STATE OF COLORADO

Ebert - DNR, Jared <jared.ebert@state.co.us>

Climax draft revision to closure cost update

Lazuk, Raymond <rlazuk@fmi.com> Tue, Feb 12, 2019 at 8:48 AM
To: "Ebert - DNR, Jared" <jared.ebert@state.co.us>
Cc: "Scott - DNR, Eric" <eric.scott@state.co.us>, Andrew Hardy <Andrew.Hardy@ajax-ltd.com>, "Kelts, Diana" <dkelts@fmi.com>

Jared,

Please see attached materials in response to our discussions regarding the Climax closure cost model. The comparison cost table highlights our latest cost updates (in blue) compared to our current cost and the DRMS revised cost. The draft reclamation plan provides the narrative for the updates and the set of figures now includes the McNulty and North 40 OSFs at year 2023 (5-year build-out). We also include back-up information to justify the cost assumptions in this latest version.

Once you have had a chance to review this information we would like to set up a teleconference to review the updates and answer any questions. Our hope is that we can reach agreement during the call such that we can finalize and formally submit the revised cost model for DRMS approval. Upon receiving DRMS approval we will begin the process to update the reclamation performance surety.

- Ray

Raymond Lazuk

Environmental Manager

Climax Mine

Hwy 91 – Fremont Pass

Climax, CO 80429

Office: 719-486-7584

Cell: 719-201-1282

rlazuk@fmi.com

5 attachments

ComparisonCosts_DRMS_16Nov2018_Climax_11Dec2018_021219.xlsx
29K

2019 Update-Reclamation Plan_Draft_021119.pdf
181K

Clx RCE Figures.pdf
10636K

Clx RCE Cost Model.pdf
547K

Clx RCE Backup.pdf
1896K

Climax Molybdenum Company – Climax Mine, CO
Permit M-1977-493
2019 Reclamation Cost Estimate Update

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1 General Reclamation Update

There are many areas of the Climax property that have been disturbed during the past approximately 100 years of mining activities. This reclamation plan for the Climax Mine continues to outline specific reclamation strategies for all existing and anticipated new disturbances towards a focus of long term water management and treatment. As agreed with DRMS, this update uses the interim 5-year mine plan as its basis (end of 2023).

This update to the Climax reclamation cost estimate approved by DRMS as AM-06 (2011) has been developed in response to Climax's 5-year cost revision (2016) and DRMS's response (2018) which included its equivalent CIRCES model results. The following key elements have been evaluated for this update:

- 2023 life of mine (LOM) facility limits for the North 40 OSF, McNulty OSF and Mayflower TSF.
- Detailed regrade designs and stormwater channel layouts for the OSFs based upon the 2023 mine plan and using AM-06 and TR-25 design criteria (see new Figures 3 and 4).
- Current plan for the proposed East Side Channel and East Side Pipeline alignments, using repurposed linear facilities constructed during the Climax Restart Project of 20010-11 (see new Figure 5).
- Updated construction approaches for Tenmile Tunnel, Roads and Revegetation.
- Updated unit rates, production calculations and correction factors using past Climax and Henderson project experience, specific industry quotes, EquipmentWatch (2019), the Caterpillar Handbook (2018) and RS Means (2019).

2 Site Specific Reclamation Planning

As specified in the permit amendment AM-06, specific reclamation strategies have been outlined for all areas of the mine. This narrative describes reclamation plans for all areas including the Open Pit, the 4 tailing dams, the 2 Overburden Storage Facilities (OSFs), and the 3 Tailing Storage Facilities (TSFs). It also refers to the long-term strategy for site-wide water management and demolition of structures upon cessation of mining. Attached Figures 1 through 5 have been utilized as the basis for the proposed final reclamation design and illustrate the final facility layout with respect to post-mine land use. Since the approval of AM-06, four key Technical Revisions (TRs) have been approved, TR-21, -22, -24 and -25 for which closure components have been referenced herein as part of this reclamation cost update.

2.1 Storke Complex

Most of the Storke Complex has already been reclaimed. Thus, the only remaining work includes hauling and spreading approximately 5,000 cy of biosolids from the Robinson Staging Area to cover 10 acres of remaining disturbance at about 4-inches thick.

The AM-06 cost for this project area included reclamation of a potential OSF on Ceresco Ridge. This OSF is no longer planned (per TR-22) so the cost for its reclamation including the construction of a seepage collection system at its toe has been eliminated.

2.2 Open Pit

The open pit will not be revegetated due to accessibility and safety concerns. The final slopes will likely remain at an angle of repose (approximately 1.5H:1V). Weathering, raveling, and ice action will cause natural reshaping of the benches and highwalls over time which will soften visual impacts. Administrative controls will be maintained to control public access via approximately 40 “No Trespassing” signs which will be installed approximately every 300 feet around the perimeter, where access is reasonable.

On the margins of the pit, where slopes are less steep, some revegetation may be possible (per DRMS requirement). In these cases, up to an estimated 27,000 cy of topsoil will be hauled from the McNulty OSF topsoil stockpiles to the open pit periphery and revegetated with the upland seed mixture.

The AM-06 cost for this project area included the installation of a 2,800 lf pipeline as part of a pit dewatering system. Climax will construct a pit dewatering system as part of production operations and it will remain in place after mining ceases (per TR-24), therefore the post mining cost for this item has been eliminated.

2.3 Mine Mill Complex

The Mine Mill Complex area will be regraded and reclaimed. Based on a new 5-year mine plan, footprints for the North 40 and McNulty OSFs have been revised. As such, approximately 243 acres will be regraded in the Mine Mill Complex at year end 2023 for a total of approximately 392,000 cy. This area will then be covered with a minimum of 12 inches of biosolids or topsoil and revegetated with the upland seed mixture. Biosolids will be hauled from the Robinson biosolids staging area or topsoil will be hauled from the McNulty OSF topsoil stockpiles. Demolition costs for the structures in the Mine Mill Complex are addressed in sections 2.23, 2.24 and 2.25; revegetation costs are addressed in section 2.18.

2.4 North 40 OSF

The lower portions of the North 40 OSF may be reclaimed concurrently with production, but final reclamation will not be completed until the OSF is no longer required for production or reclamation operations. By 2023, it is anticipated that the North 40 OSF may have reached its LOM limits. Regrading of the OSF for closure will be no steeper than 2H:1V interbench (per TR-22) with some areas considerably less steep, for a total of approximately 352,000 cy (see Figure 3).

Subsoil and topsoil to be salvaged from the ultimate footprint of the McNulty OSF will be stockpiled to the immediate north of the North 40 OSF. As such, approximately 80 acres will be covered at the North 40 OSF for a total of 129,000 cy of topsoil and/or biosolids which will be hauled and placed over the regraded surface for a total of 12 inches of growth medium to be revegetated with the upland standard seed mixture.

The work involves the construction of approximately 13,300 lf of lined diversion channel using both a nonwoven geotextile and sized riprap. The riprap unit rate is an average of three actual costs for similarly constructed reclamation channels (Climax East Side Channel 2005, Pinto Valley 4-Dam East Channel 2010, Pinto Valley 1-Dam East Channel 2012), escalated accordingly. An additional 1,200 lf of ACB-lined down drains will be constructed on the reclaimed dump surface (per TR-25). The ACB (articulated concrete block) unit rate is an average of two actual costs for similarly constructed reclamation channels (Pinto Valley 4-Dam West Channel 2010, AZ; Pinto Valley 1-Dam West Channel 2012, AZ) by Ames Construction Company. All unit rates have been escalated to 2019 costs accordingly.

2.5 McNulty OSF

Some portions of the McNulty OSF may be reclaimed concurrently with production, but final reclamation will not be completed until the OSF is no longer required for production or reclamation operations. By 2023, it is anticipated that the McNulty OSF will be regraded in a similar manner as the North 40 OSF which includes 2H:1V interbench slopes (per TR-22) for a total of approximately 2,205,777 cy (see Figure 4).

Subsoil and topsoil to be salvaged from the regraded footprint of the McNulty OSF will be stockpiled around its perimeter. According to the 2023 mine plan, approximately 359 acres will be covered at the McNulty OSF for a total of 578,703 cy of topsoil and/or biosolids which will be hauled and placed over the regraded surface for a total of 12 inches of growth medium. After topsoil placement, the lower portion of the OSF (below 11,800 feet) will be seeded with the upland standard seed mixture and higher areas will be seeded with the alpine seed mixture. TR-25 illustrates the final LOM configuration for the stormwater controls on the OSF to be constructed during the reclamation project. These include down drains and perimeter diversion channels, a portion of which will be needed under the 2023 closure plan scenario.

The work involves the construction of approximately 30,400 lf of lined diversion channel using both a nonwoven geotextile and sized riprap, and an additional 4,800 lf of ACB-lined down drains.

2.6 Tenmile TSF

Tenmile TSF will be reclaimed when it is no longer required for production operations. As approved for Robinson TSF in TR-13, Tenmile TSF will be reclaimed with a combination of dry and wet covers. The majority of the surface will be capped, but a pond is expected to remain over approximately 25% of the top surface (113 acres).

The dry cover area will be capped with a minimum of 12 inches of cover material (likely 6 inches of biosolids or topsoil over 6 inches of subsoil) over 340 acres for a total of approximately 549,000 cy. The wet cover area will be capped with a multi-layer system likely to include a geogrid layer similar to that used on the Robinson TSF wet cover area followed by a minimum of 36 inches of cover material (6 inches of biosolids or topsoil over 30 inches of subsoil) over 113 acres for a total of approximately 549,000 cy. The area will be seeded with the hydric seed mixture.

2.7 Tenmile Tunnel

The Tenmile Tunnel will be sealed just inside each portal upon cessation of mining with concrete pressure bulkheads and backfilled with tailing sludge from Robinson Lake since the tunnel will no longer be required as part of the site's water management and treatment system.

Climax's approach for sealing the Tenmile Tunnel involves constructing the north bulkhead to act as a dam followed by the construction of 4 check dams approximately every 2,000 ft along the tunnel alignment to control sludge flow. The south bulkhead will then be constructed to permanently seal the tunnel. Closure costs for this facility have either come from the AM-06 estimate or from recent similar projects completed by a Colorado-based underground mining contractor experienced with constructing pressure bulkheads in mine tunnels (2002 Homestake Mine Pressure Bulkheads, Lead, SD; Red and Bonita Mine Bulkhead, Silverton, CO; Formosa Mine Bulkhead, USACE, OR) and escalated to 2019 costs accordingly. Each bulkhead will be constructed with reinforced concrete keyed into the ribs and back. The volume of tailing sludge to pump from Robinson Lake and into the South Portal of the Tenmile Tunnel will be up to approximately 38,000 cy.

2.8 3 Dam

3 Dam was reclaimed in its current configuration during the mid-1990s. However, a slight increase in the height of 3 Dam is continuing as a part of production operations which resumed in 2012. This final dam raise will require reclamation at the completion of dam construction with a nominal 12 inches of growth medium (6 inches of biosolids or topsoil over 6 inches of subsoil) resulting in an import of approximately 15,000 cy of material which will be applied to approximately 9 acres of the dam face. The upland standard seed mixture will be applied to the cover material.

2.9 Pond Shop

The Pond Shop itself will be demolished under a different task. However, some basic soil reclamation will still be required at the Pond Shop site. This will include a minor amount of regrading and import of just over 500 cy of topsoil. The upland standard seed mixture will be applied to the cover material.

2.10 Mayflower TSF

A portion (222 acres) of Mayflower TSF will be reclaimed when it is no longer needed for production and reclamation operations. However, the southwest portion of Mayflower TSF will be used for water treatment as long as it is necessary to provide detention storage for the water treatment system. A detention storage area and several sludge cells will remain on the surface of Mayflower TSF as the operation of the PDWTP continues into the post-closure period.

The eastern portion of the Mayflower TSF will be reclaimed with a dry cover similar to that constructed on Tenmile TSF. The dry cover area will be capped with a minimum of 12 inches of cover material (likely 6 inches of biosolids or topsoil over 6 inches of subsoil) resulting in an import of approximately 357,700 cy of material for the 5 year mine plan at year end 2023 (tailing elev. 10,685 ft. at end of 2023). Topsoil and subsoil will come from the nearby soil stockpile located just below the Pond Shop. The dry cover will be seeded with the hydric seed mixture.

