building Area Footprint (including surrounding facilities) acres	Foundation Cover Thickness in	Distance from Foundation Cover Borrow Area ft	Slope from Facility to Borrow Area % grade	Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Facility to Stockpile % grade
1	***Upper Mill Building***		***55***	***30***	***15***	***8***			***30***	***0.04***				***24***	***150***	***0***
2	***Lower Mill Building***		***40***	***60***	***15***	***8***			***30***	***0.06***				***24***	***150***	***0***
3	***Warehouse***		***80***	***40***	***20***	***8***			***80***	***0.08***				***24***	***150***	***0***
4	***Garage***		***40***	***30***	***20***	***8***			***40***	***0.02***				***24***	***150***	***0***
5	***Ore Pad***		***75***	***35***	***0***	***8***	***6***	***24***	***60***	***0.06***				***24***	***150***	***0***

Notes:
1. Foundation cover only calculated to cover slab. Growth media estimated over entire footprint area

Buildings & Foundation - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Construction Materials		Slab Demolition		Foundation Cover		Growth Media		Revegetation				
	Description (required)	Building Type (select)	Foundation Wall Type (select)	Slab Demo Method (select)	Slab Breaking Equipment Fleet (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Ripping Fleet (select)
1	***Upper Mill Building***	**Lg. steel**		**Break & bury**	**Sm Excavator**			**Alluvium**	**optimize**	**Mix 1**			**No**	
2	***Lower Mill Building***	**Lg. steel**		**Break & bury**	**Sm Excavator**			**Alluvium**	**optimize**	**Mix 1**			**No**	
3	***Warehouse***	**Lg. steel**		**Break & bury**	**Sm Excavator**			**Alluvium**	**optimize**	**Mix 1**			**No**	
4	***Garage***	**Lg. steel**		**Break & bury**	**Sm Excavator**			**Alluvium**	**optimize**	**Mix 1**			**No**	
5	***Ore Pad***	**Sm. concrete**	**ck 6 in (15 cm) th**	**Break & bury**	**Sm Excavator**			**Alluvium**	**optimize**	**Mix 1**			**No**	

Buildings & Foundation - Calculations

Building Volume Calculations

Using Means Heavy Construction Cost Data (2004) calculates cubic feet from building dimensions
EstImage slab thickness and wall thickness if not known
Assumes that all concrete slabs are reinforced
Productivity for crew from Means Heavy Construction Cost Data (2004) adjusted for supervision
(addressed in Misc. Costs) and Davis-Bacon Wage Rates

Slab Demolition Calculations

Minimum 1 hr excavator time for slab demolition

Cover Volume Calculation

Foundation area x cover thickness
If "Bury in Place" is selected as slab demolition method, cover thickness is adjusted such that
total cover (cover + growth media) equals 5 ft (per NV BLM Guidance)

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation

Minimum 1 acre revegetation crew time per area

Building & Foundation Demolition Costs

Uses RS Means Heavy Construction Cost Data for building and wall demolition cost calculations. Uses CAT Handbook for slab breaking production.

							Building Demolition			Wall Demolition			Slab Demolition			Total Costs		
	Description (required)	Building Footprint (slab area) sqft	Building Volume cu ft	Wall Length ft	Wall Area sq ft	Slab Volume cy	Total Labor Cost $	Total Equipment Cost $	Building Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Wall Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Slab Breaking Cost $	Total Labor Cost $	Total Equipment Cost $	Total Demolition Costs $
1	***Upper Mill Building***	1,650	24,750	170	0	41	$3,713	$3,465	$7,178	**Wall Type!**	**Wall Type!**	**Wall Type!**	$237	$476	$713	$3,950	$3,941	$7,891
2	***Lower Mill Building***	2,400	36,000	200	0	59	$5,400	$5,040	$10,440	**Wall Type!**	**Wall Type!**	**Wall Type!**	$348	$700	$1,048	$5,748	$5,740	$11,488
3	***Warehouse***	3,200	64,000	240	0	79	$9,600	$8,960	$18,560	**Wall Type!**	**Wall Type!**	**Wall Type!**	$460	$924	$1,384	$10,060	$9,884	$19,944
4	***Garage***	1,200	24,000	140	0	30	$3,600	$3,360	$6,960	**Wall Type!**	**Wall Type!**	**Wall Type!**	$181	$364	$545	$3,781	$3,724	$7,505
5	***Ore Pad***	2,625	0	220	5,280	65				$12,091	$0	$12,091	$376	$756	$1,132	$12,467	$756	$13,223
			148,750				**$22,313**	**$20,825**	**$43,138**	**$12,091**		**$12,091**	**$1,602**	**$3,220**	**$4,822**	**$36,006**	**$24,045**	**$60,051**

Building & Foundation - Foundation Cover and Growth Media Costs

		Foundation Cover								Growth Media							
	Description (required)	Cover Volume cy	Cover Repacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Cover Cost $	Topsoil Volume cy	Topsoil Repacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Topsoiling Cost $
1	***Upper Mill Building***								$0	129	Small Truck	315	1	1.0	$195	$407	$602
2	***Lower Mill Building***								$0	194	Small Truck	315	1	1.0	$195	$407	$602
3	***Warehouse***								$0	258	Small Truck	315	1	1.0	$195	$407	$602
4	***Garage***								$0	65	Small Truck	315	1	1.0	$195	$407	$602
5	***Ore Pad***								$0	194	Small Truck	315	1	1.0	$195	$407	$602
										839				5.0	**$975**	**$2,035**	**$3,010**

Building & Foundation - Scarifying/Revegetation Costs

	Description (required)	Flat Area acres	Area Long Dimension ft	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	***Upper Mill Building***	0.10					$0	$84	$72	$30	$186
2	***Lower Mill Building***	0.10					$0	$84	$72	$30	$186
3	***Warehouse***	0.10					$0	$84	$72	$30	$186
4	***Garage***	0.10					$0	$84	$72	$30	$186
5	***Ore Pad***	0.10					$0	$84	$72	$30	$186
		0.50						**$420**	**$361**	**$150**	**$930**

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Other Demoltion and Equipment Removal - Cost Summary					
		Labor	Equipment	Materials	Totals
	Other Demolition	$1,013	$1,289	$0	$2,302
	Equipment Removal	$0	$0	$0	$0
	TOTALS	$1,013	$1,289	$0	$2,302

Color Code Key	
User Input - Direct Input	*Direct Input*
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

Other Demolition

	LOCATION	ID Code	Quantity	Units	Labor Unit Cost ($)	Equipment Unit Cost ($)	Material Unit Cost ($)	Total Cost ($)
1	*Water Tank*		*1,336*	*cu. ft.*	*0.11*	*$0.14*		$334
2	*Hopper Bin*		*3,535*	*cu. ft.*	*0.11*	*$0.14*		$884
3	*Ore Bin*		*3,000*	*cu. ft.*	*0.11*	*$0.14*		$750
4	*Propane Tank*		*1,336*	*cu. ft.*	*0.11*	*$0.14*		$334
					$1,013	$1,289	$0	**$2,302**

Notes: ***The labor and equipment rates are based on 02 41 16.13 - Building Demolition (0500) of the Means Heavy Construction Cost Data 2009 edition, page 33.***
The labor rate costs include for supervision, laborers and operators.
The equipment rate costs include for demolition and disposal in on-site landfill. Includes supervisor vehicle.

Equipment & Material Removal

	LOCATION	ID Code	Quantity	Units	Labor Unit Cost ($)	Equipment Unit Cost ($)	Material Unit Cost ($)	Total Cost ($)
1								
					$0	$0	$0	

Notes:

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File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Yards, Etc. - Cost Summary

		Labor	Equipment	Materials	Totals
	Regrading Cost	$208	$326	N/A	**$534**
	Cover Placement Cost			N/A	**$0**
	Growth Media Placement Cost			N/A	**$0**
	Ripping Cost	$389	$609	N/A	**$998**
	Subtotal Earthworks	***$597***	***$935***		***$1,532***
	Revegetation Cost	$500	$430	$1,803	**$2,733**
	TOTALS	**$1,097**	**$1,365**	**$1,803**	**$4,265**

Color Code Key	
User Input - Direct Input	***Direct Input***
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

Yards, Etc. - User Input

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

			Physical			Cover (lower layer)			Growth Media (upper layer)		
	Description (required)	**ID Code**	**Area** acres	**Average Flat Area Long Dimension (ripping distance)** ft	**Regrade Volume (calculated elsewhere)** cy	**Cover Thickness** in	**Distance from Cover Borrow Area** ft	**Slope from Facility to Borrow Area** % grade	**Growth Media Thickness** in	**Distance from Growth Media Stockpile** ft	**Slope from Facility to Stockpile** % grade
1	***General Yard Areas ****		***5.96***	***200***	***400***						
2											

Notes:
Assume 100 cy per acre for regrade.
****Includes Historic Mammoth Mine Tailings (Relocated and covered in 2006).***

Yards, Etc. - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Grading			Cover		Growth Media		Revegetation				
	Description (required)	**Dozing Material** (select)	**Dozing Material Type** (select)	**Grading Equipment Fleet** (select)	**Cover Material Type** (select)	**Cover Placement Equipment Fleet** (select)	**Growth Media Material Type** (select)	**Growth Media Placement Equipment Fleet** (select)	**Seed Mix** (select)	**Mulch** (select)	**Fertilizer** (select)	**Scarify/ Rip?** (select)	**Ripping Fleet** (select)
1	***General Yard Areas ****	**1**	**Alluvium**	**Small**					**Mix 1**			**Yes**	**Small Dozer**
2													

Yards, Etc. - Calculations

Grading Calculations

Average push distance assumed to be 2/3 of the 600 feet maximum from Catepillar Handbook or 400 feet
Material assumed to be loose stockile (1.2 productivity factor)
Slope assumed to be 0 to 5% (1.0 productivity factor)

Cover Volume Calculation

Yard area x cover thickness

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr ripping/scarifying per area

Revegetation

Minimum 1 acre revegetation crew time per area

Yards, Etc. - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side)

	Description (required)	**Regrading Volume** cy	**Dozing Distance (see above)** ft	**Uncorrected Dozer Productivity** cy/hr	**Grade Correction**	**Dozing Material**	**Density Correction**	**Total Hourly Productivity** cy/hr	**Total Dozer Hours** hr	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Regrading Cost** $
1	***General Yard Areas ****	400	400	213	1.00	1.20	0.79	126	3.0	$208	$326	$534
2												
		400							3.0	**$208**	**$326**	**$534**

Yards, Etc. - Cover and Growth Media Costs

		Cover								Growth Media							
	Description (required)	**Cover Volume** cy	**Topsoil Repacement Fleet**	**Fleet Productivity** LCY/hr	**Number of Trucks/ Scrapers**	**Total Fleet Hours**	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Cover Cost** $	**Topsoil Volume** cy	**Topsoil Repacement Fleet**	**Fleet Productivity** LCY/hr	**Number of Trucks/ Scrapers**	**Total Fleet Hours**	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Topsoiling Cost** $
1	***General Yard Areas ****																
2																	

Yards, Etc. - Scarifying/Revegetation Costs

	Description (required)	**Flat Area** acres	**Area Long Dimension** ft	**Scarifying/ Ripping Hours** hrs	**Scarifying/ Ripping Labor Costs** $	**Scarifying/ Ripping Equipment Cost** $	**Total Scarifying/ Ripping Costs** $	**Revegetation Labor Cost** $	**Revegetation Equipment Cost** $	**Revegetation Material Cost** $	**Total Revegetation Cost** $
1	***General Yard Areas ****	6.0	200	5.6	$389	$609	$998	$500	$430	$1,803	$2,733
2											
		6.0		5.6	**$389**	**$609**	**$998**	**$500**	**$430**	**$1,803**	**$2,733**

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
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Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Waste Disposal - Cost Summary

		Labor	Equipment	Fees	Totals
	Solid Waste - On Site	$0	$0	N/A	$0
	Solid Waste - Off Site				$625
	Hazardous Materials			$1,559	$1,559
	Hydrocarbon Contaminated Soils	$0	$0	$0	$0
	TOTALS	$0	$0	$1,559	$2,184

Color Code Key	
User Input - Direct Input	*Direct Input*
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

Waste Disposal - User Input - Solid Waste

	Description	ID Code	Waste Type (select)	Disposal Method (select)	Quantity cy	On-Site: Distance to On-Site Disposal ft	On-Site: Slope to Disposal (on-site) % grade	On-Site: Number of Trucks (user override)	Off-Site: Months Dumpster Rental months
1	*Variouse Site Solid Waste**		Solid Waste	Off site	10				1

Notes:
1. Use Landfills Sheet for landfill reclamation

Waste Disposal - User Input - Hazardous Materials

	Description	ID Code	Waste Type (select)	Container Type (select)	Vacuum Truck Size (select)	Liquid Quantity gallons	Soild Quantity cy	One Way Travel Distance to Disposal Site mi	One Way Travel Time to Disposal Site hr
1	*Variouse Fuels and Lubricants**		Solid	Bulk			2	10	1

Notes:
1. Use Other Demo & Equip Removal Sheet for tank removal
Includes existing pond liner

Waste Disposal - User Input - Hydrocarbon Contaminated Soils

	Description	ID Code	Waste Type (select)	Disposal Method (select)	Quantity cy	Travel Distance to Offsite Disposal mi
1						

Notes:
1. Use Yards or Landfills Sheets for bioremediation facility reclamation

Waste Disposal - Assumptions & Calculations

Solid Waste Disposal

Off site disposal assumes use of average rolloff dumpster [30 cy (m3), 10 ton (tonne)]
On site disposal assumes use of small loader/truck fleet for haulage
Average density for on site disposal = 2,600 lb/cy (1,540 kg/m3)
For on site disposal only 1 truck is required unless total truck hours > 8, only 2 trucks unless total truck hours are > 16

Hazardous Materials Disposal

Assumes all hazardous materials are known
Enter EITHER solid or liquid quantity each line.
If container type = 55 gallon drum then solid waste hauling costs apply
Average density for solids assumed to be 2,600 lb/cy (1,540 kg/m3)
Average density for liquids assumed to be weight of water 2,600 lb/cy (1,540 kg/m3)
Vacuum truck sizes: small = 2,200 gal (~8,300 litres), large = 5,000 gal (~19,000 litres)
Vacuum truck on site for 4 hours for each load

Hydrocarbon Contaminated Soils Disposal

Assumes all hazardous materials are known
On site disposal assumes biopad treatment
Exavation productivity =45 C.Y./hr (Means Heavy Construction, 2006: 02315-424-0360)

Waste Disposal - Solid Waste Disposal

	Description	Waste Volume cy	Number of Off Site Dumpster Loads	Onsite Fleet Productivity LCY/hr	Number of Trucks	Total Fleet Hours	Total Offsite Costs (incl fees) $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1	Variouse Site Solid Waste*	10	1				$625			
							$625	$0	$0	$0

Waste Disposal - Hazardous Materials Disposal

	Description	Liquid Waste Volume gallons	Solid Waste Volume cy	Number of Truck Loads	Tons of Waste Tons	Pick-up Fees $	Transport Fees $	Disposal Fees $	Total Hazardous Material Cost $
1	Variouse Fuels and Lubricants*		2	0	3	$880	$7	$672	$1,559
			2.0		2.6	$880	$7	$672	$1,559

Waste Disposal - Hydrocarbon Contaminated Soils

	Description (required)	Quantity cy	Total Fleet Hours	Treatment Cost $	Transport Fees $	Disposal Fees $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1									
				$0	$0	$0	$0	$0	$0

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Miscellaneous Cost Summary

		Labor	Equipment	Materials	Totals
	Fence Removal	$10,470	$3,316	N/A	**$13,786**
	Fence Installation				
	Pipe & Culvert Removal			N/A	
	Powerlines	$3,412	N/A	N/A	**$3,412**
	Substations/Tranformers		N/A	N/A	
	Rip-rap, rock lining, gabions				
	Other Costs				
	TOTALS	**$13,882**	**$3,316**	**$0**	**$17,198**

Color Code Key	
User Input - Direct Input	***Direct Input***
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

Fence Removal

You must fill in ALL green and blue cells

		Input		Costs		
	Description (required)	Length ft	Type (select type)	Labor Cost $	Equipment Cost $	Total Cost $
1	*Perimeter Fence*	*3,490*	Chain link 8-10 ft (2.5-3	$10,470	$3,316	$13,786
				$10,470	**$3,316**	**$13,786**

Notes:

Fence Installation

You must fill in ALL green and blue cells

		Input		Costs			
	Description (required)	Length ft	Type (select type)	Labor Cost $	Equipment Cost $	Material Cost ($)	Total Cost $
1							

Notes:

Pipe and Culvert Removal

You must fill in ALL green and blue cells

		Input		Costs		
	Description (required)	Length ft	Type (select type)	Labor Cost $	Equipment Cost $	Total Cost $
1						

Notes:

Powerline and Substation Removal

You must fill in ALL green and blue cells

		Input			Costs		
	Description (required)	Powerline Length miles	Powerline Type (select)	Number of Substations #	Powerline Removal $	Substation Removal $	Total Cost $
1	*Site Power Lines*	*0.10*	Single Pole		$3,412	$0	$3,412
					$3,412		**$3,412**

Notes: If substation owned by operator, use Other Demo & Equipment Removal sheet
User may need to add line items in Foundations & Buildings for substation slab demolition and fence removal

Rip-Rap & Rock Lining

You must fill in ALL green and blue cells

		Input		Costs			
	Description (required)	Area S.Y.	Type (select type)	Labor Cost $	Equipment Cost $	Material Cost $	Total Cost $
1							

Notes:

Other Costs

	Description (required)	Quantity	Units	Labor Unit Cost ($)	Equipment Unit Cost ($)	Material Unit Cost ($)	Total Cost $
1							

Notes:

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Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Materials/ Laboratory	Totals
Revegetation Maintenance	$79	$68	$285	**$432**
Reclamation Monitoring	$3,645	$99		**$3,744**
Subtotal Reclamation Monitoring	***$3,724***	***$167***	***$285***	***$4,176***
Water Quality Monitoring	$3,135	$520	$2,970	**$6,625**
TOTAL MONITORING	**$6,859**	**$687**	**$3,255**	**$10,801**

Reclamation Maintenance

Description	Total Revegetation Surface Area [1] acres	% Area Requiring Reseeding	Seed Mix (select)	Area Requiring Reseeding acres	Seed $/acres	Labor $/acres	Equipment $/acres	Totals $
Revegetation Maintenance	9.41	***10%***	**Mix 1**	0.94	$302.50	$83.94	$72.10	
Labor								$79
Equipment								$68
Materials								$285
Cost/Acre								$458.54
Subtotal								**$432**

Notes: 1) Surface area is NOT the same as footprint disturbance area typically used for permitting purposes.

Reclamation Monitoring

Description	Hrs/Day	Days/Year	Number of Years	Rate $/hr				
Field Work								
Field Geologist/Engineer				$101				
Range Scientist	***8***	***1***	***3***	$101				$2,430
Reporting								
Field Geologist/Engineer				$101				
Range Scientist	***4***	***1***	***3***	$101				$1,215
Subtotal								**$3,645**
Travel								
	Hrs/Trip hr	**Trips/Year**	**Years**	**Truck Cost** $/hr				
Travel	***1***	***1***	***3***	$33.07				$99
Subtotal								**$99**
							Total Reclamation Monitoring	**$3,744**

Notes:

Ground & Surface Water Monitoring

Field work

Description	No. of staff	Hrs/Day	Days/event	Events/Year	No. Years	Man-hours/ year	Rate $/hr	Cost $
Field Tech/Sampler	***1***	***8***	***1***	***1***	***3***	8	$80.00	$1,920
Pickup Truck	***1***				3	8	$21.68	$520
Pump (purchased)								
							Subtotal Field Work	**$2,440**

Water and Rock Sample Analysis

Description	Samples #	Events/Year	No. Years	Analysis Cost $/sample	Supplies $/sample	Lab Cost $	Material Cost $	Cost $
Water Analysis (Profile I) (1)	***3***	***1***	***3***	$325.00	$5.00	$2,925.00	$45.00	$2,970
							Subotal Sample Analysis	**$2,970**

Reporting

Description	Hrs/Event	Rate $/hr	Events/Year	Man-hours/ year	No. Years		Cost $
Field Geologist/Engineer	***4***	$101.25	1	4	3		$1,215
						Subtotal Reporting	**$1,215**
						Total Water Quality Monitoring	**$6,625**

Notes:

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Standardized Data (imported from data file)	**Standardized Data**
Program Calculated Value	**Locked Cell - Formula or Reference**

ZONE ADJUSTMENTS			
Cost Basis/Project Region	**Southern Nevada**	Clark, Esmeralda, Lincoln and Nye Counties	
Power Equipment Operators	**> 60 miles**	$3.00	
Truck Drivers	**>70 miles**	$3.50	
Laborers	**>70 miles**	$0.00	
INDIRECT COSTS			
FICA/Medicare (%)	7.65%		
Unemployment (%)	3.00%		
Workman's Compensation (%)	7.77%		

HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Davis-Bacon Group	Base Rate ($/hr)	Fringe ($/hr)	Zone Adjustment ($/hr)	Hourly Wage ($/hr)	FICA/ Medicare ($/hr)	Unemployment ($/hr)	Workman's Comp ($/hr)	Total ($/hr)
EQUIPMENT OPERATORS ($/hr) (2)									
Bulldozers									
D6R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
D7R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
D8R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
D9R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
D10R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
D11R	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
Motor Graders									
14G/H	Group 10	$39.85	$16.00	$3.00	$58.85	$4.50	$1.77	$4.57	$69.69
16G/H	Group 10	$39.85	$16.00	$3.00	$58.85	$4.50	$1.77	$4.57	$69.69
Track Excavators									
320C	Group 12	$40.02	$16.00	$3.00	$59.02	$4.52	$1.77	$4.59	$69.89
325C	Group 12	$40.02	$16.00	$3.00	$59.02	$4.52	$1.77	$4.59	$69.89
345B	Group 12	$40.02	$16.00	$3.00	$59.02	$4.52	$1.77	$4.59	$69.89
385BL	Group 12	$40.02	$16.00	$3.00	$59.02	$4.52	$1.77	$4.59	$69.89
Scrapers									
631G	Group 15	$40.23	$16.00	$3.00	$59.23	$4.53	$1.78	$4.60	$70.14
637G PP	Group 15	$40.23	$16.00	$3.00	$59.23	$4.53	$1.78	$4.60	$70.14
Wheeled Loaders									
928G	Group 8	$39.73	$16.00	$3.00	$58.73	$4.49	$1.76	$4.56	$69.55
966G	Group 8	$39.73	$16.00	$3.00	$58.73	$4.49	$1.76	$4.56	$69.55
972G	Group 8	$39.73	$16.00	$3.00	$58.73	$4.49	$1.76	$4.56	$69.55
988G	Group 10	$39.85	$16.00	$3.00	$58.85	$4.50	$1.77	$4.57	$69.69
992G	Group 10	$39.85	$16.00	$3.00	$58.85	$4.50	$1.77	$4.57	$69.69
Hydrauilc Hammers									
H-120 (fits 325)									
H-160 (fits 345)									
H-180 (fits 365/385)									
Other Equipment									
420D 4WD Backhoe	Group 4	$39.40	$16.00	$3.00	$58.40	$4.47	$1.75	$4.54	$69.16
CS563E Vibratory Roller	Group 4	$39.40	$16.00	$3.00	$58.40	$4.47	$1.75	$4.54	$69.16
Light Truck - 1.5 Ton									
Supervisor's Truck									
Air Compressor + tools	Group 1	$36.67	$16.00	$3.00	$55.67	$4.26	$1.67	$4.33	$65.92
Welding Equipment	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
Heavy Duty Drill Rig	Group 2	$37.62	$16.00	$3.00	$56.62	$4.33	$1.70	$4.40	$67.05
Pump (plugging) Drill Rig	Group 2	$37.62	$16.00	$3.00	$56.62	$4.33	$1.70	$4.40	$67.05
Concrete Pump									
Gas Engine Vibrator	Group 6	$39.62	$16.00	$3.00	$58.62	$4.48	$1.76	$4.55	$69.42
Generator 5KW									
HDEP Welder (pipe or liner)									
5 Ton Crane Truck	Group 8	$39.73	$16.00	$3.00	$58.73	$4.49	$1.76	$4.56	$69.55
25 Ton Crane	Group 8	$39.73	$16.00	$3.00	$58.73	$4.49	$1.76	$4.56	$69.55

NOTES:

(1) Equipment Type:	Catepillar model or equivalent
(2) Equipment Operator Source:	D-B ENGI0012-015 07/01/2009
(3) Zone Basis:	From Las Vegas City Hall

TRUCK DRIVERS ($/hr) (4)									
769D	Group 4	$27.18	$16.64	$3.50	$47.32	$3.62	$1.42	$3.68	$56.04
777D	Group 4	$27.18	$16.64	$3.50	$47.32	$3.62	$1.42	$3.68	$56.04
613E (5,000 gal) Water Wagon	Group 3	$27.00	$16.64	$3.50	$47.14	$3.61	$1.41	$3.66	$55.82

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User Input - Pull Down List	**Pull Down Selection**
Standardized Data (imported from data file)	**Standardized Data**
Program Calculated Value	**Locked Cell - Formula or Reference**

ZONE ADJUSTMENTS

Cost Basis/Project Region	**Southern Nevada**	Clark, Esmeralda, Lincoln and Nye Counties
Power Equipment Operators	**> 60 miles**	$3.00
Truck Drivers	**>70 miles**	$3.50
Laborers	**>70 miles**	$0.00

INDIRECT COSTS

FICA/Medicare (%)	7.65%
Unemployment (%)	3.00%
Workman's Compensation (%)	7.77%

621E (8,000 gal) Water Wagon	Group 4	$27.18	$16.64	$3.50	$47.32	$3.62	$1.42	$3.68	$56.04
Dump Truck (10-12 yd^3)	Group 2	$26.79	$16.64	$3.50	$46.93	$3.59	$1.41	$3.65	$55.57

NOTES:

(4) Truck Driver Source:	D-B TEAM0631-008 07/01/2008
(5) Zone Basis:	From Las Vegas City Hall

LABORERS ($/hr) (6,7)

General Laborer	Group 1	$24.31	$16.83	$0.00	$41.14	$3.15	$1.23	$3.20	$48.72
Skilled Laborer	Group 3	$24.62	$16.83	$0.00	$41.45	$3.17	$1.24	$3.22	$49.09
Driller's Helper	Group 2	$24.52	$16.83	$0.00	$41.35	$3.16	$1.24	$3.21	$48.97
Rodmen (reinforcing concrete)	Group 3A	$25.12	$16.83	$0.00	$41.95	$3.21	$1.26	$3.26	$49.68
Cement finisher	Group 3A	$25.12	$16.83	$0.00	$41.95	$3.21	$1.26	$3.26	$49.68
Carpenter		$37.76	$16.83	$0.00	$54.59	$4.18	$1.64	$4.24	$64.65

NOTES:

(6) Laborer Source:	D-B LABO0872-010 07/01/2008
(7) Carpenter Source:	D-B CARP1780-011 07/01/2010
(8) Zone Basis:	From Las Vegas City Hall

PROJECT MANAGEMENT AND TECHNICAL LABOR ($/hr) (9)

Project Manager		$60.15			$60.15	$4.60	$1.80	$4.67	$71.23
Foreman		$55.69			$55.69	$4.26	$1.67	$4.33	$65.95
Field Geologist/Engineer		$101.25							$101.25
Field Tech/Sampler		$80.00							$80.00
Range Scientist		$101.25							$101.25

NOTES:

(9) Project Manager:	R.S.Means 2010 Q2 (01300-700-0200 Total
(9) Foreman Source:	R.S.Means 2010 Q2 (01300-700-0260 Total
(9) Techical Labor Source:	SRK Consulting 2010 (Total Incl. O&P-10%)

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Monthly Rental Basis: 176 hrs month

EQUIPMENT RENTAL RATE TABLE

EQUIPMENT TYPE (1)	Monthly Rental Rate	Equipment Hourly Rate	Fuel/Lube/ Wear	Total Rate
Bulldozers				
D6R	$9,895	$56.22	$23.94	$80.16
D7R	$13,855	$78.72	$30.00	$108.72
D8R	$17,820	$101.25	$37.46	$138.71
D9R	$21,725	$123.44	$53.99	$177.42
D10R	$28,050	$159.38	$68.63	$228.01
D11R	$54,000	$306.82	$98.86	$405.68
Motor Graders				
14G/H	$12,430	$70.63	$43.04	$113.67
16G/H	$18,425	$104.69	$51.16	$155.84
Track Excavators				
320C	$7,240	$41.14	$20.44	$61.58
325C	$7,885	$44.80	$25.45	$70.25
345B	$10,800	$61.36	$37.31	$98.67
385BL	$22,140	$125.80	$59.05	$184.85
Scrapers				
631G	$23,460	$133.30	$64.82	$198.11
637G PP	$32,140	$182.61	$90.18	$272.80
Wheeled Loaders				
928G	$5,495	$31.22	$21.56	$52.79
966G	$10,890	$61.88	$37.16	$99.04
972G	$11,990	$68.13	$39.43	$107.56
988G	$20,350	$115.63	$63.64	$179.26
992G	$42,300	$240.34	$125.98	$366.32
Hydrauilc Hammers				
H-120 (fits 325)	$4,840	$27.50	$4.73	$32.23
H-160 (fits 345)	$8,100	$46.02	$9.25	$55.27
H-180 (fits 365/385)	$10,100	$57.39	$10.96	$68.35
Other Equipment				
420D 4WD Backhoe	$3,045	$17.30	$14.85	$32.16
CS563E Vibratory Roller	$7,480	$42.50	$8.05	$50.55
Light Truck - 1.5 Ton	$5,416	$30.77	$2.30	$33.07
Supervisor's Truck	$3,410	$19.38	$2.30	$21.68
Air Compressor + tools	$4,734	$26.90	$0.00	$26.90
Welding Equipment	$3,296	$18.73	$0.00	$18.73
Heavy Duty Drill Rig	$65,010	$369.38	$0.00	$369.38
Pump (plugging) Drill Rig	$65,010	$369.38	$0.00	$369.38
Concrete Pump	$16,654	$94.63	$4.60	$99.23
Gas Engine Vibrator	$686	$3.90	$4.60	$8.50
Generator 5KW	$1,038	$5.90	$4.60	$10.50
HDEP Welder (pipe or liner)	$3,036	$17.25	$0.00	$17.25
5 Ton Crane Truck	$6,244	$35.48	$6.90	$42.38
25 Ton Crane	$16,940	$96.25	$6.90	$103.15
Trucks				
769D	$14,000	$79.55	$39.42	$118.96
777D	$28,000	$159.09	$73.16	$232.25
613E (5,000 gal) Water Wagon	$9,235	$52.47	$33.77	$86.24
621E (8,000 gal) Water Wagon	$14,575	$82.81	$33.98	$116.79
Dump Truck (10-12 yd^3)	$15,092	$85.75	$39.42	$125.17

NOTES:

(1) Power Equipment Source: Cashman Equipment Company (July 2010) unless noted
(2) Power Equipment Type: Catepillar model or equivalent
(3) Drilliing Equipment Source: Means Heavy Construction (2010)
(4) Other Equipment Source: Means Heavy Construction (2010)
(5) Drill rig includes support (pipe) truck

FUEL, LUBE AND WEAR CALCULATIONS

EQUIPMENT TYPE	PM Cost Per Hour(1)	Under carriage or Tires (2)	G.E.T Consumption	Fuel Use Rate gal/hr	Cost@ $2.30/gal	Total Hourly Equipment
Bulldozers						
D6R	$6.56		$4.15	5.75	$13.23	$23.94
D7R	$6.59		$6.16	7.50	$17.25	$30.00
D8R	$7.05		$7.98	9.75	$22.43	$37.46

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D9R	$8.81		$12.40	14.25	$32.78	$53.99
D10R	$9.91		$17.32	18.00	$41.40	$68.63
D11R	$12.17		$25.74	26.50	$60.95	$98.86
Motor Graders						
14G/H	$6.58	$9.70	$12.39	6.25	$14.38	$43.04
16G/H	$5.30	$11.67	$16.94	7.50	$17.25	$51.16
Track Excavators						
320C	$5.41		$3.76	4.90	$11.27	$20.44
325C	$5.53		$4.74	6.60	$15.18	$25.45
345B	$6.94		$5.99	10.60	$24.38	$37.31
385 BL	$7.88		$10.92	17.50	$40.25	$59.05
Scrapers						
631G	$8.16	$15.35	$6.81	15.00	$34.50	$64.82
637G PP	$11.66	$15.35	$8.55	23.75	$54.63	$90.18
Wheeled Loaders						
928G	$5.32	$4.49	$3.70	3.50	$8.05	$21.56
966G	$5.82	$9.48	$8.64	5.75	$13.23	$37.16
972G	$6.09	$9.48	$9.49	6.25	$14.38	$39.43
988G	$9.44	$16.06	$11.69	11.50	$26.45	$63.64
992G	$13.31	$32.08	$27.69	23.00	$52.90	$125.98
Hydrauilc Hammers						
H-120 (fits 325	N/A		$4.73		$0.00	$4.73
H-160 (fits 345)	N/A		$9.25		$0.00	$9.25
H-180 (fits 365/385)	N/A		$10.96		$0.00	$10.96
Other Equipment						
420D 4WD Backhoe	$3.85	$1.20	$2.90	3.00	$6.90	$14.85
CS563E Vibratory Roller			N/A	3.50	$8.05	$8.05
Light Truck - 1.5 Ton	N/A		N/A	1.00	$2.30	$2.30
Supervisor's Truck	N/A		N/A	1.00	$2.30	$2.30
Air Compressor + tools	N/A		N/A		$0.00	$0.00
Welding Equipment	N/A	$0.00	N/A		$0.00	$0.00
Heavy Duty Drill Rig	N/A		N/A		$0.00	$0.00
Pump (plugging) Drill Rig	N/A		N/A		$0.00	$0.00
Concrete Pump	N/A		N/A	2.00	$4.60	$4.60
Gas Engine Vibrator	N/A		N/A	2.00	$4.60	$4.60
Generator 5KW	N/A	$0.00	N/A	2.00	$4.60	$4.60
HDEP Welder (pipe or liner)	N/A	$0.00	N/A		$0.00	$0.00
5 Ton Crane Truck			N/A	3.00	$6.90	$6.90
25 Ton Crane			N/A	3.00	$6.90	$6.90
Trucks						
769D	$8.27	$7.16	$2.71	9.25	$21.28	$39.42
777D	$12.37	$18.07	$3.62	17.00	$39.10	$73.16
613E (5,000 gal) Water Wagon	$6.11	$2.94	N/A	10.75	$24.73	$33.77
621E (8,000 gal) Water Wagon	$6.90	$5.80	N/A	9.25	$21.28	$33.98
Dump Truck (10-12 yd3)	$8.27	$7.16	$2.71	9.25	$21.28	$39.42