2.11 East Side Channel

The East Side Channel system diverts un-impacted stormwater run-on along the east side of the affected areas from Camp (Mine Mill Complex) to Tenmile Creek below the Mayflower Acid Building. The work involves the construction of an additional 16,400 lf of lined diversion channel using both a nonwoven geotextile and sized riprap.

An additional East Side Channel (5,700 lf) for impacted water will be constructed for the Mayflower Pond Spillway and will tie-in with the TDL at the crest of 5-Dam.

The East Side Pipeline system will convey impacted flows primarily from the OSFs also along the east side of the TSFs and to the PDWTP for treatment. The previous concept approved in AM-06 had been reduced to 13,100 lf as approved in TR-21 and TR-22 and associated correspondence. This update further reduces the length of required pipeline to approximately 10,400 lf by repurposing existing pipelines (TDL) at closure.

2.12 Mayflower Acid

The Mayflower Acid building itself will be demolished under a different task. However, some basic soil reclamation will still be required at the Mayflower Acid building site. The upland standard seed mixture will be applied to the cover material. This closure task also includes backfilling and capping the Clear Ponds. In total, this will include approximately 34,000 cy of regrading and import of just over 2,700 cy of topsoil for the area covers.

2.13 Robinson TSF

Robinson TSF reclamation began in the 1980s and is ongoing. The majority of the surface has been capped with overburden rock, and covered with biosolids or suitable soil material and most of that area has been revegetated. The biosolids production area is on the Robinson TSF and will not be reclaimed until the biosolids program is no longer needed for reclamation at Climax. In addition, there are several roads on the surface of the Robinson TSF that are still required for production and reclamation activities.

These roads will remain until they are no longer considered necessary. It is currently estimated that approximately 68 acres will need biosolids or topsoil at 4 inches thick (or 36,000 cy). However, portions of that 68 acres will require additional soils cover to eliminate low spots for a thicker total cover, so this cost update accounts for a total of 100,000 cy of fill material.

2.14 1 Dam

Reclamation on 1 Dam is also close to completion. The dam face requires a minimal amount of extra biosolids application (4 inches) over a 65-acre area (35,000 cy) to supplement existing revegetation success.

2.15 Roads

Roads not to be retained for post-mining land use will be reclaimed after they are no longer needed for mining and reclamation purposes. Roads which are not permanent will be regraded as necessary to blend with the adjacent terrain and to meet natural drainage patterns. Following regrading, topsoil will be applied and seed will be spread. The seed mixture used will be appropriate to the elevation of the road. The entrances to reclaimed roads will be blocked by barriers of native rock or earthen berms to prevent vehicular access but allow wildlife access. The following roads are most likely to be reclaimed: switchbacks on Little Bartlett Mountain (which are scheduled for haul truck access improvements over the next few years); access roads at the toes of 1 Dam and 4 Dam; various roads between 3 Dam and Mayflower TSF; various roads northeast and southeast of 5 Dam; and, various roads northwest of Mayflower TSF. Approximately 87,000 cy of subsoil and topsoil will be hauled to the road locations for reclamation purposes.

2.16 Robinson Lake

Robinson Lake is currently used for process water storage, but it will be reclaimed after it is no longer needed for production operations and converted to a fresh water reservoir. Final reclamation will follow the methods utilized during 2008-2011 by various contractors, including removal of an estimated final 300,000 cy of sediment and sludge to expose a native footprint around the margins of the lake to encourage development of hydric vegetation communities. These areas will also be seeded with the hydric seed mixture.

The AM-06 cost for this project area included some general work items such as mobilization and demobilization, and sediment and erosion control. This update includes these general costs grouped for all areas (see Sections 2.20 and 2.27). Unit rates for the 300,000 cy sludge cleanout for this unique project are entirely based on actual costs during Skanska's successful sludge cleanout during summer and fall 2010.

2.17 5 Dam

5 Dam has been reclaimed in its current configuration. However, an increase in the height of 5-Dam during the course of the current production operations will create up to 27 acres of tailing which will require reclamation for the 5 year mine plan at year end 2023 (dam crest elev. 10,685 ft. at end of 2023). A nominal 12 inches of growth medium (6 inches of biosolids or topsoil over 6 inches of subsoil) will be applied to these 27 acres of the dam face for a total of approximately 44,000 cy. The upland standard seed mixture will be applied to the cover material.

2.18 Revegetation

Revegetation activities which meet the approved approach provided in AM-06 will be followed. This cost includes seeding, mulching, and crimping site wide, an area of approximately 2,500 acres or almost 4 square miles.

Unit rates are based on over 2 decades of actual costs for completing successful reclamation projects on thousands of acres at Climax. Recent unit rates for revegetation application (Jones Pit reclamation in 2016) include $250/ac. for drill seeding and $595/ac. for mulching and crimping, plus $282/ac. for the seed mix itself (Western Native Seed, August 2018).

In accordance with a recent DRMS requirement, Climax has added a re-seeding cost. Based on research and experience conducted by a Climax consultant, a reseeding rate of 10% is considered to be a reasonable and supported assumption for reseeding at the site (see attached memo).

2.19 Seal Underground Mine Openings

No. 3 Gallery is currently blocked off to prevent access. Upon cessation of mining operations, it would require further work to prevent long-term access. A 2-feet thick concrete bulkhead is proposed for the No. 3 Gallery closure. Storke Portal currently has ventilation access to the 600 level of the underground workings. Similarly, upon cessation of mining operations, it would require further work to prevent long-term access. A 2-feet thick concrete bulkhead is proposed for the Storke Portal closure.

The Phillipson Portal will be closed at cessation of mining but since it will be sealed easily with minor use of a bulldozer its cost is considered insignificant.

2.20 Mobilize and Demobilize

Prior reclamation cost estimates included a minimal total cost for total project equipment mobilization and demobilization. For this cost estimate update, we have assumed annual mobilization and demobilization lump sum costs based on historic Climax reclamation projects for a period of 3 years.

2.21 Buffer Zone

The concept for a reclamation Buffer Zone around impacted facilities is no longer being required by DRMS.

2.22 Hydrologic Protection

Water management and site-wide water treatment will continue at Climax long after the cessation of production operations. The AM-06 reclamation cost estimate for hydrologic protection has been updated using actual costs from 2013-2017, which are reflective of a successfully operating downstream water treatment facility, the PDWTP. These baseline costs are based upon a current treatment footprint of approximately 10,000 acre-ft. Similar to the base assumption for the AM-06 approved cost, it is understood that during LOM closure activities, the first 5 years of water treatment will be required for an 8,100 acre-ft footprint and a subsequent 3 years of water treatment (post facility reclamations) for an estimated 3,570 acre-ft footprint. However, DRMS requires that Climax use a treatment basis of 8,100 acre-feet of water for a 10-year O&M period.

2.23 Demolition – Former Mine

Buildings, utilities, processing equipment, and other above-ground structures and materials no longer required during the post-reclamation period will be demolished. In reality, and to the extent possible, the salvageable and recyclable materials obtained from these structures and facilities will be retrieved and sold, or recycled, and so a corresponding direct cost credit will apply against the site's closure cost. This fact has been proven by Climax since the mid-1990s during the decommissioning and demolition of numerous small and large facilities.

Material that is not retrievable or practicably recycled will be disposed of by burial. Buried pipe, wire, etc. will be left in place during reclamation if it does not interfere with regrading activities and is non-toxic or not hazardous. Foundations deeper than 3 feet from the reclaimed surface that will not interfere with regrading activities will also be left in place. In accordance with AM-06, Exhibit E, Section E-11.5.2, concrete floors, walls, equipment pedestals, and foundations which are at or near grade will be pulverized in place and buried as part of the mass regrade (1-ft of spoil cover) and then covered with biosolids or topsoil (also 1-ft) as discussed in the Mine Mill Complex reclamation of section 2.3; revegetation is included as part of the site-wide effort in section 2.18.

2.24 Demolition – Linear Facilities

Several linear facilities at Climax will not be needed following cessation of production operations. These include substations and powerlines, pipelines, and similar historic structures. Again, and to the extent

possible, the salvageable and recyclable materials obtained from these structures and facilities will be retrieved and sold, or recycled, and so a corresponding direct cost credit will apply against the site's closure cost. Material that is not retrievable or practicably recycled will be disposed of by burial. Buried pipe, wire, etc. will be left in place during reclamation if it does not interfere with regrading activities and is non-toxic or not hazardous. Foundations deeper than 3 feet from the reclaimed surface that will not interfere with regrading activities will also be left in place. In accordance with AM-06, Exhibit E, Section E-11.5.2, concrete floors, walls, equipment pedestals, and foundations which are at or near grade will be pulverized in place and buried as part of a mass regrade/topsoil cover and revegetation effort, costs for which are included elsewhere.

2.25 Demolition – New Structures

Several new structures constructed since the restart of production in 2012 will no longer be required during the post-reclamation period and will be demolished. These structures include the Mayflower Coherex Station constructed in 2014, the Supply Canal No. 2 Pipelines constructed in 2012, the Mayflower Flood Bypass Tunnel constructed in 2012-14 (see TR-21), and a portion of the Mill Return Pipeline in Searle Gulch constructed in 2013. Again, and to the extent possible, the salvageable and recyclable materials obtained from these structures and facilities will be retrieved and sold, or recycled, and so a corresponding direct cost credit will apply against the site's closure cost.

Material that is not retrievable or practicably recycled will be disposed of by burial. Buried pipe, wire, etc. will be left in place during reclamation if it does not interfere with regrading activities and is non-toxic or not hazardous. Foundations deeper than 3 feet from the reclaimed surface that will not interfere with regrading activities will also be left in place. In accordance with AM-06, Exhibit E, Section E-11.5.2, concrete floors, walls, equipment pedestals, and foundations which are at or near grade will be pulverized in place and buried as part of the mass regrade (1-ft of spoil cover) and then covered with biosolids or topsoil (also 1-ft) as discussed in the Mine Mill Complex reclamation of section 2.3; revegetation is included as part of the site-wide effort in section 2.18.

The 4 Dam Seep Pump Station, Robinson Seep Pump Station, Storke Wastewater Treatment Plant, 5 Shaft Pumping System, and Warren's Pump Station, amongst others, will remain post closure for either continuation of water management. 3 Dam Pump Station is scheduled for demolition on or before 2026 as Mayflower TSF rises.

2.26 Disposal of Reagents

TR-24 Section T-3.5 describes that all chemicals not to be used in the long-term water treatment operations "would be used or removed from the site. Mixed chemicals such as Nokes Reagent and NaCN in solution would be used in the milling process until depletion of the supplies. The distributor [will] be contacted to assume possession of unmixed and uncontaminated chemicals, and the material [will] be transported off-site in the same manner that it was received at the site." Further, TR-28 presents a current list of reagents being used at the mine. Table T-A-1 provides chemical types, specific product names, storage container types and volumes. For the purposes of this cost estimate update, we have assumed that 100% of all chemicals would be used in the milling process until depletion of the supplies once closure has been announced.

2.27 Maintenance and Environmental Control

AM-06 provided for a significant amount of general maintenance and environmental control activity site-wide during the post production 3-year reclamation process. This cost item remains unchanged even though some activities are included on a facility-specific basis for some of the other site reclamation projects.

3 Reclamation Costs

The estimated costs for the reclamation activities include the Direct Costs associated with each of the sites described above and the Indirect Costs as discussed below, most of which are a percentage of Direct Costs as required by DRMS.

3.1 Indirect Costs

Approved AM-06 Indirect Cost allocations for Insurances, Bonds, and Contractor Profits are fixed DRMS Direct Cost percentages at 2.02%, 1.05%, and 10%, respectively. The cost for a Job Superintendent "team" was calculated using the labor rates for a period of 3 years. The Financial Warranty Fee of $500 was a rate fixed by DRMS. The final two Indirect Cost categories for Engineering, Bidding, Contracts and Management, Administration have been set to 2% and 5%, respectively, of the total of Direct Costs, Overhead, and Profit, per DRMS requirements.