Notes:

(1) PM Source: July 2010 Cashman Equipment Rental Rate, Elko, NV (except as noted)
(2) Undercarriage Source: Purcell Tire. 07/28/2010
(3) G.E.T. Source: CAT Historical Data
(4) Fuel Use Source: Caterpillar Handbook, Edition 35, Ch. 20; or estimated average for smaller vehicles

TIRE COST TABLES

Equipment	Tire Size	# of Tires Per	Cost	Tire Cost	Life	Tire Cost per
Bulldozers						
D6R			N/A			
D7R			N/A			
D8R			N/A			
D9R			N/A			
D10R			N/A			
D11R			N/A			
Motor Graders						
14G/H	20.5R25	6	$5,656.24	$33,937.44	3,500	$9.70
16G/H	23.5R25	6	$6,805.89	$40,835.34	3,500	$11.67
Track Excavators						
320C			N/A			
325C			N/A			
345B			N/A			
385 BL			N/A			

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Scrapers						
631G	37.25R35	4	$15,346.54	$61,386.16	4,000	$15.35
637G PP	37.25R35	4	$15,346.54	$61,386.16	4,000	$15.35
Wheeled Loaders						
928G	17.5R25	4	$5,055.26	$20,221.04	4,500	$4.49
966G	26.5R25	4	$10,663.93	$42,655.72	4,500	$9.48
972G	26.5R25	4	$10,663.93	$42,655.72	4,500	$9.48
988G	35/65-33	4	$18,066.04	$72,264.16	4,500	$16.06
992G	45/65R45	4	$36,094.03	$144,376.12	4,500	$32.08
Hydrauilc Hammers						
H-120 (fits 325			N/A			
H-160 (fits 345)			N/A			
H-180 (fits 365/385)			N/A			
Other Equipment						
420D 4WD Backhoe	340/80R18-195LR24	2 + 2	$1,806.13	$3,612.26	3,000	$1.20
CS563E Vibratory Roller			N/A			
Light Truck - 1.5 Ton			N/A			
Supervisor's Truck			N/A			
Air Compressor + tools			N/A			
Welding Equipment						
Heavy Duty Drill Rig			N/A			
Pump (plugging) Drill Rig			N/A			
Concrete Pump			N/A			
Gas Engine Vibrator			N/A			
Generator 5KW			N/A			
HDEP Welder (pipe or liner)			N/A			
5 Ton Crane Truck			N/A			
25 Ton Crane			N/A			
Trucks						
769D	18.00R33	6	$7,162.67	$42,976.02	6,000	$7.16
777D	27.00R49	6	$15,057.94	$90,347.64	5,000	$18.07
613E (5,000 gal) Water Wagon	23.5R25	4	$4,403.53	$17,614.12	6,000	$2.94
621E (8,000 gal) Water Wagon	33.25R29	4	$11,603.67	$46,414.68	8,000	$5.80
Dump Truck (10-12 yd3)		6	$7,162.67	$42,976.02	6,000	$7.16

Notes:

(1) Unit Cost Basis:	Cost per set
(2) Cost Basis:	Total cost for all required tires.
(3) Tire Cost Source:	Purcell Tire. 07/28/2010
(4) Tire Wear Source:	Caterpillar Handbook, Edition 35; Ch. 20

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Revegetation Materials

Seed Mixes

Seed Mix	Description		Cost/Acre
None			
Mix 1	Basins		$302.50
Mix 2	Low Hills		$332.75
Mix 3	Uplands		$363.00
Mix 4	Riparian or Custom		$393.25
User Mix 1	***Lowlands***		***$217.00***
User Mix 2	***Low Hills***		
User Mix 3	***Uplands***		
User Mix 4	***Riparian***		
	Cost/lb	lbs/Acre	Cost/Acre
User Mix 5 (from Seed Mix sheet)	#DIV/0!	0	$0.00
Notes:			

Mulch

Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Straw Mulch	$0.14	***2000***	$280.00
Hydro Mulch	$0.26	***50***	$12.75
		550	

Notes: Straw Specialties (July 2010) 60# bale, Certified weed free, $8.25ea
Granite Seed $510 per Ton in 50# bag Wood (Hydro) Mulch (July 2010)

Amendments

Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Organic Matter	$0.70	***2000***	$1,400.00
Treated Sludge		***3000***	
Chemical	$0.42	***100***	$42.00
		1000	

Notes: Granite Seed $0.70/# in 50# bag 1 ton min order Biosol Mix (July 2010)
Western Nevada Supply $21.20 per 50 # bag 16/20/0 (July 2010)

Well Abandonment Materials

Description	Units	Cost/unit
Cement	cy	$292.09
Grout (Low Grade Bentonite)	cy	$59.64
Inert Material/Cuttings	cy	$0.00

(1) Ferguson Enterprises, Inc. quote (July 2010) Type I,II Cement at $11.90
(2) Ferguson Enterprises, Inc. (July 2010) Abandonite grout at $12.70 per

Monitoring Costs

Description	Units	Cost/unit
Monitor Well Pump	ea.	$2,140.00
Sampling Supplies	ea.	$5.00
Water Analysis (Profile I) (1)	ea.	$325.00
Leach Test (MWMP) w/ analysis	ea.	$395.00
ABA + S speciation	ea.	$125.00
WAD Cyanide in water	ea.	$35.00
Water Analysis (Profile II) (1)	ea.	$375.00

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EQUIPMENT FLEETS

RIPPING			
Rip road			
Waste rock dumps, heaps, tails - rip flat surfaces			
Surface preparation			
Scarify			
Small Dozer w/ multi-shank			
D7R	$108.72	$69.42	$178.14
Totals	$108.72	$69.42	$178.14
Medium Dozer w/ multi-shank			
D9R	$177.42	$69.42	$246.84
Totals	$177.42	$69.42	$246.84
Large Dozer w/ multi-shank			
D10R	$228.01	$69.42	$297.43
Totals	$228.01	$69.42	$297.43
Grader w/ multi-shank			
16G/H	$155.84	$69.69	$225.53
Totals	$155.84	$69.69	$225.53
GRADING			
Grading storage and structure areas			
Grading waste rock dumps and heaps			
Grading landfills			
Constructing pit safety berms			
Small Dozer Fleet			
D7R	$108.72	$69.42	$178.14
Totals	$108.72	$69.42	$178.14
Medium Dozer Fleet			
D9R	$177.42	$69.42	$246.84
Totals	$177.42	$69.42	$246.84
Large Dozer Fleet			
D10R	$228.01	$69.42	$297.43
Totals	$228.01	$69.42	$297.43
EXPLORATION GRADING			
Backfilling and grading exploration trenches			
Grading flat exploration roads			
Small Dozer Fleet			
D6R	$80.16	$69.42	$149.58
Totals	$80.16	$69.42	$149.58
Medium Dozer Fleet			
D7R	$108.72	$69.42	$178.14
Totals	$108.72	$69.42	$178.14
Large Dozer Fleet			
D8R	$138.71	$69.42	$208.13
Totals	$138.71	$69.42	$208.13
EXCAVATING			
Earthen Berms			
Diversion ditch backfill			
Underground openings backfill - excavate and place			
Large Excavator			
385BL	$184.85	$69.89	$254.74
Totals	$184.85	$69.89	$254.74
Medium Excavator			
345B	$98.67	$69.89	$168.56
Totals	$98.67	$69.89	$168.56

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EQUIPMENT FLEETS

Small Excavator			
325C	$70.25	$69.89	$140.14
Totals	$70.25	$69.89	$140.14
EXCAVATE AND RECONTOUR			
Recontour large roads (haul roads, access roads, etc.)			
Ponds - Excavate and pull liner and bury			
Excavation and grading for diversion and drainage control			
Large Excavator + Dozer			
385BL	$184.85	$69.89	$254.74
D10R	$228.01	$69.42	$297.43
Totals	$412.86	$139.31	$552.17
Medium Excavator + Dozer			
345B	$98.67	$69.89	$168.56
D9R	$177.42	$69.42	$246.84
Totals	$276.09	$139.31	$415.40
Small Excavator + Dozer			
325C	$70.25	$69.89	$140.14
D7R	$108.72	$69.42	$178.14
Total Equipment	$178.97	$139.31	$318.28
EXPLORATION ROAD/PAD RECONTOUR			
Recontour small roads (exploration roads, service roads, etc.)			
Cut and Fill reclamation on slopes			
Drill pad recountour			
Drill sump backfill			
Small Dozer			
D6R	$80.16	$69.42	$149.58
Totals	$80.16	$69.42	$149.58
Large Dozer			
D8R	$138.71	$69.42	$208.13
Totals	$138.71	$69.42	$208.13
Grader			
14G/H	$113.67	$69.69	$183.36
Totals	$113.67	$69.69	$183.36
Small Excavator			
320C	$61.58	$69.89	$131.47
Totals	$61.58	$69.89	$131.47
Medium Excavator			
325C	$70.25	$69.89	$140.14
Totals	$70.25	$69.89	$140.14
LOAD, HAUL AND PLACE MATERIAL			
Rock placement			
Haul overburden for backfill			
Haul borrow for backfill			
Haul cover or growth media			
Large Truck/Loader Fleet			
777D	$232.25	$56.04	$288.29
992G	$366.32	$69.69	$436.01
D7R	$108.72	$69.42	$178.14
Totals	$707.29	$195.15	$902.44
Small Truck/Loader Fleet			
769D	$118.96	$56.04	$175.00
988G	$179.26	$69.69	$248.95
D7R	$108.72	$69.42	$178.14
Totals	$406.94	$195.15	$602.09
Scraper/Dozer Fleet			

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EQUIPMENT FLEETS			
631G	$198.11	$70.14	$268.25
D10R	$228.01	$69.42	$297.43
D7R	$108.72	$69.42	$178.14
Totals	$534.84	$208.98	$743.82
Tandem Scraper Fleet			
637G PP	$272.80	$70.14	$342.94
D7R	$108.72	$69.42	$178.14
Totals	$381.52	$139.56	$521.08
MISC. LOAD AND HAUL AND EARTHWORKS			
Sludge removal			
Drainage controls			
Misc. - Cat 325B Excavator / 10-12 yd^3 Truck			
325C	$70.25	$69.89	$140.14
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Totals	$195.42	$125.46	$320.88
Misc. - Cat D9R Dozer/ Loader (5 yd^3) / 10-12 yd^3 Truck			
D9R	$177.42	$69.42	$246.84
966G	$99.04	$69.55	$168.59
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Totals	$401.63	$194.54	$596.17
Misc. - Cat D6 Dozer / Cat 966 Loader / 10-12 yd3 Truck			
D6R	$80.16	$69.42	$149.58
966G	$99.04	$69.55	$168.59
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Totals	$304.37	$194.54	$498.91
CONCRETE BREAKING			
Slab demolition			
Footing demolition			
Wall demolition			
Small - Cat 325B Excavator w/ H140D s Hammer			
325C	$70.25	$69.89	$140.14
H-120 (fits 325)	$32.23	$0.00	$32.23
D9R	$177.42	$69.42	$246.84
Totals	$279.90	$139.31	$419.21
Medium - Cat 345B Excavator w/ H180D s Hammer			
345B	$98.67	$69.89	$168.56
H-160 (fits 345)	$55.27	$0.00	$55.27
D9R	$177.42	$69.42	$246.84
Totals	$331.36	$139.31	$470.67
Large - Cat 385B Excavator w/ H180D s Hammer			
385BL	$184.85	$69.89	$254.74
H-180 (fits 365/385)	$68.35	$0.00	$68.35
D9R	$177.42	$69.42	$246.84
Totals	$430.62	$139.31	$569.93
DRILL HOLE ABANDONMENT			
Drill Hole - Grout or Cement			
Pump (plugging) Drill Rig	$369.38	$67.05	$436.43
Driller's Helper	$0.00	$48.97	$48.97
Driller's Helper	$0.00	$48.97	$48.97
Totals	$369.38	$164.99	$534.37
Drill Hole - Inert Media (Means Crew B-11M+ 1 Laborer)			
420D 4WD Backhoe	$32.16	$69.16	$101.32
General Laborer	$0.00	$48.72	$48.72
Totals	$32.16	$117.88	$150.04
Drill Hole - Casing Perforation or Removal			
Heavy Duty Drill Rig	$369.38	$67.05	$436.43
Driller's Helper	$0.00	$48.97	$48.97

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EQUIPMENT FLEETS

Driller's Helper	$0.00	$48.97	$48.97
Totals	$369.38	$164.99	$534.37
MAINTENANCE FLEET			
Road Grading, Dust Suppression, Clean Up			
Maintenance - Small Water Truck and Cat 14G Grader			
613E (5,000 gal) Water Wagon	$86.24	$55.82	$142.06
14G/H	$113.67	$69.69	$183.36
Totals	$199.91	$125.51	$325.42
Maintenance - Large Water Truck and Cat 16G Grader			
621E (8,000 gal) Water Wagon	$116.79	$56.04	$172.83
16G/H	$155.84	$69.69	$225.53
Totals	$272.63	$125.73	$398.36
PROJECT SUPERVISION			
Supervisor's Truck	$21.68	$0.00	$21.68
Totals	$21.68	$0.00	$21.68
MEANS CREW DEFINITIONS			
Crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .			
For use with misc. unit costs where Means is the source for productivity			
1 Clab - Seedling Planting/Block Wall Demolition			
General Laborer	$0.00	$48.72	$48.72
Totals	$0.00	$48.72	$48.72
2 Clab - Barbed Wire/Wood Fence Removal, Corrugated Drainpipe Installation			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$33.07	$97.44	$130.51
2 Clab + Excavator - Pond Liner Cut and Fold			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
325C	$70.25	$69.89	$140.14
Totals	$70.25	$167.33	$237.58
2 Clab + Welder - Bat Gates			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Welding Equipment	$18.73	$69.42	$88.15
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$51.80	$166.86	$218.66
3 Clab - Foam Adit Plugs			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
420D 4WD Backhoe	$32.16	$69.16	$101.32
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$65.23	$166.60	$231.83
3 Clab + Welder - Culvert Bat Gate			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Welding Equipment	$18.73	$69.42	$88.15
420D 4WD Backhoe	$32.16	$69.16	$101.32
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$83.96	$236.02	$319.98
3 Clab D - 3 Laborers + Foreman			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Foreman	$21.68	$65.95	$87.63
Supervisor's Truck	$21.68	$0.00	$21.68
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$76.43	$212.11	$288.54

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EQUIPMENT FLEETS

3 SKWK - Liner Installation			
Skilled Laborer	$0.00	$49.09	$49.09
Skilled Laborer	$0.00	$49.09	$49.09
Skilled Laborer	$0.00	$49.09	$49.09
HDEP Welder (pipe or liner)	$17.25	$0.00	$17.25
420D 4WD Backhoe	$32.16	$69.16	$101.32
Totals	$49.41	$216.43	$265.84
B-3 - Small Building Demoltion			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Foreman	$21.68	$65.95	$87.63
928G	$52.79	$69.55	$122.34
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Totals	$324.81	$344.08	$668.89
B-6 - Chain Link Fence/Pipeline/Culvert Removal			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
928G	$52.79	$69.55	$122.34
Totals	$52.79	$166.99	$219.78
B-8 - Large Building Demolition			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Foreman	$21.68	$65.95	$87.63
928G	$36.97	$69.55	$106.52
25 Ton Crane	$78.03	$69.55	$147.58
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Dump Truck (10-12 yd3)	$125.17	$55.57	$180.74
Totals	$387.02	$413.63	$800.65
B-9 - Concrete Wall Demolition			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Foreman	$21.68	$65.95	$87.63
Air Compressor + tools	$26.90	$65.92	$92.82
Totals	$48.58	$326.75	$375.33
B-10Y - General Compaction			
General Laborer	$0.00	$48.72	$48.72
CS563E Vibratory Roller	$50.55	$69.16	$119.71
Totals	$50.55	$117.88	$168.43
B-11L - Fine Grading for Evaporation Pond Liner Base			
General Laborer	$0.00	$48.72	$48.72
14G/H	$113.67	$69.69	$183.36
Totals	$113.67	$118.41	$232.08
B-11M - Backhoe Work			
420D 4WD Backhoe	$32.16	$69.16	$101.32
Totals	$32.16	$69.16	$101.32
B-12G - Rip-Rap Machine Placed (Modified)			
966G	$99.04	$69.55	$168.59
325C	$70.25	$69.89	$140.14
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$202.36	$139.44	$341.80
B-13 - Grouted Rip-Rap & Gabion Baskets			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Foreman	$21.68	$65.95	$87.63
25 Ton Crane	$103.15	$69.55	$172.70
Totals	$124.83	$330.38	$455.21

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

EQUIPMENT FLEETS

B-12G - Rip-Rap Machine Placed (Modified)			
966G	$99.04	$69.55	$168.59
325C	$70.25	$69.89	$140.14
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$202.36	$139.44	$341.80
B-12G - Rip-Rap Machine Placed (Modified)			
966G	$99.04	$69.55	$168.59
325C	$70.25	$69.89	$140.14
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$202.36	$139.44	$341.80
B-14 PVC Drain Pipe Installation			
Foreman	$0.00	$65.95	$65.95
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
420D 4WD Backhoe	$32.16	$69.16	$101.32
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$65.23	$329.99	$395.22
B-22A - HDEP Installation - Pipe or Liner			
Foreman	$21.68	$65.95	$87.63
Skilled Laborer	$0.00	$49.09	$49.09
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
5 Ton Crane Truck	$42.38	$69.55	$111.93
Generator 5KW	$10.50	$0.00	$10.50
HDEP Welder (pipe or liner)	$17.25	$0.00	$17.25
Totals	$124.88	$282.03	$406.91
B-80A - Install Barbed Wire Fence			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$33.07	$146.16	$179.23
B-80C - Install Chain Link Fence (Flatbed truck has small crane)			
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Light Truck - 1.5 Ton	$33.07	$0.00	$33.07
Totals	$33.07	$146.16	$179.23
C-14B - Elevated Concrete Slabs (Reinforced Concrete Shaft Covers)			
Foreman	$21.68	$65.95	$87.63
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Cement finisher	$0.00	$49.68	$49.68

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

EQUIPMENT FLEETS			
Cement finisher	$0.00	$49.68	$49.68
Gas Engine Vibrator	$8.50	$69.42	$77.92
Concrete Pump	$99.23	$0.00	$99.23
Totals	$129.41	$1,565.29	$1,694.70
C-14D - Concrete Walls Formed in Place (Reinforced Concrete Adit Bulkheads)			
Foreman	$21.68	$65.95	$87.63
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
Carpenter	$0.00	$64.65	$64.65
General Laborer	$0.00	$48.72	$48.72
General Laborer	$0.00	$48.72	$48.72
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Rodmen (reinforcing concrete)	$0.00	$49.68	$49.68
Cement finisher	$0.00	$49.68	$49.68
Gas Engine Vibrator	$8.50	$69.42	$77.92
Concrete Pump	$99.23	$0.00	$99.23
Totals	$129.41	$1,545.55	$1,674.96

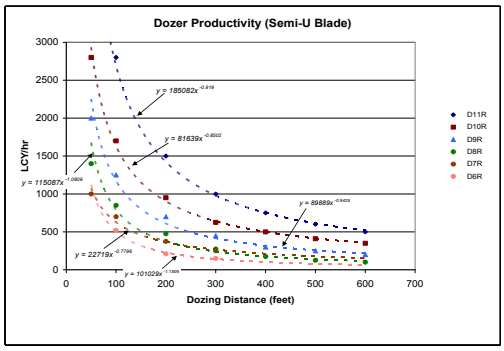
Productivity - Bulldozers

Dozer Specifications						
Description	D11R	D10R	D9R	D8R	D7R	D6R
Blade Width (SU)	18.33 ft	15.92 ft	14.17 ft	12.92 ft	12.08 ft	10.67 ft
Shank Guage (3 shanks)	9.83 ft	8.67 ft	7.67 ft	7.08 ft	6.50 ft	6.50 ft
Pocket Spacing	4.75 ft	4.33 ft	3.87 ft	3.58 ft	3.25 ft	3.25 ft
Ripping Width (Ripper + 1 Pocket)	14.58 ft	13.00 ft	11.54 ft	10.66 ft	9.75 ft	9.75 ft
Ripping Speed	1.0 mph	1.0 mph	1.0 mph	1.0 mph	1.0 mph	1.0 mph
Ripping Maneuver (turn) Time	0.25 min	0.25 min	0.25 min	0.25 min	0.25 min	0.25 min
Ripping Hourly Production (excluding maneuvering time)	5280 ft	5280 ft	5280 ft	5280 ft	5280 ft	5280 ft

Source: Caterpillar Performance Handbook Edition 35

Dozer Productivity vs. Grading Distance						
Average Dozing Distance (feet)	Production (LCY/hr)					
	D11R	D10R	D9R	D8R	D7R	D6R
50	4800	2800	2000	1400	1000	
100	2800	1700	1250	850	700	520
200	1500	950	700	475	375	210
300	1000	625	450	275	250	150
400	750	500	300	175		
500	600	410	250	125		
600	500	350	200	100		
dozer productivity = k x Dozing Distance^{p} (see graph)						
k =	185082	81639	89889	115087	22719	101029
p =	-0.919	-0.8502	-0.9425	-1.0809	-0.7796	-1.1506

Source: Caterpillar Performance Handbook Edition 35

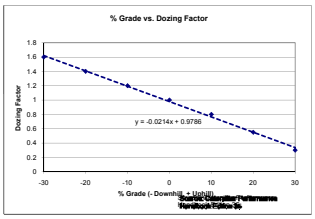


Productivity - Bulldozers (cont.)