3.2 Repurposing

The Climax Mine does not currently propose to pursue the repurposing of select industrial facilities and buildings for use by other entities post closure.

4 Cost Model Instructions

This section describes the system of inputs required by this update to the Climax Mine reclamation cost model.

4.1 General Inputs

The first six worksheets require direct input of the model's operating assumptions. The majority of the cells which require modification have been shaded in green or yellow. Items which change include, but is not limited to:

- Indirect Cost percentage allocations for Insurances, Bonds, and Contractor Profits which are fixed DRMS Direct Cost percentages at 2.02%, 1.05%, and 10%, respectively.
- The cost for a Job Superintendent has been calculated using the labor rates and assuming an onsite presence of 3 years.
- The Financial Warranty Fee of $500 is a rate fixed by DRMS.
- The final two Indirect Cost categories for Engineering/Bidding/Contracts and Management/Administration have been set to 2% and 5%, respectively, of the total of Direct Costs, Overhead, and Profit, in accordance with DRMS requirements.
- Equipment unit rates are obtained from EquipmentWatch which obtains Colorado rental rates (generally Caterpillar models).
- The sources of the update to the Materials List are referenced in the table.
- Demolition unit rates are largely provided from the latest RSMeans' *Heavy Construction Cost Data* book, in this case published in 2019.

4.2 Project Inputs

On the Summary tab, the buttons at the top will automatically create new tabs or outputs, as follows:

- Add a GENERAL worksheet: adds a new worksheet for reclamation of a facility or area.
- Add a DEMOLITION worksheet: adds a new worksheet for demolition of a facility or building.
- GO TO Last Active SHEET: returns the user to the previous active worksheet.
- Create PDF copy: allows the user to select which tabs to print to an Adobe Acrobat file.

On the individual project tabs, the buttons at the top of each sheet will automatically create activities and line items, as follows:

- GO TO "SUMMARY" SHEET: returns the user to the Summary worksheet described above.
- Insert a new task HAUL/LOAD: adds new cost line items for a loader-haul truck fleet combination.
- Insert a new task SPREAD (CUYDS): adds a new cost line item for a motor grader (spreading of cover material).
- Insert a new task GRADING (ACRES): adds a new cost line item for a motor grader (grading of haul routes).
- Insert a new task WATER: adds a new cost line item for a water truck (dust control of haul routes).
- Insert a new task MATERIALS: adds a new line item for materials only.
- Add new equipment to look up: takes the user to the Equipment List tab to add a new piece of equipment.
- Add new material to look up: takes the user to the Materials List tab to add a new material.

At each of these prompts, green shaded cells typically indicate where user input is required. In some cases, a Production Table will automatically be created below the Calculations Table from which calculated data will be pulled back into the reclamation cost line item. However, the Production Table must be modified by the user with consideration for two production categories. First, Figure 1 should be consulted (in AutoCAD format) in order to calculate haulage distances and average road grades, if required. This data should then be taken into consideration for the calculation of haul times between the proposed borrow areas and the reclamation sites. Second, the Caterpillar Handbook, in this case Edition 48 dated June 2018, should be consulted to determine actual production factors for each fleet of equipment generated, including estimates for material swell factors, altitude deration factors (critical at the

Climax Mine), average dozer pushes, time trial study methods, equipment operator efficiency ratings, blade correction factors, to name but a few. The green-shaded cells generally require research using the Caterpillar Handbook and sound engineering judgment for reclamation construction projects. Most unshaded cells are either calculated automatically or have been provided with direct input by the user in the Equipment List tab. Finally, the Production Table will indicate an appropriate number of haul units (articulated haul trucks) to be balanced against one loading unit (default for the Climax Mine model is a wheeler loader). This number of haul units should be considered carefully based on reclamation project experience and common sense given the haul distance, road configuration, mine elevation, seasonal impacts, and reasonableness given other site-specific constraints. This haul unit “gut check” should then be modified in the Calculations Table accordingly.

Figures

1 – Climax Site, Reclamation Plan, 12/10/18

2 – Mine & Mill Complex, Reclamation Plan, 1/25/19

3 – North 40 OSF Reclamation Plan, 2/5/19

4 – McNulty OSF Reclamation Plan, 2/5/19

5 – Climax Site, ESC/ESP Water Conveyance Plan, 1/25/19

Model Outputs

TBD

Requested Data Backup

Davis Bacon rates for Colorado – DOL, 1/4/2019

EquipmentWatch retail rental rate inquiry – Informa email, 1/29/2019

Geogrid unit rate – Tensar quote, 1/9/2019

Revegetation unit rate – Julius Equipment quote, 6/3/2016

Seed mix unit rate – Western Native Seed quote, 8/21/2018

Recommended reseeding requirements – Habitat Management memo, 1/10/2019

Model Inputs for Reclamation Cost Model

Year of Cost Data	2018	Year of Cost Data (Dec-31)
Public Liability Insurance	2.02%	% of Direct
Bond	1.05%	% of Direct
Profit (10% of Direct)	10.00%	% of Direct
Financial Warranty Fee	$ 500.00	Flat Fee in dollars
Engineering/Bidding/Contracts (2% of Direct, OH&P)	2.00%	% of Direct, OH&P
Management/Adminstration (5% of Direct, OH&P)	5.00%	% of Direct, OH&P
Sitewide Efficiency Correction Factor	0.83	0 to 1

Labor Inputs for Reclamation Cost Model

FICA, % of Base Rate =	7.65%	Source: www.ssa.gov/OACT/ProgData/TasRates.html
SIIS, % of Base Rate =	6.33%	Source: [Avg of Colorado Contractor's Assn. 1999 & 2001 Surveys + Previous Climax Cost Model Updates]
Unemployment, % of Base Rate =	3.80%	Source: www.coworkforce.com - Colorado Department of Labor and Employment
Workers Comp, % of Base Rate =	16.00%	Source: [Avg of Colorado Contractor's Assn. 1999 & 2001 Surveys + Previous Climax Cost Model Updates]

FICA, % of Base Rate	7.65%
SIIS, % of Base Rate	6.33%
Unemployment, % of Base Rate	3.80%
Workers Comp, % of Base Rate	16.00%

Worker Classification	Base Hourly Rate	
CHOOSE OPERATOR		
Dozer Operator	$ 26.78	
Loader Operator	$ 24.07	
Scraper Operator	$ 20.60	
Grader Operator	$ 27.60	
Backhoe Operator	$ 27.75	
Water Truck Driver	$ 20.39	
Truck Driver	$ 17.79	
Laborer	$ 12.44	
Mechanic/Welder	$ 28.08	
Foreman	$ 34.24	
Crane Operator	$ 23.82	
Job Superintendent (DRMS factor)	$ 51.73	3.00 years to include Superintendent expense

Equipment List for Reclamation Cost Model

equipmentwatch.com Colorado Average Retail Rental Rates 1/22/2019	Equipment	Operator Class	Cost/Unit Equip	Cost/Unit Labor	Units of Measure	Units	OPERATED Cost/Unit Equip	Effective Load Capacity (cu yds)	Average Push (LF)
$8,075	D6N LGP Dozer	Dozer Operator	$ 45.88	$ 42.88	cuyd	cuyd/hr	$ 88.76	235	150
$9,106	D7E Dozer	Dozer Operator	$ 51.74	$ 42.88	cuyd	cuyd/hr	$ 94.61	320	200
$20,088	D8T Dozer	Dozer Operator	$ 114.14	$ 42.88	cuyd	cuyd/hr	$ 157.01	320	250
$30,109	D9T Dozer	Dozer Operator	$ 171.07	$ 42.88	cuyd	cuyd/hr	$ 213.95	500	250
$6,069	938M Loader	Loader Operator	$ 34.48	$ 40.12	cuyd	cuyd/hr	$ 74.60	3.25	
$17,547	740B EJ Artic. Haul Truck	Truck Driver	$ 99.70	$ 27.82	cuyd	cuyd/hr	$ 127.52	25.8	
$11,203	336 EL/FL 88K lb Excavator	Backhoe Operator	$ 63.65	$ 47.22	cuyd	cuyd/hr	$ 110.88	100	
	4000G Water Truck, 4000 gal	Water Truck Driver	$ 39.20	$ 30.71	gallons	gal/hr	$ 69.91	4000	
$12,367	621G Water Wagon, 8000 gal	Truck Driver	$ 70.27	$ 27.82	gallons	gal/hr	$ 98.09	8000	
$8,103	12M3 Grader AWD	Grader Operator	$ 46.04	$ 47.02	acres	acres/hr	$ 93.06		

Material List for Reclamation Cost Model

Material	Cost/Unit Materials	Units of Measure	Source
Excavate trench 4-6' deep	$ 3.49	cuyd	RSMeans 2019 / 31 23 16.13 6110
Drain rock	$ 25.85	cuyd	RSMeans 2019 / 33 41 23.19 0300
Perforated pipe 8" dia.	$ 5.29	LF	RSMeans 2019 / 33 41 16.35 0080
Geotextile	$ 1.98	sqyd	RSMeans 2019 / 33 41 23.19 0110
Signs	$ 118.41	each	RSMeans 2019 / 10 14 53.20 0600, 1500
Rip Rap Armoring (12-24" D_{50})	$ 32.08	cuyd	Actuals (Climax ESC 2005, Pinto Valley 4DEC 2010 & 1DEC 2012)
42-48" HDPE pipe and bedding	$ 177.12	LF	previous estimate incl. bedding or mounding
concrete-safety bulkhead	$ 1,446.00	cuyd	Actuals (Climax Tenmile Tunnel rehab 2011-12)
Seeding-Standard drill seeding	$ 1,127.00	acre	Julius Equipment actual (Jones Pit reclamation 2016)
Seeding-Standard Steep (>2.5:1) drill seeding	$ 1,127.00	acre	Julius Equipment actual (Jones Pit reclamation 2016)
Seeding-Alpine drill seeding	$ 1,127.00	acre	Julius Equipment actual (Jones Pit reclamation 2016)
Seeding-Alpine Steep (>2.5:1) drill seeding	$ 1,127.00	acre	Julius Equipment actual (Jones Pit reclamation 2016)
Seeding-Wetland	$ 675.00	acre	Slater Seeding quote (Henderson reclamation 2017)
Geogrid	$ 4.25	sqyd	Tensar quote 1/29/2019
ACB Channel	$ 14.50	SF	Actuals (Ames Constr. Co., Pinto Valley 4DWC 2010 & 1DWC 2012)

DEMOLITION Material List for Reclamation Cost Model

Material	Cost/Unit Materials	Units	Source	Section
steel	$ 0.28	cuft	RSMeans 2019	02 41 16.13 0020
concrete floor	$ 0.58	sqft	RSMeans 2019	02 41 16.17 0240
concrete footing	$ 9.71	LF	RSMeans 2019	02 41 16.17 1000
asphalt	$ 4.31	sqyd	RSMeans 2019	02 41 13.17 5010
Tin	$ 0.25	cuft	previous estimate	
Wood	$ 0.25	cuft	previous estimate	
COMBINATION	$ 0.13	cuft	previous estimate	
WOOD/WIRE	$ 0.78	LF	previous estimate	
pipe grouting	$ 31.00	cuft	RSMeans 2019	31 73 13.10 0800

Financial Reporting Unit Rates

12/31/2018 Climax Reclamation Labor Rates

Source of Base Rates: https://www.bls.gov/oes/current/oes_co.htm#47-0000
https://www.wdol.gov/wdol/scafiles/davisbacon/co13.dvb Highway Construction 2019
Superintendent only: RS Means 01 31 13.20 0260