% Grade vs. Dozing Factor	
% Grade	Dozing Factor
-30	1.6
-20	1.4
-10	1.2
0	1
10	0.8
20	0.55
30	0.3

Source: Caterpillar Performance Handbook Edition 35

% Grade Dozing Factor = -0.0214x + 0.9786 (see graph)



Job Condition Correction Factors - Bulldozers	
OPERATOR	
Average	0.75
MATERIAL (1)	
Loose stockpile	1.20
Normal	1.00
Hard to cut; frozen — with tilt cylinder	0.80
Hard to drift; "dead" (dry,non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60
SLOT DOZING OR SIDE BY SIDE	1.20
DOZING (1)	
VISIBILITY	
Good conditions	1.00
JOB EFFICIENCY	
50 min/hr	0.83

(1) Selected in facility worksheets. Other factors included as standard factors.

Source: Caterpillar Performance Handbook Edition 35

Material Densities(1)		
Material	lb/cy	kg/m^3
Alluvium	2,900	1,720
Basalt	3,300	1,960
Clay - Dry	2,500	1,480
Granite - broken	2,800	1,660
Gravel	2,550	1,510
LS - broken	2,600	1,540
LS - crushed	2,600	1,540
Sandstone	2,550	1,510
Shale	2,100	1,250
Stone - crushed	2,700	1,600
Tailings - Coarse (dry, loose sand)	2,400	1,420
Tailings - Slimes (loose sand & clay)	2,700	1,600
Topsoil	1,600	950

(1) Source: Caterpillar Performance Handbook Edition 35

Note: uses Sand & Gravel - Dry from Caterpillar Handbook

Productivity - Scrapers

Scraper Specifications		
Description	631G	637G PP
Empty Weight	100,600 lb	112,760 lb
Payload Capacity		
Struck	24 cy	24 cy
Heaped	34 cy	34 cy
Average	29 cy	29 cy
Loaded by	One D10R	Self*
Load Time	0.5 min	0.5 min
Maneuver and Spread	0.7 min	0.6 min
Job Efficiency	0.83	0.83
Rolling Resistance**	2.5%	2.5%

* Requires pair

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 35

Weight of Materials			Downhill Scraper Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)											
			631G						637G PP					
Material	lb/cy	Scraper Load lb	Loaded Weight (lbs)	22.0%	16.0%	10.0%	5.0%	1.0%	Loaded Weight (lbs)	25.0%	20.0%	15.0%	10.0%	5.0%	1.0%
Alluvium	2,900	84,100	184,700	7.5	10	13	33	33	196,860	7	10	10	18.5	34	34
Basalt	3,300	95,700	196,300	7.5	10	13	24.5	33	208,460	7	10	10	18.5	25	34
Clay - Dry	2,500	72,500	173,100	7.5	10	13	33	33	185,260	7	10	10	18.5	34	34
Granite - broken	2,800	81,200	181,800	7.5	10	13	33	33	193,960	7	10	10	18.5	34	34
Gravel	2,550	73,950	174,550	7.5	10	13	33	33	186,710	7	10	10	18.5	34	34
LS - broken	2,600	75,400	176,000	7.5	10	13	33	33	188,160	7	10	10	18.5	34	34
LS - crushed	2,600	75,400	176,000	7.5	10	13	33	33	188,160	7	10	10	18.5	34	34
Sandstone	2,550	73,950	174,550	7.5	10	13	33	33	186,710	7	10	10	18.5	34	34
Shale	2,100	60,900	161,500	7.5	10	18	33	33	173,660	10	10	13.5	18.5	34	34
Stone - crushed	2,700	78,300	178,900	7.5	10	13	33	33	191,060	7	10	10	18.5	34	34
Tailings - Coarse (dry, loose sand)	2,400	69,600	170,200	7.5	10	13	33	33	182,360	7	10	10	18.5	34	34
Tailings - Slimes (loose sand & clay)	2,700	78,300	178,900	7.5	10	13	33	33	191,060	7	10	10	18.5	34	34
Topsoil	1,600	46,400	147,000	7.5	10	18	33	33	159,160	10	10	13.5	18.5	34	34
			Empty	10	18	24.5	33	33	Empty	10	10	13.5	18.5	34	34

Source: Caterpillar Performance Handbook Edition 34

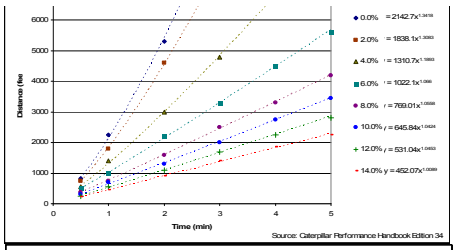
Productivity - Scrapers (cont.)

631G Scraper Travel Time - Uphill Loaded

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0.0%	825	2250	5300				2142.7	1.3418
2.0%	750	1800	4600				1838.1	1.3083
4.0%	550	1400	3000	4800	6700		1310.7	1.1893
6.0%	490	1000	2200	3300	4500	5600	1022.1	1.066
8.0%	375	750	1600	2500	3300	4200	769.01	1.0558
10.0%	300	700	1300	2000	2750	3450	645.84	1.0424
12.0%	250	550	1100	1700	2250	2800	531.04	1.0453
14.0%	225	450	900	1400	1850	2250	452.07	1.0089

$$\text{Travel Time (min)} = \sqrt[p]{\frac{\text{distance}}{k}}$$

Source: Caterpillar Performance Handbook Edition 35

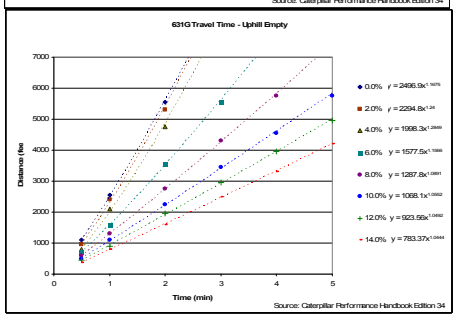


Source: Caterpillar Performance Handbook Edition 34

631G Scraper Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0.0%	1100	2550	5550				2496.9	1.1675
2.0%	950	2400	5300				2294.8	1.24
4.0%	800	2100	4750				1998.3	1.2849
6.0%	700	1600	3550	5550			1557.5	1.1566
8.0%	600	1300	2750	4300	5750		1287.8	1.0891
10.0%	500	1100	2250	3450	4550	5750	1068.1	1.0552
12.0%	450	900	1950	2950	3950	4950	923.56	1.0492
14.0%	375	800	1600	2500	3300	4200	783.37	1.0444

$$\text{Travel Time (min)} = \sqrt[p]{\frac{\text{distance}}{k}}$$

Source: Caterpillar Performance Handbook Edition 35



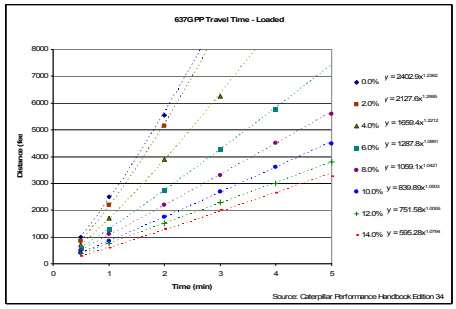
Source: Caterpillar Performance Handbook Edition 34

Productivity - Scrapers (cont.)

637G Push-Pull Scraper Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0.0%	1000	2500	5550				2402.9	1.2362
2.0%	850	2200	5150				2127.6	1.2995
4.0%	700	1700	3900	6250			1659.4	1.2212
6.0%	600	1300	2750	4300	5750		1287.8	1.0891
8.0%	500	1100	2200	3300	4500	5600	1059.1	1.0421
10.0%	400	850	1750	2700	3600	4475	839.89	1.0503
12.0%	375	750	1500	2300	3000	3800	751.58	1.0055
14.0%	275	600	1300	2000	2650	3250	595.28	1.0794

$$\text{Travel Time (min)} = \sqrt[p]{\frac{\text{distance}}{k}}$$

Source: Caterpillar Performance Handbook Edition 35

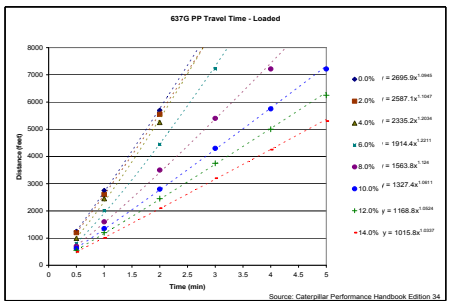


Source: Caterpillar Performance Handbook Edition 34

637G Push-Pull Scraper Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0.0%	1250	2750	5700				2695.9	1.0945
2.0%	1200	2600	5550				2587.1	1.1047
4.0%	990	2450	5250				2335.2	1.0234
6.0%	800	2000	4450	7216			1914.4	1.2211
8.0%	700	1600	3500	5400	7216		1563.8	1.124
10.0%	625	1350	2800	4300	5750	7216	1327.4	1.0611
12.0%	550	1200	2450	3750	5000	6250	1168.8	1.0524
14.0%	495	1010	2100	3200	4250	5300	1015.8	1.0337

$$\text{Travel Time (min)} = \sqrt[p]{\frac{\text{distance}}{k}}$$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

Productivity - Haul Trucks

Haul Truck Specifications		
Description	769D	777D
Chassis Weight	53,506 lb	111,575 lb
Body Weight	17,200 lb	36,788 lb
Standard Liner Weight		
Total Truck Weight	70,706 lb	148,363 lb
Payload Capacity		
Struck	21.6 cy	55 cy
Heaped	31.7 cy	78.6 cy
Average	26.65 cy	66.8 cy
Maneuver to Load Time	0.7 min	0.7 min
Maneuver and Dump Time	1.1 min	1.1 min
Job Efficiency	0.83	0.83
Rolling Resistance**	2.5%	2.5%

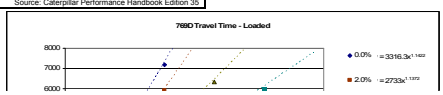
**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under

Source: Caterpillar Performance Handbook Edition 35

Weight of Materials				Downhill Haul Truck Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)									
				769D					777D				
Material	lb/cy	Truck (769D) Load lb	Truck (777D) Load lb	Loaded Weight (lbs)	20.0%	15.0%	10.0%	5.0%	Loaded Weight (lbs)	20.0%	15.0%	10.0%	5.0%
Alluvium	2,900	77,285	193,720	147,991	11	11	15	26	342,083	7	9	12	29
Basalt	3,300	87,945	220,440	158,651	11	11	11	20	368,803	7	7	12	21
Clay - Dry	2,500	66,625	167,000	137,331	11	11	15	26	315,363	7	9	16	29
Granite - broken	2,800	74,620	187,040	145,326	11	11	15	26	335,403	7	9	12	29
Gravel	2,550	67,958	170,340	138,664	11	11	15	26	318,703	7	9	16	29
LS - broken	2,600	69,290	173,680	139,996	11	11	15	26	322,043	7	9	12	29
LS - crushed	2,600	69,290	173,680	139,996	11	11	15	26	322,043	7	9	12	29
Sandstone	2,550	67,958	170,340	138,664	11	11	15	26	318,703	7	9	16	29
Shale	2,100	55,965	140,280	126,671	11	11	15	26	288,643	7	9	16	29
Stone - crushed	2,700	71,955	180,360	142,661	11	11	15	26	328,723	7	9	12	29
Tailings - Coarse (dry, loose sand)	2,400	69,600	170,200										
Tailings - Slimes (loose sand & clay)	2,700	78,300	178,900										
Topsoil	1,600	42,640	106,880	113,346	11	11	15	26	255,243	9	12	16	29
				Empty	15	15	26	36	Empty	16	16	29	39

Source: Caterpillar Performance Handbook Edition 35

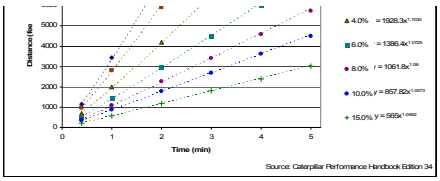
769D Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min) 0.4	1	2	3	4	5	k	p
0.0%	1148	3428	7183				3316.3	1.1422



2.0%	951	2821	5904				2733	1.1372
4.0%	689	1984	4198	6330			1928.3	1.1033
6.0%	508	1427	2952	4510	6002		1386.4	1.0725
8.0%	394	1082	2263	3411	4592	5740	1061.8	1.06
10.0%	328	869	1771	2690	3608	4510	857.82	1.0373
15.0%	213	574	1181	1804	2394	3018	565	1.0482

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

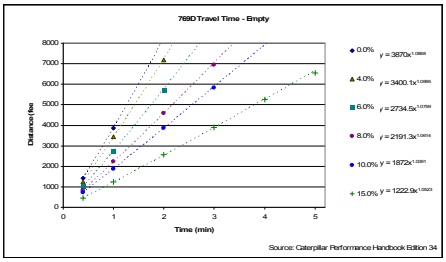
Productivity - Haul Trucks (cont.)

769D Haul Truck Travel Time - Uphill Empty

Total Resistance (%) (rolling + grade)	Time (min) 0.4	1	2	3	4	5	k	p
0.0%	1427	3870					3870	1.0888
4.0%	1246	3444	7183				3400.1	1.0895
6.0%	1017	2755	5740				2734.5	1.0759
8.0%	820	2230	4592	6954			2191.3	1.0614
10.0%	722	1870	3870	5838			1872	1.0391
15.0%	459	1246	2558	3903	5248	6560	1222.9	1.0523

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



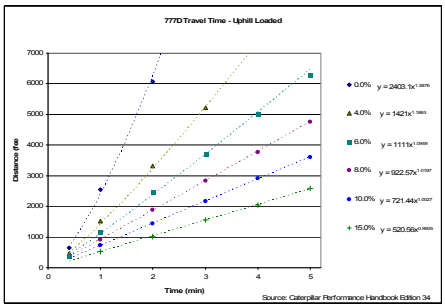
Source: Caterpillar Performance Handbook Edition 34

777D Haul Truck Travel Time - Uphill Loaded

Total Resistance (%) (rolling + grade)	Time (min) 0.4	1	2	3	4	5	k	p
0.0%	656	2558	6068				2403.1	1.3876
4.0%	459	1509	3313	5215	7085		1412	1.1863
6.0%	394	1148	2460	3706	5018	6298	1111	1.0949
8.0%		918	1886	2837	3772	4756	922.57	1.0197
10.0%		722	1443	2165	2919	3608	721.44	1.0027
15.0%		525	1017	1558	2034	2591	520.56	0.9905

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

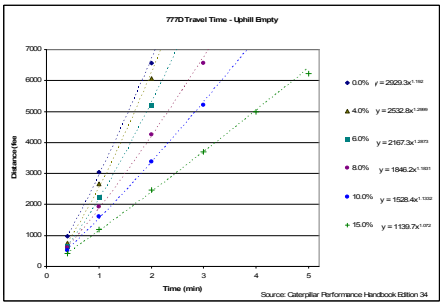
Productivity - Haul Trucks (cont.)

777D Haul Truck Travel Time - Uphill Empty

Total Resistance (%) (rolling + grade)	Time (min) 0.4	1	2	3	4	5	k	p
0.0%	968	3034	6560				2929.3	1.192
4.0%	754	2657	6068				2532.8	1.2999
6.0%	656	2247	5182				2167.3	1.2873
8.0%	607	1935	4248	6560			1846.2	1.1831
10.0%	525	1607	3378	5215	7282		1528.4	1.1332
15.0%	410	1197	2460	3706	4986	6232	1139.7	1.072

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

Productivity - Wheel Loaders

Wheel Loader Specifications

Description	928G	966G	972G	988G	992G
Payload Capacity					
Struck	2.5 cy	4.46 cy	4.71 cy	6.9 cy	13.2 cy
Heaped	3.25 cy	5 cy	5.5 cy	8.33 cy	16 cy
Average	2.88 cy	4.73 cy	5.11 cy	7.62 cy	14.60 cy
Matched Truck	N/A	N/A	N/A	769D	777D
Average Cycle Time	0.45 min	0.50 min	0.50 min	0.55 min	0.60 min
Passes to Fill Truck	N/A	N/A	N/A	4	5
Time to Fill Truck	N/A	N/A	N/A	2.29	3.23
Rolling Resistance**	2.5%	2.5%	2.5%	2.5%	2.5%

**A firm, smooth, rolling roadway with

Source: Caterpillar Performance Handbook Edition 35

Wheeled Loaders	General Purpose	Spade Nose-Rock
928G	3.25 cubic yard	not available
966G	5.0 cubic yard	not available
972G	5.5 cubic yard	not available
988G	not available	8.3 cubic yard
992G	not available	16.0 cubic yard

note: capacities are 2:1 heaped, SAE standards
NOTES: Buckets for both Track Excavators and Wheel Loaders are offered by CECo & available for the rental rates quoted. Bucket sizes and capacities obtained from CATERPILLAR PERFORMANCE HANDBOOK, ED 34; Section 12, Wheel Loader and Section 4, Excavators Bucket capacity and width dictated by material weight and configuration, ie., shot, loose, tight bank, stockpile, rock, etc. Typical Nevada applications were used to determine above bucket capacities as related to materials & densities. Job site specifics may alter specific bucket requirements. (Cashman Equipment, Elko, Nevada - February 21, 2005)

Productivity - Motor Graders

Motor Grader Specifications

Description	14G/H	16G/H
Grader Width	9.25 ft	10.08 ft
Blade Width	14.00 ft	16.00 ft
Ripper Width (7 shanks)	8.50 ft	9.75 ft
Road Maintence Speed		
Minimum	3.0 mph	3.0 mph
Maximum	9.5 mph	9.5 mph
Average	6.3 mph	6.3 mph
Hourly Production	33000 ft	33000 ft
Ripping Speed	1.0 mph	1.0 mph
Minimum	0.0 mph	0.0 mph
Maximum	3.0 mph	3.0 mph
Average	1.5 mph	1.5 mph
Hourly Production (excluding maneuver time)	7920 ft	7920 ft
Maneuver time per pass	0.5 min	0.5 min

Source: Caterpillar Performance Handbook Edition 35

Productivity - Excavators

Track Excavator Specifications

Description	320C	325C	345B	385BL
Bucket Capacity	1.57 cy	2.22 cy	3 cy	7.3 cy
Fill Factor	0.90	0.90	0.90	0.90
Average Bucket Load	1.413 cy	1.998 cy	2.7 cy	6.57 cy
Soil Type	hard clay	hard clay	hard clay	hard clay
Job Condition	med-hard	med-hard	med-hard	med-hard
Cycle Times (minutes) - based on hard clay				
Load Bucket	*0.09*	*0.09*	*0.13*	*0.19*
Swing Loaded	*0.06*	*0.06*	*0.07*	*0.06*
Dump Bucket	*0.03*	*0.04*	*0.02*	*0.03*
Swing Empty	*0.05*	*0.06*	*0.06*	*0.07*
Total Cycle Time	0.23	0.25	0.28	0.35
Job Efficiency	0.83	0.83	0.83	0.83
Operator Efficiency	0.75	0.75	0.75	0.75
Corrected Productivity (LCY/hr)	229 cy	299 cy	360 cy	701 cy
Exploration Road Cycle Time [1]	0.38	0.40	N/A	N/A
Exploration Road Corr Prod (LCY/hr)	139 cy	187 cy	N/A	N/A
Track Width	9.17 ft	9.83 ft	11.42 ft	11.50 ft

Track Excavators	Hvy Duty Rock	Extreme Service Exc (e.g. haulroad recontour)	Hvy Duty Trench
320C	30", .78 cubic yd	55.1", 1.57 cubic yard	23.6", .54 yard
325C	36", 1.25 cubic yd	60", 2.22 cubic yard	30", .88 cubic yard
345B	43.2", 1.69 cubic yd	65", 3.0 cubic yd	48", 2.09 cubic yd
385BL	85", 6.30 cubic yd.	96.0, 7.30 cubic yd	57", 2.75 cuic yd

Note: capacities are 2:1 heaped, SAE standards
NOTES: Buckets for both Track Excavators and Wheel Loaders are offered by CECo & available for the rental rates quoted. Bucket sizes and capacities obtained from CATERPILLAR PERFORMANCE HANDBOOK, ED 34; Section 12, Wheel Loader and Section 4, Excavators Bucket capacity and width dictated by material weight and configuration, ie., shot, loose, tight bank, stockpile, rock, etc. Typical Nevada applications were used to determine above bucket capacities as related to materials & densities. Job site specifics may alter specific bucket requirements (Cashman Equipment, Elko, Nevada - February 21, 2005)

Ditch/Trench Excavation				
Bucket Capcity	0.45 cy	0.88 cy	2.09 cy	2.75 cy
Fill Factor	0.50	0.50	0.50	0.50
Corrected Productivity (LCY/hr)	37 cy	66 cy	139 cy	147 cy

Source: Caterpillar Performance Handbook Edition 35

(1) Exploration cycle time assumes feathering/smoothing performed by excavator

Concrete Breaking Production

Track Excavator w/Hammer Specifications			
Description	**325C**	**345B**	**385B**
Hydraulic Hammer	H120D s	H160D s	H180D s
Material	reinforced concrete		
Min Shift Production (8hr)	160 cy	300 cy	350 cy
Max Shift Production (8hr)	300 cy	850 cy	1550 cy
Avg Shift Production (8hr)	230 cy	575 cy	950 cy
Job Efficiency	0.83	0.83	0.83

Source: Caterpillar Performance Handbook Edition 35

Drill Hole Plugging Productivity

Drill Hole Plugging Productivity		
Description	**Drill Rig**	**Pump Rig**
Move-to-hole, set-up, tear-down	1.5 hr	1.5 hr
Pulling casing (threaded, not cemented)	80 ft/hr	
Single-pass perforating (water wells)		
4-inch	240 ft/hr	
6-inch	240 ft/hr	
8-inch	200 ft/hr	
12-inch	150 ft/hr	
18-inch	40 ft/hr	
Perforation setup,trip in/out,tear-down tie	1.0 hr	
Perforation tool cost (wear cost)	$1.25 ft	
Inert Material Placement (backfill)		
Grouting/Cement		5.33 cy/hr
Cuttings (see below)		3.50 cy/hr
	Sourmce: WDC Exploration, Dec 2005	
Cuttings Placement Productivity		
Shift productivity (Means 02210-700-0120; Crew B11M)	28 cy / shift	
Shift length	8 hours	
Estimated Hourly Productivity	3.5 cy / hour	