Worker Classification	Base Hourly Rate	Fringe	FICA[2]	SIIS[3]	Unemploy[4]	Workers Comp[5]	Total-2018 Dollars	**Labor 12/31/2018 Dollars**
Dozer Operator	$26.78	$7.05	$2.05	$1.70	$1.02	$4.28	$42.88	**$42.88**
Loader Operator	$24.07	$7.92	$1.84	$1.52	$0.91	$3.85	$40.12	**$40.12**
Scraper Operator	$20.60	$7.99	$1.58	$1.30	$0.78	$3.30	$35.55	**$35.55**
Grader Operator	$27.60	$10.10	$2.11	$1.75	$1.05	$4.42	$47.02	**$47.02**
Backhoe Operator	$27.75	$10.10	$2.12	$1.76	$1.05	$4.44	$47.22	**$47.22**
Water Truck Driver	$20.39	$3.43	$1.56	$1.29	$0.77	$3.26	$30.71	**$30.71**
Truck Driver	$17.79	$4.02	$1.36	$1.13	$0.68	$2.85	$27.82	**$27.82**
Laborer	$12.44	$3.53	$0.95	$0.79	$0.47	$1.99	$20.17	**$20.17**
Mechanic/Welder	$28.08	$10.10	$2.15	$1.78	$1.07	$4.49	$47.67	**$47.67**
Foreman	$34.24	$10.10	$2.62	$2.17	$1.30	$5.48	$55.91	**$55.91**
Crane Operator	$23.82	$9.22	$1.82	$1.51	$0.91	$3.81	$41.09	**$41.09**
Job Superintendent (DRMS factor)	$51.73	$0.00	$3.96	$3.27	$1.97	$8.28	$69.20	**$69.20**

Climax Molybdenum Company, Climax Mine, CO

SUMMARY		2019	AM06	(under)/over		
Directs	Storke Complex	$ 24,512	$ 281,085	$ (256,573)	-91%	deleted Ceresco OSF per TR-22
	Open Pit	$ 133,381	$ 630,249	$ (496,868)	-79%	LOM pipeline will be constructed during mining
	Mine Mill Complex	$ 1,762,268	$ 1,617,529	$ 144,739	9%	cover thickness 1' all areas per Figure 2 (no repurposing)
	North 40 OSF	$ 1,781,315	$ 1,306,005	$ 475,310	36%	DRMS agreement to use an interim (2023) mine plan per Figure 3, added over 14,000 lf of channels
	McNulty OSF	$ 6,556,524	$ 2,439,518	$ 4,117,006	169%	DRMS agreement to use an interim (2023) mine plan per Figure 4, added over 35,000 lf of channels
	Tenmile TSF	$ 5,843,523	$ 4,890,186	$ 953,337	19%	DRMS agreement to use an interim (2023) mine plan per Figure 1
	Tenmile Tunnel	$ 1,044,089	$ 789,264	$ 254,825	32%	updated bulkhead construction costs
	3 Dam	$ 42,651	$ 149,174	$ (106,523)	-71%	cover thickness consistent at 1' in accordance with AM-06 Exhibit E
	Pond Shop	$ 3,706	$ 2,956	$ 750	25%	updated unit rates per change in equipment fleet
	Mayflower TSF	$ 1,524,771	$ 1,325,517	$ 199,254	15%	DRMS agreement to use an interim (2023) mine plan per Figure 3, added over 14,000 lf of channels
	East Side Channel	$ 4,891,957	$ 11,967,396	$ (7,075,439)	-59%	per TR-21, TR-22, and Figure 5
	Mayflower Acid	$ 38,013	$ 40,632	$ (2,619)	-6%	updated unit rates per change in equipment fleet
	Robinson TSF	$ 168,055	$ 228,131	$ (60,076)	-26%	updated unit rates per change in equipment fleet
	1 Dam	$ 73,193	$ 69,894	$ 3,299	5%	added dust control and road grading activities
	Roads	$ 329,724	$ 174,490	$ 155,234	89%	increased Little Bartlett roads disturbance; cover thickness consistent at 1' in accordance with AM-06 Exhibit E
	Robinson Lake	$ 2,333,570	$ 2,637,570	$ (304,000)	-12%	general work items now covered elsewhere
	5 Dam	$ 171,018	$ 961,543	$ (790,525)	-82%	cover thickness consistent at 1' in accordance with AM-06 Exhibit E
	Revegetation	$ 3,032,273	$ 2,481,035	$ 551,238	22%	added a reseeding rate per DRMS 12/2018
	Seal Underground Mine Openings	$ 24,850	$ 8,732	$ 16,118	185%	updated unit rate
	Mobilize-Demobilize	$ 750,000	$ 374,636	$ 375,364	100%	increased using annual costs over 3 years
	Buffer Zone	$ -	$ 1,434,840	$ (1,434,840)	-100%	no longer required per DRMS 12/2018
	Hydrologic Protection	$ 33,129,000	$ 19,746,576	$ 13,382,424	68%	DRMS requirement for a 10-year O&M cost with no credit given for the reclaimed footprint
	Mtnce & Environmental Control	$ 521,178	$ 521,178	$ 0	0%	no change
	Demolition 1 - former mine	$ 3,379,689	$ 3,243,603	$ 136,086	4%	deleted old Scale House, TDH, CAVR, etc.
	Demolition 2-linear facilities	$ 44,927	$ 644,113	$ (599,186)	-93%	deleted OH91 and Camp area asphalt removal
	Demolition 3-new structures	$ 3,728,829	$ 3,205,386	$ 523,443	16%	added MF Coherex Sta., Mill Return, Supply Canal No. 2, Mayflower FC Tunnel
	Disposal of Reagents	$ -	$ 174,603	$ (174,603)	-100%	all chemicals will be used up
Subtotal		**$ 71,333,016**	**$ 62,323,998**	$ 9,009,018	14%	plus CAVR $13,841, Equip Ass/Disass $964,316
Indirects	Public Liab. Ins. (2.02% of Direct)	$ 1,440,927	$ 1,258,945	$ 181,982	14%	DRMS requirement
	Bond (1.05% of Direct)	$ 748,997	$ 654,402	$ 94,595	14%	DRMS requirement
	Profit (10% of Direct)	$ 7,133,302	$ 6,232,400	$ 900,902	14%	DRMS requirement
	Job Superintendent (DRMS factor)	$ 519,033	$ 662,606	$ (143,573)	-22%	based on a 3-year construction schedule at 50 hours/week for 50 weeks
	Subtotal OH & Profit	**$ 9,842,258**	**$ 8,808,353**	$ 1,033,906	12%	
	Financial Warranty Fee	$ 500	$ 500	$ -	0%	DRMS requirement
	Engineering/Bidding/Contracts (2% of Direct, OH&P	$ 1,623,505	$ 3,556,618	$ (1,933,112)	-54%	DRMS requirement
	Management/Adminstration (5% of Direct, OH&P)	$ 4,058,764	$ 3,556,618	$ 502,146	14%	DRMS requirement
Subtotal		**$ 15,525,027**	**$ 15,922,088**	$ (397,060)	-2%	
TOTAL		**$ 86,858,043**	**$ 78,246,086**	$ 8,611,958	11%	

0.2176415383

Financial Reporting Unit Rates

Storke Complex

Assumptions

Tasks

(1) Minor grading of areas remaining from previous work in 2004 and 2005 - assume 12M Grader work on 10 acres @ 2 hrs/ac
(2) Haul biosolids from Robinson Staging Area and replacement on 10 acres at 4 inches thick = 5323 cy @ Haul Distance = 2.6 miles

Timing

LOM

Total Costs

$24,512

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul biosolids from Robinson	HAUL_LOAD	Robinson	740B EJ Artic. Haul Truck	3	5,323	6,467	cuyd	74.16	cuyd/hr	87	$ 100	$ 8,695	$ 28	$ 2,426	$ -	$ -	$ 11,121	
Load biosolids at Robinson	HAUL_LOAD	Robinson	938M Loader	1		-	cuyd		cuyd/hr	29	$ 34	$ 1,002	$ 40	$ 1,166	$ -	$ -	$ 2,169	
Grading at Storke disturbed areas	GRADING	Storke	12M3 Grader AWD	1	10	10	acres	0.50	acres/hr	20	$ 46	$ 921	$ 47	$ 940	$ -	$ -	$ 1,861	
Spread biosolids at Storke	SPREAD	Storke	D6N LGP Dozer	1	5,323	5,323	cuyd	72.85	cuyd/hr	73	$ 46	$ 3,352	$ 43	$ 3,133	$ -	$ -	$ 6,485	
Full time dust control	WATER	Haul road	4000G Water Truck, 4000 gal	1						29	$ 39	$ 1,140	$ 31	$ 893	$ -	$ -	$ 2,032	
Full time road grading	GRADING	Haul road	12M3 Grader AWD	1		-	acres	3.00	acres/hr	9	$ 46	$ 418	$ 47	$ 426	$ -	$ -	$ 844	

																	Total Cost	
TOTAL COSTS												**$ 15,528**		**$ 8,985**		**$ -**	**$ 24,512**	

Notes:

Financial Reporting Unit Rates

Open Pit

Assumptions

Tasks

(1) Grade west open pit periphery (DRMS estimate)
(2) Haul and spread topsoil/biosolids at west open pit perimeter (DRMS estimate)
(3) Install No-Trespassing signs approx. every 300-ft

Timing

LOM

Total Costs

$133,381

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul biosolids from Robinson	HAUL_LOAD	West Open Pit	740B EJ Artic. Haul Truck	5	26,560	32,270	cuyd	107.21	cuyd/hr	301	$ 100	$ 30,010	$ 28	$ 8,374	$ -	$ -	$ 38,383	
Load biosolids at Robinson	HAUL_LOAD	West Open Pit	938M Loader	1		-	cuyd		cuyd/hr	60	$ 34	$ 2,076	$ 40	$ 2,415	$ -	$ -	$ 4,491	
Spread biosolids at Open Pit	SPREAD	West Open Pit	D6N LGP Dozer	1	26,560	26,560	cuyd	72.85	cuyd/hr	365	$ 46	$ 16,727	$ 43	$ 15,632	$ -	$ -	$ 32,359	
Full time road grading	GRADING	West Open Pit	12M3 Grader AWD	1			acres	0.50	acres/hr	60	$ 46	$ 2,772	$ 47	$ 2,831	$ -	$ -	$ 5,602	
Full time dust control	WATER	West Open Pit	4000G Water Truck, 4000 gal	1						60	$ 39	$ 2,360	$ 31	$ 1,849	$ -	$ -	$ 4,209	
Grade west open pit periphery	SPREAD	West Open Pit	D8T Dozer	2	26,560	26,560	cuyd	99.20	cuyd/hr	268	$ 114	$ 30,559	$ 43	$ 11,480	$ -	$ -	$ 42,039	
Install signs	MATERIALS	West Open Pit	Signs	1	41	41	each			41	$ 15	$ 615	$ 20	$ 827	$ 118	$ 4,855	$ 6,297	1 hour/sign+post; incl. laborer and pickup truck at $15/hr
																	Total Cost	
TOTAL COSTS												**$ 85,119**		**$ 43,407**		**$ 4,855**	**$ 133,381**	

Notes:

Financial Reporting Unit Rates

Mine Mill Complex

Assumptions

Tasks

(1) Regrade average 1' cut/fill across 243 ac. (incl. pulverizing foundation slabs, if any, remaining after demolition activities)
(2) Finish grade Mine/Mill Complex
(3) Haul and spread 1' topsoil/biosolids

Timing

LOM

Total Costs

$1,762,268

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul soil from McNulty stockpile	HAUL_LOAD	Mine/Mill Complex	740B EJ Artic. Haul Truck	5	391,879	476,133	cuyd	107.21	cuyd/hr	4441	$ 100	$ 442,775	$ 28	$ 123,550	$ -	$ -	$ 566,324	
Load soil at McNulty stockpile	HAUL_LOAD	Mine/Mill Complex	938M Loader	1		-	cuyd		cuyd/hr	888	$ 34	$ 30,629	$ 40	$ 35,636	$ -	$ -	$ 66,265	
Spread subsoil/topsoil	SPREAD	Mine/Mill Complex	D7E Dozer	5	391,879	391,879	cuyd	99.20	cuyd/hr	3950	$ 52	$ 204,388	$ 43	$ 169,378	$ -	$ -	$ 373,766	
Full time road grading	GRADING	Mine/Mill Complex	12M3 Grader AWD	1		-	acres	0.50	acres/hr	888	$ 46	$ 40,894	$ 47	$ 41,767	$ -	$ -	$ 82,661	
Full time dust control	WATER	Mine/Mill Complex	621G Water Wagon, 8000 gal	1						888	$ 70	$ 62,413	$ 28	$ 24,710	$ -	$ -	$ 87,123	
Regrade 1' cut/fill	SPREAD	Mine/Mill Complex	D9T Dozer	3	391,879	391,879	cuyd	155.00	cuyd/hr	2528	$ 171	$ 432,517	$ 43	$ 108,402	$ -	$ -	$ 540,919	
Finish grade Mine/Mill Complex	GRADING	Mine/Mill Complex	12M3 Grader AWD	1	243	243	acres	0.50	acres/hr	486	$ 46	$ 22,366	$ 47	$ 22,844	$ -	$ -	$ 45,210	
TOTAL COSTS												**$ 1,235,981**		**$ 526,287**		**$ -**	**Total Cost $ 1,762,268**	

Notes:
Per Figure 2, bldgs. which get demolished = 14.3 ac., paved roads = 14.5 a.c, unpaved roads = 27.1ac, disturbed (tan) area = 187 ac.

Financial Reporting Unit Rates

North 40 OSF

Assumptions

For the basis of this cost estimate only, assume ACB channels can be geotextile-riprap lined

Tasks

(1) Regrade top surface to drain, slopes to 2:1 interbench, 20' benches - 351,708 cy per Figure 3
(2) Road grading and dust control
(3) Haul and spread 12" subsoil/topsoil over 80 ac.
(4) Construct stormwater runoff channels (TR-22, TR-25) - 14,456 lf

Timing

2023 mine plan

Total Costs

$1,781,315

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul soil from McNulty stockpile	HAUL_LOAD	North 40	740B EJ Artic. Haul Truck	5	129,067	156,816	cuyd	107.21	cuyd/hr	1463	$ 100	$ 145,829	$ 28	$ 40,692	$ -	$ -	$ 186,521	
Load soil at McNulty stockpile	HAUL_LOAD	North 40	938M Loader	1		-	cuyd		cuyd/hr	293	$ 34	$ 10,088	$ 40	$ 11,737	$ -	$ -	$ 21,825	
Regrade top to drain, slopes to 2:1 i/bench	SPREAD	North 40	D9T Dozer	5	351,708	351,708	cuyd	235.00	cuyd/hr	1497	$ 171	$ 256,034	$ 43	$ 64,170	$ -	$ -	$ 320,204	
Spread 12" subsoil/topsoil	SPREAD	North 40	D7E Dozer	4	129,067	129,067	cuyd	99.20	cuyd/hr	1301	$ 52	$ 67,316	$ 43	$ 55,785	$ -	$ -	$ 123,101	
Full time dust control	HAUL_LOAD	North 40	621G Water Wagon, 8000 gal	1						293	$ 70	$ 20,556	$ 28	$ 8,138	$ -	$ -	$ 28,694	
Full time road grading	HAUL_LOAD	North 40	12M3 Grader AWD	1						293	$ 46	$ 13,468	$ 47	$ 13,756	$ -	$ -	$ 27,225	
Construct runoff downdrains (ACB)	GENERAL	McNulty						23240.00	sf		$ 14.50	$ 58,100		$ 46,480		$ 232,400	$ 336,980	
Construct runoff channels (geotex. + riprap)	GENERAL	McNulty						13294.00	ft		$ 3.49	$ 34,797		$ 11,599			$ 46,396	
Geotextiles (furnish & install)	MATERIALS	McNulty	Geotextile		29,542	29,542	sqyd								$ 1.98	$ 58,494	$ 58,494	
Rip rap armoring along channels	MATERIALS	McNulty	Rip Rap Armoring (12-24" D50)		19,695	19,695	cuyd								$ 32.08	$ 631,875	$ 631,875	
TOTAL COSTS												**$ 606,189**		**$ 252,357**		**$ 922,769**	**Total Cost $ 1,781,315**	

Notes:
Post regrade, total area = 80.05 ac.
Regrade design (Figure 3), cut/fill = 351,708 cy
Down drains (Figure 3) = 1,162 lf, Perimeter Channels = 3,625 lf, Bench channels = 7,170 lf, Top Channels = 2,499 lf

Financial Reporting Unit Rates

McNulty OSF

Assumptions

For the basis of this cost estimate only, assume ACB channels can be geotextile-riprap lined

Tasks

(1) Regrade top surface to drain, slopes to 2:1 interbench, 20' benches - 2,205,777 cy per Figure 4
(2) Road grading and dust control
(3) Haul and spread 12" subsoil/topsoil over 359 ac.
(4) Construct stormwater runoff channels (TR-22, TR-25) - 35,183 lf

Timing

2023 mine plan

Total Costs

$6,556,524

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Regrade top to drain, slopes to 2:1 i/b	SPREAD	McNulty	D9T Dozer	3	2,205,777	2,205,777	cuyd	280	cuyd/hr	7878	$ 171	$ 1,347,681	$ 43	$ 337,770	$ -	$ -	$ 1,685,451	
Haul soil from McNulty stockpile	HAUL_LOAD	McNulty	740B EJ Artic. Haul Truck	4	578,703	703,124	cuyd	91.88	cuyd/hr	7653	$ 100	$ 762,959	$ 28	$ 212,892	$ -	$ -	$ 975,851	
Load soil at McNulty stockpile	HAUL_LOAD	McNulty	938M Loader	1			cuyd		cuyd/hr	1913	$ 34	$ 65,971	$ 40	$ 76,758	$ -	$ -	$ 142,729	
Spread 12" subsoil/topsoil	SPREAD	McNulty	D7E Dozer	2	578,703	578,703	cuyd	179.20	cuyd/hr	3229	$ 52	$ 167,083	$ 43	$ 138,463	$ -	$ -	$ 305,546	
Full time dust control	HAUL_LOAD	McNulty	621G Water Wagon, 8000 gal	1			cuyd		cuyd/hr	1913	$ 70	$ 134,432	$ 28	$ 53,223	$ -	$ -	$ 187,655	
Full time road grading	HAUL_LOAD	McNulty	12M3 Grader AWD	1			cuyd	0.50	cuyd/hr	1913	$ 46	$ 88,081	$ 47	$ 89,963	$ -	$ -	$ 178,044	
Construct runoff downdrains (ACB)	GENERAL	McNulty						96460.00	sf		$ 14.50	$ 241,150		$ 192,920		$ 964,600	$ 1,398,670	
Construct runoff channels (geotex. + riprap)	GENERAL	McNulty						30360.00	ft		$ 3.49	$ 79,467		$ 26,489			$ 105,956	
Geotextiles (furnish & install)	MATERIALS	McNulty	Geotextile		67,467	67,467	sqyd								$ 1.98	$ 133,584	$ 133,584	
Rip rap armoring along channels	MATERIALS	McNulty	Rip Rap Armoring (12-24" D50)		44,978	44,978	cuyd								$ 32.08	$ 1,443,037	$ 1,443,037	
TOTAL COSTS												**$ 1,539,144**		**$ 790,708**		**$ 2,541,221**	**Total Cost $ 6,556,524**	

Notes:
Post regrade, total area = 358.67 ac.
Regrade design (Figure 4), cut = 2,208,073 cy, fill = 2,203,482 cy
Down drains (Figure 4) = 4,823 lf, Perimeter Channels = 13,528 lf, Bench/top channels = 13,879 lf, Exit Channels (to ETDL) = 2,953 lf

Financial Reporting Unit Rates

Tenmile TSF

Assumptions

Tasks

(1) Place geogrid on wet cover area or 25% of total cover area = 0.25*454 ac. = 113.5 acres
(2) Hauling and placement of 6" biosolids/topsoil over 30" subsoil cap for 25% of impoundment representing the "wet" cover (113.5 ac)
(3) Hauling and placement of 6" biosolids/topsoil over 6" subsoil for 75% of impoundment representing the "dry" cover (340.5 ac)

Timing

LOM (=2023 mine plan), crest elev. 11,085'

Total Costs

$5,843,523

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Geogrid Placement on soft tailing (113.5 ac)	MATERIALS	Soft Tailing	Geogrid		549,340	549,340	sqyd								$ 4.25	$ 2,334,695	$ 2,334,695	
Haul soil from Pond Shop Stockpile	HAUL LOAD	Wet Cover	740B EJ Artic. Haul Truck	3	549,340	667,448	cuyd	71.44	cuyd/hr	9343	$ 100	$ 931,464	$ 28	$ 259,911			$ 1,191,375	
Load soil at Pond Shop Stockpile	HAUL LOAD	Wet Cover	938M Loader	1		-	cuyd		cuyd/hr	3114	$ 34	$ 107,389	$ 40	$ 124,947			$ 232,336	
Spread 6" topsoil/biosolids over 30" subsoil (113.5 ac)	SPREAD	Wet Cover	D8T Dozer	1	549,340	549,340	cuyd	99.20	cuyd/hr	3114	$ 114	$ 355,450	$ 43	$ 133,528			$ 488,978	
Haul soil from Pond Shop Stockpile	HAUL LOAD	Dry Cover	740B EJ Artic. Haul Truck	4	549,340	667,448	cuyd	97.52	cuyd/hr	6844	$ 100	$ 682,361	$ 28	$ 190,402			$ 872,763	
Load soil at Pond Shop Stockpile	HAUL LOAD	Dry Cover	938M Loader	1		-	cuyd		cuyd/hr	1711	$ 34	$ 59,002	$ 40	$ 68,649			$ 127,651	
Spread 6" topsoil/biosolids over 6" subsoil (340.5 ac)	SPREAD	Dry Cover	D8T Dozer	1	549,340	549,340	cuyd	99.20	cuyd/hr	1711	$ 114	$ 195,294	$ 43	$ 73,364			$ 268,657	
Full time road grading	GRADING	Dry Cover	12M3 Grader AWD	1		-	acres	0.50	acres/hr	1711	$ 46	$ 78,777	$ 47	$ 80,459			$ 159,236	
Full time dust control	WATER	Dry Cover	621G Water Wagon, 8000 gal	1						1711	$ 70	$ 120,231	$ 28	$ 47,601			$ 167,831	
TOTAL COSTS												**$ 2,529,967**		**$ 978,861**		**$ 2,334,695**	**Total Cost $ 5,843,523**	

Notes:

Financial Reporting Unit Rates

Tenmile Tunnel

Assumptions

Tunnel will be maintained until closure
Therefore adit rehabilitation on the back and ribs is not required since Climax conducts ongoing inspections and maintainenance of tunnel
Hydrostatic pressures are such that a bulkhead at both ends plus sludge and check dams in between will effectively maintain the integrity of the tunnel indefinitely

Tasks

Construct north bulkhead to act as a dam
Construct 4 check dams at locations spaced approximately 2,000 ft apart to partially contain sludge
Pump tailing sludge from Robinson Lake until tunnel backfilling complete
Construct south bulkhead to permanently seal tunnel

Example similar projects by MES Mining (2002 Homestake Mine Pressure Bulkheads, Lead, SD; Red and Bonita Mine Bulkhead, Silverton, CO, $400,000; Formosa Mine 22' Bulkhead, USACE, OR, $509,538)

Timing

LOM

Total Costs

$1,044,089

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Construction of north bulkhead	GENERAL	Tenmile Tunnel															$ 347,412	
Pump sludge (previous estimate)	GENERAL	Tenmile Tunnel										$ 154,632		$ 77,316		$ 77,316	$ 309,264	
Construction of check dams	GENERAL	Tenmile Tunnel															$ 40,000	
Construction of south bulkhead	GENERAL	Tenmile Tunnel															$ 347,412	
TOTAL COSTS												**$ 154,632**		**$ 77,316**		**$ 77,316**	**Total Cost $ 1,044,089**	

Notes:
Volume of tunnel = 1,050,000 cf
Volume of Robinson Lake sludge to pump to tunnel = 38,519 cy
Thickness of bulkheads = 15 lf

Financial Reporting Unit Rates

3 Dam

Assumptions
Face of 3-Dam was reclaimed in 1995; current reclamation will be maintained until closure

Tasks
Cover future raise with 6" topsoil/biosolids over 6" subsoil across 9 acres

Timing
LOM (=2023 mine plan), crest elev. 11,085'

Total Costs
$42,651

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul soil from Pond Shop Stockpile	HAUL_LOAD	Topsoil Cover	740B EJ Artic. Haul Truck	5	14,520	17,642	cuyd	107.21	cuyd/hr	165	$ 100	$ 16,405.81	$ 28	$ 4,578	$ -	$ -	$ 20,984	
Load soil at Pond Shop Stockpile	HAUL_LOAD	Topsoil Cover	938M Loader	1		-	cuyd		cuyd/hr	33	$ 34	$ 1,135	$ 40	$ 1,320	$ -	$ -	$ 2,455	
Spread subsoil/topsoil	SPREAD	Topsoil Cover	D7E Dozer	1	14,520	14,520	cuyd	99.20	cuyd/hr	146	$ 52	$ 7,573	$ 43	$ 6,276	$ -	$ -	$ 13,849	
Full time dust control	WATER	Topsoil Cover	4000G Water Truck, 4000 gal	1						33	$ 39	$ 1,290	$ 31	$ 1,011	$ -	$ -	$ 2,301	
Full time road grading	GRADING	Topsoil Cover	12M3 Grader AWD	1		-	acres	0.50	acres/hr	33	$ 46	$ 1,515	$ 47	$ 1,548	$ -	$ -	$ 3,063	
TOTAL COSTS												**$ 27,919**		**$ 14,732**		**$ -**	**Total Cost $ 42,651**	

Notes:

Financial Reporting Unit Rates

Pond Shop

Assumptions

Tasks
Reclaim Pond Shop area

Timing
LOM

Total Costs
$3,706

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul topsoil from Pond Shop Stockpile	HAUL_LOAD	Pond Shop topsoil	740B EJ Artic. Haul Truck	1	538	654	cuyd	234.26	cuyd/hr	3	$ 100	$ 278	$ 28	$ 78	$ -	$ -	$ 356	
Load topsoil at Pond Shop Stockpile	HAUL_LOAD	Pond Shop topsoil	938M Loader	1		-	cuyd		cuyd/hr	3	$ 34	$ 96	$ 40	$ 112	$ -	$ -	$ 208	
Spread topsoil	SPREAD	Pond Shop topsoil	D7E Dozer	1	538	538	cuyd	86.40	cuyd/hr	6	$ 52	$ 322	$ 43	$ 267	$ -	$ -	$ 589	
Rough grading before capping	SPREAD	Pond Shop grading	D8T Dozer	1	1,613	1,613	cuyd	99.20	cuyd/hr	16	$ 114	$ 1,856	$ 43	$ 697	$ -	$ -	$ 2,553	
																	Total Cost	
TOTAL COSTS												**$ 2,553**		**$ 1,154**		**$ -**	**$ 3,706**	

Notes:

Financial Reporting Unit Rates

Mayflower TSF

Assumptions

Soil cover is not required over area covered by High Process Pool
Sludge Cells remain for material deposition post-closure; no reclamation required

Tasks

(1) Finish grade top surface of impoundment outside sludge cells (222 ac.)
(2) Load, haul, and spread 6" topsoil/biosolids over 6" subsoil (222 ac.) from future Kokomo soil stockpile

Timing

2023 mine plan, crest elev. 10,685'

Total Costs

$1,524,771

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul soil from Kokomo Stockpile	HAUL_LOAD	Mayflower TSF	740B EJ Artic. Haul Truck	4	357,676	######	cuyd	91.88	cuyd/hr	4,730	$ 100	$ 471,558	$ 28	$ 131,581	$ -	$ -	$ 603,139	
Load soil at Kokomo Stockpile	HAUL_LOAD	Mayflower TSF	938M Loader	1		-	cuyd		cuyd/hr	1,182	$ 34	$ 40,775	$ 40	$ 47,441	$ -	$ -	$ 88,216	
Spread topsoil	SPREAD	Mayflower TSF	D8T Dozer	2	357,676	######	cuyd	99.20	cuyd/hr	3,606	$ 114	$ 411,531	$ 43	$ 154,595	$ -	$ -	$ 566,126	
Full time road grading	GRADING	Mayflower TSF	12M3 Grader AWD	1		-	acres	0.50	acres/hr	1,182	$ 46	$ 54,440	$ 47	$ 55,603	$ -	$ -	$ 110,043	
Full time dust control	WATER	Mayflower TSF	621G Water Wagon, 8000 gal	1						1,182	$ 70	$ 83,088	$ 28	$ 32,895	$ -	$ -	$ 115,983	
Finish grade the top surface	GRADING	Mayflower TSF	12M3 Grader AWD	1		222	acres	0.50	acres/hr	443	$ 46	$ 20,414	$ 47	$ 20,850	$ -	$ -	$ 41,264	
																	Total Cost	
TOTAL COSTS												**$ 1,081,805**		**$ 442,966**		**$ -**	**$ 1,524,771**	

Notes:
Per Figure 1, Future Reclamation Area (tan) between future sludge cells and 5-Dam crest (10,685') = 221.7 ac.

Financial Reporting Unit Rates

East Side Channel

Assumptions

Channel and pipeline locations and lengths per Figure 5, after TR-21 and TR-22

Tasks

(1) Construct East Side Channel (clean water) extensions through Tenmile and Mayflower
Tenmile ESC Extension 5,000 lf from 2-Dam to 3-Dam
Mayflower ESC Extension 11,400 lf from 3-Dam to Mayflower Canal at 5-Dam
(2) Construct new East Side Channel (impacted water) along Mayflower TSF
Mayflower Pond Spillway 5,700 lf to tie-in with TDL at 5-Dam crest
(3) Construct new East Side Pipeline through Tenmile
Tenmile ESP Extension 4,400 lf from Robinson Spillway to tie-in with ETDL above SDP
Mayflower ESP Extension 6,000 lf from Mayflower TDL at 5-Dam crest to PDWTP

Timing

LOM

Total Costs

$4,891,957

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Cost/Unit Equip	Total Equip Cost	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Construct Channel Extensions	GENERAL	Tenmile/Mayflower TSF		N/A				118,114	$ 3.49	$ 309,163	$ 103,054			$ 412,217	
Geotextiles (furnish & install)	MATERIALS	Tenmile/Mayflower TSF	Geotextile	N/A	119,991	119,991.10	sqyd					$ 1.98	$ 237,582	$ 237,582	
Rip Rap Armoring along Channel Route	MATERIALS	Tenmile/Mayflower TSF	Rip Rap Armoring (12-24" D50)	N/A	74,809	74,808.60	cuyd					$ 32.08	$ 2,400,109	$ 2,400,109	
East Side Pipeline	MATERIALS	Tenmile/Mayflower TSF	42-48" HDPE pipe and bedding	N/A	10,400	10,400.00	lf					$177.12	$ 1,842,048	$ 1,842,048	
														Total Cost	
TOTAL COSTS										**$ 309,163**	**$ 103,054**		**$ 4,479,740**	**$ 4,891,957**	

Notes:

Financial Reporting Unit Rates

East Side Channel

Assumptions

Channel and pipeline locations and lengths per Figure 5, after TR-21 and TR-22

Tasks

(1) Construct East Side Channel (clean water) extensions through Tenmile and Mayflower
- Tenmile ESC Extension 5,000 lf from 2-Dam to 3-Dam
- Mayflower ESC Extension 11,400 lf from 3-Dam to Mayflower Canal at 5-Dam

(2) Construct new East Side Channel (impacted water) along Mayflower TSF
- Mayflower Pond Spillway 5,700 lf to tie-in with TDL at 5-Dam crest

(3) Construct new East Side Pipeline through Tenmile
- Tenmile ESP Extension 4,400 lf from Robinson Spillway to tie-in with ETDL above SDP
- Mayflower ESP Extension 6,000 lf from Mayflower TDL at 5-Dam crest to PDWTP

East Side Channel	Camp Extension	MF Pond Spillway to 5D Crest	Tenmile Extension	Mayflower Extension	Total	Units
Channel Length:	0	5,684	5,000	11,400	22,084	ft
Bottom Width:	6.0	6.0	10.0	16.0		ft
Channel Depth:	6.0	6.0	6.0	6.0		ft
Side Slope:	2.0	2.0	2.0	2.0		(H):1(V)
Cross-Section Area:	108.00	108.00	132.00	168.00		sq ft
Wetted Perimeter:	32.83	32.83	36.83	42.83		ft
Top Width:	30.00	30.00	34.00	40.00		ft
Channel Volume:	0	22,736	24,444	70,933	118,114	cu yds
Channel Excavation:	0	22,736	24,444	70,933	118,114	cu yds
Riprap Size:	6.0	6.0	12.0	18.0		in
Riprap Thickness:	1.00	1.00	2.00	3.00		ft
Riprap Volume:	0	6,912	13,642	54,255	74,809	cu yds
Geotextile Length:	42.83	42.83	46.83	52.83		ft
Geotextile Area:	0	27,051	26,018	66,922	119,991	sq yds
Road Width:	20.0	20.0	20.0	20.0		ft
Road Surface Area:	0	113,680	100,000	228,000	441,680	sq ft
Surfacing Depth:	9.0	9.0	9.0	9.0		in
Surfacing Volume:	0	3,158	2,778	6,333	12,269	cu yds
East Side Pipeline						
Pipe Length:	0	0	4,400	6,000	10,400	ft
Pipe Size:	42	42	42	42		in
Material:	HDPE SDR 17	HDPE SDR 17	HDPE SDR 17	HDPE SDR 17		PE4710
Pipe Weight:	135.372	135.372	135.372	135.372		lbs/ft
Pipe Weight:	0	0	595,637	812,232	1,407,869	lbs
Pipe OD Area:	9.62	9.62	9.62	9.62		sq ft
Trench Side Space:	1.50	1.50	1.50	1.50		ft
Bedding Base:	0.50	0.50	0.50	0.50		ft
Bedding Cover:	0.50	0.50	0.50	0.50		ft
Soil Cover:	2.00	2.00	2.00	2.00		ft
Trench Width:	6.50	6.50	6.50	6.50		ft
Trench Depth:	6.50	6.50	6.50	6.50		ft
Trench Area:	42.25	42.25	42.25	42.25		sq ft
Trench Volume:	0	0	6,885	9,389	16,274	cu yds
Bedding Area:	19.63	19.63	19.63	19.63		sq ft
Bedding Volume:	0	0	3,199	4,362	7,561	cu yds

Financial Reporting Unit Rates

Mayflower Acid

Assumptions

Quantities from previous state based estimate

Tasks

(1) Finish grade general area before capping (approx. 3/4 ac); fill clear ponds via dozer push of local cut material etc.
(2) Load, haul, and spread 6" topsoil/biosolids over 6" subsoil from existing soil stockpile at toe of 5-Dam

Timing

LOM

Total Costs

$38,013

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul topsoil from 5-Dam Stockpile	HAUL_LOAD	Mayflower Acid Plant	740B EJ Artic. Haul Truck	3	2,690	3,268	cuyd	217.97	cuyd/hr	15	$ 100	$ 1,495	$ 28	$ 417	$ -	$ -	$ 1,912	
Load topsoil at 5-Dam Stockpile	HAUL_LOAD	Mayflower Acid Plant	938M Loader	1		-	cuyd		cuyd/hr	5	$ 34	$ 172	$ 40	$ 201	$ -	$ -	$ 373	
Grade site	SPREAD	Mayflower Acid Plant	D8T Dozer	1	33,873	33,873	cuyd	155.00	cuyd/hr	219	$ 114	$ 24,943	$ 43	$ 9,370	$ -	$ -	$ 34,313	
Spread soil at site	SPREAD	Mayflower Acid Plant	D7E Dozer	1	2,690	2,690	cuyd	179.80	cuyd/hr	15	$ 52	$ 774	$ 43	$ 641	$ -	$ -	$ 1,416	
TOTAL COSTS												**$ 27,384**		**$ 10,629**		**$ -**	**Total Cost $ 38,013**	

Notes:

Financial Reporting Unit Rates

Robinson TSF

Assumptions

There are four reclamation treatments for the areas left on Robinson TSF to be reclaimed

Tasks

(1) Load, haul, and spread 4" topsoil/biosolids across 68 ac (36,000 cy) plus a token 64,000 cy to fill low spots and repair poor cover areas for 100,000 cy total

Timing

LOM

Total Costs

$168,055

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul biosolids to Robinson TSF	HAUL_LOAD	Robinson TSF	740B EJ Artic. Haul Truck	7	100,000	######	cuyd	169.40	cuyd/hr	717	$ 100	$ 71,508	$ 28	$ 19,953	$ -	$ -	$ 91,461	
Load biosolids for Robinson TSF	HAUL_LOAD	Robinson TSF	938M Loader	1		-	cuyd		cuyd/hr	102	$ 34	$ 3,533	$ 40	$ 4,111	$ -	$ -	$ 7,644	
Spread biosolids at Robinson TSF	SPREAD	Robinson TSF	D6N LGP Dozer	2	100,000	######	cuyd	179.80	cuyd/hr	556	$ 46	$ 25,518	$ 43	$ 23,847	$ -	$ -	$ 49,364	
Full time dust control	WATER	Robinson TSF	621G Water Wagon, 8000 gal	1						102	$ 70	$ 7,200	$ 28	$ 2,850	$ -	$ -	$ 10,050	
Full time road grading	GRADING	Robinson TSF	12M3 Grader AWD	1		-	acres	0.50	acres/hr	102	$ 46	$ 4,717	$ 47	$ 4,818	$ -	$ -	$ 9,535	
TOTAL COSTS												**$112,476**		**$ 55,579**		**$ -**	**Total Cost $168,055**	

Notes:

Financial Reporting Unit Rates

1 Dam

Assumptions
Bond release not yet obtained

Tasks
Cover with 4" topsoil/biosolids across approx. 65 acres

Timing
LOM

Total Costs
$73,193

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul Biosolids to 1 Dam	HAUL_LOAD	1 Dam	740B EJ Artic. Haul Truck	4	34,956	42,471	cuyd	189.38	cuyd/hr	224	$ 100	$ 22,359	$ 28	$ 6,239	$ -	$ -	$ 28,598	
Load Biosolids at Robinson	HAUL_LOAD	1 Dam	938M Loader			-	cuyd		cuyd/hr	56	$ 34	$ 1,933	$ 40	$ 2,249	$ -	$ -	$ 4,183	
Spread Biosolids at Robinson TSF	SPREAD	1 Dam	D6N LGP Dozer		34,956	34,956	cuyd	99.20	cuyd/hr	352	$ 46	$ 16,167	$ 43	$ 15,109	$ -	$ -	$ 31,276	
Full time dust control	WATER	1 Dam	4000G Water Truck, 4000 gal							56	$ 39	$ 2,198	$ 31	$ 1,722	$ -	$ -	$ 3,920	
Full time road grading	GRADING	1 Dam	12M3 Grader AWD			-	acres	0.50	acres/hr	56	$ 46	$ 2,581	$ 47	$ 2,636	$ -	$ -	$ 5,218	
																	Total Cost	
TOTAL COSTS												**$ 45,239**		**$ 27,955**		**$ -**	**$ 73,193**	

Notes:

Financial Reporting Unit Rates

Roads

Assumptions

Tasks

(1) Cover switchback access roads from McNulty OSF to Little Bartlett Mountain (approx 13,960 lf upper road and 4900 ft lower road, assume 120 ft wide) - 38.5 acres
(2) Cover access roads at the base of 1 Dam and 4 Dam - approx 1.38 ac at 1 Dam and 2.07 ac at 4 Dam
(3) Cover various roads between 3 Dam and Mayflower (Mar 1994 letter to DMG by Stoller for description of segments) - approx 6 acres
(4) Cover various roads NE and SE of 5 Dam (Mar 1994 letter to DMG by Stoller for description of segments) - approx 4 acres
(5) Cover various roads NW of Mayflower TSF (Mar 1994 letter to DMG by Stoller for description of segments) - approx 2 acres
- Assume 6" subsoil plus 6" topsoil cover required; larger dozer for subsoil vs topsoil

Timing

LOM

Total Costs

$329,724

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul subsoil from local stockpiles	HAUL_LOAD	Roads	740B EJ Artic. Haul Truck	4	43,520	43,520	cuyd	97.52	cuyd/hr	446	$ 100	$ 44,492	$ 28	$ 12,415	$ -	$ -	$ 56,907	
Load subsoil at local stockpiles	HAUL_LOAD	Roads	938M Loader	1		-	cuyd		cuyd/hr	112	$ 34	$ 3,847	$ 40	$ 4,476	$ -	$ -	$ 8,323	
Tram subsoil to replacement areas	SPREAD	Roads	938M Loader	1	43,520	43,520	cuyd	62.00	cuyd/hr	702	$ 34	$ 24,205	$ 40	$ 28,162	$ -	$ -	$ 52,367	
Spread subsoil at replacement areas	SPREAD	Roads	D7E Dozer	1	43,520	43,520	cuyd	99.20	cuyd/hr	439	$ 52	$ 22,698	$ 43	$ 18,810	$ -	$ -	$ 41,508	
Haul topsoil from local stockpiles	HAUL_LOAD	Roads	740B EJ Artic. Haul Truck	4	43,520	43,520	cuyd	97.52	cuyd/hr	446	$ 100	$ 44,492	$ 28	$ 12,415	$ -	$ -	$ 56,907	
Load topsoil at local stockpiles	HAUL_LOAD	Roads	938M Loader	1		-	cuyd		cuyd/hr	112	$ 34	$ 3,847	$ 40	$ 4,476	$ -	$ -	$ 8,323	
Tram topsoil to replacement areas	SPREAD	Roads	938M Loader	1	43,520	43,520	cuyd	62.00	cuyd/hr	702	$ 34	$ 24,205	$ 40	$ 28,162	$ -	$ -	$ 52,367	
Spread topsoil at replacement areas	SPREAD	Roads	D6N LGP Dozer	1	43,520	43,520	cuyd	72.85	cuyd/hr	597	$ 46	$ 27,409	$ 43	$ 25,614	$ -	$ -	$ 53,022	
																	Total Cost	
TOTAL COSTS												**$ 195,194**		**$ 134,530**		**$ -**	**$ 329,724**	

Notes:

Financial Reporting Unit Rates

Robinson Lake

Assumptions

Tasks
300,000 cy of sediment and sludge removal from Robinson Lake

Timing
LOM
Total Costs
$2,333,570

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Pre-Excavation Work and Water Management	General	Robinson Lake															$ 419,070	
Sediment and Subsoil Removal	General	Robinson Lake															$ 1,807,000	
Finish Work	General	Robinson Lake															$ 107,500	
TOTAL COSTS												**$ -**		**$ -**		**$ -**	**Total Cost $ 2,333,570**	

Notes:

Lower Robinson Lake Cleanout actual costs from 2010 (Skanska)
Do not use numbers for Habitat since their numbers are skewed
resulting from their slimes failure and higher than previous costs (vs. Lawrence Constr. Co. in 2008 and Skanska in 2010)

Description of Work		Cost in 12/31/10 $
General		
Clearing and Grubbing		$10,000
Haul Roads		$30,000
Subtotal		**$40,000**
Pre-Excavation Work and Water Management		
Diversions and Dewatering		$379,070
Subtotal		**$379,070**
Sediment and Subsoil Removal		
Develop Access into Robinson Lake		$15,000
Develop Access into Fill Area		$10,000
Excavate and Haul Sediments to Fill Area (300K	$5.40	$1,620,000
Excavate, Haul and Place Native Materials (10% over-exc.		$162,000
Subtotal		**$1,807,000**
Finish Work		
Final Recontouring at Robinson Lake		$45,000
Final Recontouring at Fill Area		$22,500
Regrade and Re-establish Cover on Face of 2-Dam to Pre		$40,000
Subtotal		**$107,500**
Total		**$2,333,570**

Notes:

Lawrence Constr. Co. - 4 months in 2008	Slimes excavated = 220,000 cy
Skanska - 3 months in 2010	Slimes excavated = 380,000 cy
Habitat - 4 months in 2010-2011	Slimes excavated = 100,000 cy
	Total excavated = 700,000 cy

(URS, Jan 2005 Initial Field Invest. Rpt estimated sludge volume at 1,000,000 cy)

Financial Reporting Unit Rates

5 Dam

Assumptions

Tasks
Cover future raise with 6" topsoil/biosolids over 6" subsoil across 27 acres

Timing
2023 mine plan, crest elev. 10,685'

Total Costs
$171,018

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Haul topsoil from Kokomo Stockpile	HAUL_LOAD	5 Dam	740B EJ Artic. Haul Truck	4	43,721	53,121	cuyd	97.52	cuyd/hr	545	$ 100	$ 54,308	$ 28	$ 15,154	$ -	$ -	$ 69,462	
Load topsoil at Kokomo Stockpile	HAUL_LOAD	5 Dam	938M Loader	1		-	cuyd		cuyd/hr	136	$ 34	$ 4,696	$ 40	$ 5,464	$ -	$ -	$ 10,160	
Spread topsoil	SPREAD	5 Dam	D8T Dozer	1	43,721	43,721	cuyd	99.20	cuyd/hr	441	$ 114	$ 50,304	$ 43	$ 18,897	$ -	$ -	$ 69,202	
Full time road grading	GRADING	5 Dam	12M3 Grader AWD	1		-	acres	0.50	acres/hr	136	$ 46	$ 6,270	$ 47	$ 6,404	$ -	$ -	$ 12,673	
Full time dust control	WATER	5 Dam	4000G Water Truck, 4000 gal	1						136	$ 39	$ 5,339	$ 31	$ 4,182	$ -	$ -	$ 9,521	
																	Total Cost	
TOTAL COSTS												**$ 120,917**		**$ 50,100**		**$ -**	**$ 171,018**	

Notes:
Per Figure 1, 5-Dam lift, un-reclaimed, between 2012 crest (start of tailings depo.) and 2023 crest (10,685') = 27.1 ac.

Financial Reporting Unit Rates

Revegetation

Assumptions
Reseeding at 10% rate per HMI memo 01/2019, weighted average

Tasks
Seeding, mulching, and crimping site wide

Timing
LOM
Total Costs
$3,032,273

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Revegetation	MATERIALS	Site	Seeding-Standard drill seeding		1466	1466	acre								$ 1,127	$ 1,652,182	$ 1,652,182	
Reseeding			Reseeding		147	147	acre								$ 1,127	$ 165,218	$ 165,218	
Revegetation	MATERIALS	Site	Seeding-Standard Steep (>2.5:1) drill seeding		263	263	acre								$ 1,127	$ 296,401	$ 296,401	
Reseeding			Reseeding		26	26	acre								$ 1,127	$ 29,640	$ 29,640	
Revegetation	MATERIALS	Site	Seeding-Alpine drill seeding		227	227	acre								$ 1,127	$ 255,829	$ 255,829	
Reseeding			Reseeding		23	23	acre								$ 1,127	$ 25,583	$ 25,583	
Revegetation	MATERIALS	Site	Seeding-Alpine Steep (>2.5:1) drill seeding		475	475	acre								$ 1,127	$ 535,325	$ 535,325	
Reseeding			Reseeding		48	48	acre								$ 1,127	$ 53,533	$ 53,533	
Revegetation	MATERIALS	Site	Seeding-Wetland		25	25	acre								$ 675	$ 16,875	$ 16,875	
Reseeding			Reseeding		3	3	acre								$ 675	$ 1,688	$ 1,688	
TOTAL COSTS												**$ -**		**$ -**		**$ 3,032,273**	**Total Cost $ 3,032,273**	

Notes:

Financial Reporting Unit Rates

Seal Underground Mine Openings

Assumptions

Tasks
Seal various underground openings with a 2-feet thick concrete safety bulkhead

Timing
LOM

Total Costs
$24,850

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Seal Storke Portal - 12'x14'	GENERAL	Storke Portal				12.44	cuyd					$ -		$ -	$ 1,446	$ 17,995	$ 17,995	
Seal No. 3 Gallery - 8' x 8'	GENERAL	No. 3 Gallery				4.74	cuyd					$ -		$ -	$ 1,446	$ 6,855	$ 6,855	
TOTAL COSTS												**$ -**		**$ -**		**$ 24,850**	**Total Cost $ 24,850**	

Notes:

Financial Reporting Unit Rates

Mobilize-Demobilize

Assumptions

Tasks
Costs to mobilize and demobilize **EACH YEAR**

Timing
LOM
Total Costs
$750,000

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
	Year 1											$ 250,000		$ -		$ -	$ 250,000	
	Year 2											$ 250,000		$ -		$ -	$ 250,000	
	Year 3											$ 250,000		$ -		$ -	$ 250,000	
																	$ -	
																	Total Cost	
TOTAL COSTS												**$750,000**		**$ -**		**$ -**	**$750,000**	

Notes:

Financial Reporting Unit Rates

Hydrologic Protection

Assumptions

Tasks
Extended cost estimate for Hydrologic Protection - 8 years

Timing
LOM
Total Costs
$33,129,000

Calculations

Specific Tasks	Work Type	Area	Equipment/Material	# of Equip	Initial Volume	Final Volume	Units of Measure	Production	Units	Hrs Req'd	Cost/Unit Equip	Total Equip Cost	Cost/Unit Labor	Total Labor Cost	Cost/Unit Materials	Total Material Cost	Total Cost	Comment
Labor (water/maintenance/electrician) (8 FTE for 5 years)						40	FTE					$ -	$ 60,000	$ 2,400,000		$ -	$ 2,400,000	Assumes 8 water/maintenance operators on rotating shifts
Site Supervisor (1 FTE for 5 years)						5	FTE					$ -	$ 80,000	$ 400,000		$ -	$ 400,000	Assumes 1 Site Supervisor for the management of the crew and site
Lime (11,300 tons/year for 5 years)						56,500	tons					$ -		$ -	$ 150	$ 8,475,000	$ 8,475,000	Assumes consistent lime usage for treatment post mining
Sulfuric Acid (4 loads each year for 5 years)						20	loads					$ -		$ -	$ 7,500	$ 150,000	$ 150,000	Assumes consistent acid usage for treatment post mining
Other Reagents (polymer) (40k lbs per year for 5 years)						200,000	Lbs					$ -		$ -	$ 2.25	$ 450,000	$ 450,000	Assumes consistent polymer usage for treatment post mining
Power						5	year					$ -		$ -	$ 675,000	$ 3,375,000	$ 3,375,000	$0.9M per year currently- assume 75% post closure for treatment systems
Natural Gas						5	year					$ -		$ -	$ 315,000	$ 1,575,000	$ 1,575,000	$630K per year (2010)- assume 50% post closure for remaining buildings (not confirmed in 2016)
Vehicles						10	units				$ 7,500	$ 75,000		$ -		$ -	$ 75,000	Pickups for access to remote water system check points
Loader (1 loader for 5 years)						5	year				$ 60,000	$ 300,000		$ -		$ -	$ 300,000	Loader for road maintenance, snow plowing and general maintenance
Outside Services						5	year							$ 250,000			$ 250,000	$100K per year currently- assume 50% post closure
Pump Maintenance (annual pump maintenance expense)						5	year				$ 200,000	$ 1,000,000		$ -		$ -	$ 1,000,000	Regular maintenance and service of installed pump sets
Road Mantenance (annual road maintenance expense)						5	year					$ -	$ 150,000	$ 750,000		$ -	$ 750,000	Snow plowing for access to system in winter and repairs in summer
Building Maintenance (annual building maintenance)						5	year					$ -	$ 150,000	$ 750,000		$ -	$ 750,000	Roofs, HVAC, domestic water and waste water
Electrical Maintenance (annual electrical maintenance)						5	year					$ -	$ 100,000	$ 500,000		$ -	$ 500,000	Programing, electric motors, power maintenance, radios
																	$ 20,450,000	10,000 ac-ft 5-yr cost
																	$ 16,564,500	8,100 ac-ft 5-yr cost
																	$ 4,380,390	3,570 ac-ft 3-yr cost
																	Total Cost	
TOTAL COSTS												**$ 1,375,000**		**$ 5,050,000**		**$ 14,025,000**	**$ 33,129,000**	**8,100 ac-ft 10-yr cost**

Notes:

Financial Reporting Unit Rates

Demolition 1 - former mine

Assumptions

Tasks
Various demolition of former mine structures

Timing
LOM
Total Costs
$3,379,689

Calculations

Specific Tasks	Area	Material	Length	Width	Height	Volume	Units	Cost/Unit Materials	Total Cost	Comment
Demolish 6 CRUSHER SWCH HSE - SUPERSTRUCTURE	Mine Mill	STEEL	80	38	15	45,600	cuft	$ 0.28	$ 8,938	Deduct 30% for no interior walls per RS Means
Demolish MILL LIME SILO - SUPERSTRUCTURE	Mine Mill	STEEL	60	16	16	15,360	cuft	$ 0.28	$ 4,301	
Demolish DOMESTIC WATER PLANT - SUPERSTRUCTURE	Mine Mill	STEEL	45	81	24	87,480	cuft	$ 0.28	$ 17,146	Deduct 30% for no interior walls per RS Means
Demolish 3 MILL - SUPERSTRUCTURE	Mine Mill	STEEL	725	180	80	10,440,000	cuft	$ 0.28	$ 2,046,240	Deduct 30% for no interior walls per RS Means
Demolish 6 CRUSHER SECONDARY - SUPERSTRUCTURE	Mine Mill	STEEL	160	90	87	1,252,800	cuft	$ 0.28	$ 350,784	
Demolish 6 CRUSHER PRIMARY - SUPERSTRUCTURE	Mine Mill	STEEL	60	110	72	475,200	cuft	$ 0.28	$ 133,056	
Demolish 6 CRUSHER OFFICE - SUPERSTRUCTURE	Mine Mill	STEEL	30	72	16	34,560	cuft	$ 0.28	$ 9,677	
Demolish GATEHOUSE - SUPERSTRUCTURE	Mine Mill	COMBINATION	64	40	10	25,600	cuft	$ 0.13	$ 3,328	
Demolish COVERED STORAGE - SUPERSTRUCTURE	Mine Mill	TIN	60	25	14	21,000	cuft	$ 0.25	$ 5,250	
Demolish PHILLIPSON MAPP GAS HSE - SUPERSTRUCTURE	Mine Mill	TIN	20	45	8	7,200	cuft	$ 0.25	$ 1,800	
Demolish OPEN PIT FUEL TANKS - SUPERSTRUCTURE	Mine Mill	STEEL	100	25	8	20,000	cuft	$ 0.28	$ 5,600	
Demolish DOMESTIC WATER TANK - SUPERSTRUCTURE	Mine Mill	STEEL	44	44	40	77,440	cuft	$ 0.28	$ 21,683	
Demolish OPEN PIT FUEL PUMP HSE - SUPERSTRUCTURE	Mine Mill	STEEL	40	20	12	9,600	cuft	$ 0.28	$ 2,688	
Demolish PHILLIPSON WAREHOUSE - SUPERSTRUCTURE	Mine Mill	STEEL	76	94	42	300,048	cuft	$ 0.28	$ 58,809	Deduct 30% for no interior walls per RS Means
Demolish OPEN PIT PHASE 1 SHOP - SUPERSTRUCTURE	Mine Mill	STEEL	146	56	52	425,152	cuft	$ 0.28	$ 83,330	Deduct 30% for no interior walls per RS Means
Demolish OPEN PIT OFFICES - SUPERSTRUCTURE	Mine Mill	COMBINATION	40	80	25	80,000	cuft	$ 0.13	$ 7,280	Deduct 30% for no interior walls per RS Means
Demolish OPEN PIT PHASE 2 SHOP - SUPERSTRUCTURE	Mine Mill	STEEL	440	80	70	2,464,000	cuft	$ 0.28	$ 482,944	Deduct 30% for no interior walls per RS Means
Demolish OPEN PIT WASH BAY - SUPERSTRUCTURE	Mine Mill	STEEL	90	105	60	567,000	cuft	$ 0.28	$ 111,132	Deduct 30% for no interior walls per RS Means
Demolish TENMILE TUNNEL SHOP - SUPERSTRUCTURE	1-Dam	TIN	34	26	16	14,144	cuft	$ 0.25	$ 3,536	
Demolish TENMILE TUNL OFC - SUPERSTR. (trailer)	1-Dam	STEEL	50	20	12	12,000	cuft	$ 0.28	$ 2,352	Deduct 30% for no interior walls per RS Means
Demolish TENMILE TUNL CMP HSE - SUPERSTRUCTURE	1-Dam	STEEL	18	18	12	3,888	cuft	$ 0.28	$ 762	Deduct 30% for no interior walls per RS Means
Demolish TENMILE TUNL DMP HSE - SUPERSTRUCTURE	1-Dam	STEEL	40	12	10	4,800	cuft	$ 0.28	$ 941	Deduct 30% for no interior walls per RS Means
Demolish TENMILE BARGE - SUPERSTRUCTURE	Tenmile	TIN	36	36	10	12,960	cuft	$ 0.25	$ 3,240	
Demolish POND SHOP - SUPERSTRUCTURE	3-Dam	STEEL	60	40	20	48,000	cuft	$ 0.28	$ 9,408	Deduct 30% for no interior walls per RS Means
Demolish POND SHOP DOCKS - SUPERSTRUCTURE	3-Dam	WOOD	200	20	3	12,000	cuft	$ 0.25	$ 3,000	
Demolish TENMILE COHEREX STA - SUPERSTRUCTURE	Tenmile	STEEL	22	40	10	8,800	cuft	$ 0.28	$ 2,464	

	Total Cost	
TOTAL COSTS	**$ 3,379,689**	

Notes:

Financial Reporting Unit Rates

Demolition 2-linear facilities

Assumptions

Tasks
Various demolition (continued from Demo 1)

Timing
LOM
Total Costs
$44,927

Calculations

Specific Tasks	Area	Material	Length	Width	Height	Volume	Units	Cost/Unit Materials	Total Cost	Comment
MAYFLOWER HLDNG TANK- SUPERSTRUCTURE	Water Control Structures	STEEL	28	28	18	14,112	cuft	$ 0.28	$ 3,951	
CHALK MTN PUMP HOUSE- SUPERSTRUCTURE	Water Control Structures	STEEL	25	25	20	12,500	cuft	$ 0.28	$ 2,450	Deduct 30% for no interior walls per RS Means
3 MILL SUBSTATION- SUPERSTRUCTURE	Substations and Utility Lines	STEEL	155	30	15	69,750	cuft	$ 0.37	$ 25,808	
OPEN PIT SHOP SUB- SUPERSTRUCTURE	Substations and Utility Lines	STEEL	25	25	15	9,375	cuft	$ 0.28	$ 2,625	
DOMESTIC WATER SUB- WOOD STRUCTURE	Substations and Utility Lines	WOOD	20	20	8	3,200	cuft	$ 0.25	$ 800	
IRECO PLANT SUB- SUPERSTRUCTURE	Substations and Utility Lines	WOOD	20	20	8	3,200	cuft	$ 0.25	$ 800	
OPEN PIT UTIL LINES- 21 POLES/237'AVG SPACING	Substations and Utility Lines	WOOD/WIRE	1	1	4,977	4,977	LF	$ 0.78	$ 3,877	
TAILING UTILITY LINE- 25 POLES/237'AVG SPACING	Substations and Utility Lines	WOOD/WIRE	1	1	5,925	5,925	LF	$ 0.78	$ 4,616	

	Total Cost
TOTAL COSTS	**$ 44,927**

Notes:

Financial Reporting Unit Rates

Demolition 3-new structures

Assumptions

Tasks
Demolition of newer structures

Timing
LOM
Total Costs
$3,728,829

Calculations

Specific Tasks	BLDG	Area	Material	Length	Width/Pipe Radius	Height	Volume	Units	Cost/Unit Materials	Total Cost	Comment
New Mill Bldg		Mine Mill	STEEL	