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

2010 MOB/DEMOB using R.S. MEANS and SRCE equipment and DAVIS-BACON wages

blue font is for project specific user input

Miles one way from Washoe County Courthouse	0
Miles to project, one way	9
Hours travel time @ 55 MPH	0.16

project name, date

Equipment	Mobilization $/hour (1)	$ Flat Rate load & unload (2)	$/hour Deadhead (empth return cost (3)	Disassembly and assembly (4)	Permit cost $ (5)	Pilot car costs	# of units	One Way Mob Cost	Total Mob and Demob Cost
Bulldozers									
D6R	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
D7R	$ 108	$ 108	$ -	$ -	$ 25	$ -	1	$ 151	$ 302
D8R	$ 155	$ 155	$ -	$ -	$ 25	$ -		$ -	$ -
D9R	$ 155	$ 155	$ -	$ 5,000	$ 25	$ -		$ -	$ -
D10R	$ 155	$ 155	$ -	$ 5,000	$ 25	$ -		$ -	$ -
D11R (two transports) (7)	$ 155	$ 155	$ -	$ 5,000	$ 25	$ -		$ -	$ -
Motor Graders									
14G/H	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
16G/H	$ 108	$ 108	$ -	$ -	$ 25	$ -		$ -	$ -
Track Excavators									
320C	$ 108	$ 108	$ -	$ -	$ -	$ -		$ -	$ -
325C	$ 108	$ 108	$ -	$ -	$ -	$ -	1	$ 126	$ 252
345B	$ 155	$ 155	$ -	$ -	$ 25	$ -		$ -	$ -
385BL	$ 155	$ 155	$ -	$ 13,000	$ 25	$ -		$ -	$ -
Scrapers									
631G	$ 155	$ 155	$ -	$ -	$ 25	$ -		$ -	$ -
637G PP	$ 155	$ 155	$ -	$ -	$ 25	$ -		$ -	$ -
Wheeled Loaders									
928G	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
966G	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
972G	$ 108	$ 108	$ -	$ -	$ -	$ -		$ -	$ -
988G	$ 108	$ 108	$ -	$ 5,000	$ 25	$ -		$ -	$ -
992G (two transports) (7)	$ 155	$ 155	$ -	$ 20,000	$ 25	$ -		$ -	$ -
Hydrauilc Hammers									
H-120 (fits 325) no charge, mobilize with ma	$ -	$ -	$ -	$ -	$ -	$ -	1	$ -	$ -
H-160 (fits 345) no charge, mobilize with ma	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -
H-180 (fits 365/385) no charge, mobilize wit	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -
Other Equipment									
420D 4WD Backhoe	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
CS563E Vibratory Roller	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Light Truck - 1.5 Ton	$ 64	$ 64	$ -	$ -	$ -	$ -		$ -	$ -
Supervisor's Truck	$ 53	$ 53	$ -	$ -	$ -	$ -	1	$ 61	$ 123
Air Compressor + tools	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Welding Equipment	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Heavy Duty Drill Rig	$ 426	$ 426	$ -	$ -	$ -	$ -		$ -	$ -
Pump (plugging) Drill Rig	$ 426	$ 426	$ -	$ -	$ -	$ -	1	$ 495	$ 990
Concrete Pump	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Gas Engine Vibrator	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Generator 5KW	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
HDEP Welder (pipe or liner)	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
5 Ton Crane Truck	$ 92	$ 92	$ -	$ -	$ -	$ -	1	$ 107	$ 214
25 Ton Crane	$ 153	$ 153	$ -	$ -	$ -	$ -		$ -	$ -
Trucks									
769D	$ 108	$ 108	$ -	$ -	$ 25	$ -		$ -	$ -
777D (two transports) (8)	$ 155	$ 155	$ -	$ 20,000	$ 25	$ -		$ -	$ -
613E (5,000 gal) Water Wagon	$ 155	$ 155	$ -	$ -	$ -	$ -		$ -	$ -
621E (8,000 gal) Water Wagon	$ 155	$ 155	$ -	$ -	$ 25	$ -		$ -	$ -
Dump Truck (10-12 yd3)	$ 126	$ 126	$ -	$ -	$ -	$ -	1	$ 146	$ 293
Miscellaneous									
Equipment for dry hole abandonment (420D 4	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
Pilot car (Light Truck)	$ 52	$ 52	$ -	$ -	$ -	$ -		$ -	$ -
Truck Tractor + Lowbed Trailer 75 ton	$ 155	$ 155	$ -	$ -	$ -	$ -		$ -	$ -
Truck Tractor + Flatbed Trailer 40 ton	$ 108	$ 108	$ -	$ -	$ -	$ -		$ -	$ -
Light Truck + Flatbed Trailer 25 ton	$ 73	$ 73	$ -	$ -	$ -	$ -		$ -	$ -
							7		$ 2,173

Footnotes and explanations of assumptions

(1) The sum of the cost of equipment from either the SRCE or RSM equipment tab plus Davis-Bacon labor tab
(2) Assumes minimum of 30 minutes load and secure and 30 minutes unsecure and unload machine.
(3) No "Deadhead" (empty) charge for Mob up to 50 miles. More than 50 miles the cost of deadhead same rate as loaded miles.
(4) Only large equipment requires disassembly for transport. Includes cost of mechanic + mechanic's truck + crane operator + crane.
(5) Nevada Dept of Transportation overdimensional permits are $25 per trip or $60 per year.
(6) Sum of mobilization plus all ancillary costs for one way loaded and return empty.
(7) Two transports are required but the second transport does not need pilot cars or permits or a heavy duty trailer.
(8) Two transports required with both requiring full complement of pilot cars and permits.
(9) Pilot Car costs based on SRCE light truck costs and Davis-Bacon wages
(10) SRCE costs based on July 2010 vendor quotes.
(11) RS Means costs based on R.S. Means Heavy Construction Cost Data, 2010
(12) Davis_Bacon wages based on July 30, 2010 determination.

Project Name: Bishop Mill Project - Reclamation Plan
Date of Submittal: December 21, 2010
File Name: Bishop_Mill_Reclamation_Bond_Cost_Estimate.xls
Model Version: Version 1.1.2 (updated 03 February, 2008)
Cost Data: Standardized Data
Cost Data File: cost_data-std-nv2010.xls

Well Abandonment

	Labor	Equipment	Materials	Totals
Production, Dewatering,	$951	$1,981	$516	$3,448
Monitoring Wells	$1,520	$4,904	$91	$6,515
TOTALS	**$2,471**	**$6,885**	**$607**	**$9,963**

Color Code Key	
User Input - Direct I	**Direct Input**
User Input - Pull Do	**Pull Down Selection**
Program Constant (	**Alternate Input**
Program Calculated	**Locked Cell - Formula or Reference**

Well seal thickness: **20** ft
Minimum seal above groundwater table: **50** ft

Production, Dewatering and Infiltration Well Closure

	Description (required)	Number of Holes	Casing Diam in	Average Depth(1) ft bgs	Depth to First Water ft bgs	Original Static Water Level ft bgs	Top of Slotted Casing(2) ft bgs	Blank Casing Below Top of Screen(2) ft	Type of Pump (if any) (select)	Depth to Pump ft bgs	Hole Plug Method (select)	Casing Volume per ft cf	Perforation Length (3,4) ft	Grout Volume per Hole(4,5) cy	Cement Volume per Hole(6) cy	Inert Media Volume per Hole(7) cy	Pump Removal Labor Cost $	Pump Removal Equip Cost $	Perf Labor Cost $	Perf Equip Cost (8) $	Grout + Cement Labor Cost(9) $	Grout + Cement Equip Cost(9) $	Grout + Cement Material Cost $	Inert Media Labor Cost(10) $	Inert Media Equip Cost(9) $	Total Cost $
1	**PW-3**	**1**	**12.0**	**130**	**47**	**47**	**30**	**0**	**Submersible**	**100**	**Grout Only**	0.790	0	6.44	0.60		$224	$488	$0	$0	$432	$1,397	$516	$295	$96	$3,448
																	$224	**$488**	**$0**	**$0**	**$432**	**$1,397**	**$516**	**$295**	**$96**	**$3,448**

(1) For previously abandoned holes enter "0" for depth
(2) Wells abandoned per Nevada Administrative Code (NAC 534.420). Hole grouted and perforated from bottom to 50 feet (15.24m) above the top of the screen, or first water encountered or original static water level, depending on vertical hydraulic gradient and well construction parameters. Inert media (cuttings or alluvium) used from top of grout to top seal.
(3) Perforation length = amount of blank casing below first water (for confined aquifers) or predicted recovered water table (unconfined aquifers) + 50 feet (15.24m) of blank casing above water table
(4) Assumes 50' (15.24m) sanitary seal at top of hole. Therefore, perforation and grouting only required to bottom of sanitary seal.
(5) Assumes 100% loss to formation for grout (abandonite) for screened and perforated sections.
(6) Assumes 10' (3m) top seal of cement in casing only. See note 4.
(7) Inert material is cuttings or alluvium sourced locally.
(8) Includes perforation tool wear cost/ft of perforation (see Productivty Sheet).
(9) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup. If no perforation required, use standard drill rig.
(10) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes:

Monitoring Well Closure

	Description (required)	Number of Holes	Casing Diam in	Average Depth ft bgs	Top of Screen(1) ft bgs	Hole Plug Method (select)	Casing Volume per ft ft3	Grout Volume/ Well(2,3) cy	Cement Volume per Hole(4) cy	Inert Backfill Volume per Hole(5) cy	Total Grouting Hours/ Hole hr	Total Inert Media Hours/ Hole hr	Grout + Cement Labor Cost(6) $	Grout + Cement Equip Cost(6) $	Grout + Cement Material Cost $	Inert Material Labor Cost(7) $	Inert Material Equip Cost(7) $	Total Cost $
1	**MW-1**	**1**	**5.0**	**50**	**40**	**Grout Only**	0.140	0.19	0.13		3.1		$377	$1,216	$46	$0	$0	$1,639
2	**MW-2**	**1**	**4.0**	**50**	**30**	**Grout Only**	0.090	0.13	0.08		3.1		$377	$1,216	$29	$0	$0	$1,622
3	**MW-3**	**1**	**2.0**	**88**	**58**	**Grout Only**	0.020	0.06	0.02		3.2		$389	$1,256	$9	$0	$0	$1,654
4	**MW-4**	**1**	**2.0**	**53**	**23**	**Grout Only**	0.020	0.03	0.02		3.1		$377	$1,216	$7	$0	$0	$1,600
													$1,520	**$4,904**	**$91**	**$0**	**$0**	**$6,515**

Wells abandoned per NAC 534.420 with bentonite grout placed to 50 feet above the top of the screen (see note 1).
(1) Assumes top of screen is at or above the static water level (in unconfined aquifers) or the depth of first water encountered (in confined aquifers).
(2) Assumes 25% loss to formation for grouting
(3) Grouting only required to 50' (15.24m) above the top of screen because monitor wells are constructed with a seal in the annular space.
(4) Assumes top 10' (3m) plugged with cement.
(5) Assumes hole plugged with inert material (cuttings or alluvium) above grout up to cement surface plug.
(6) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup (see Productivty Sheet).
(7) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes: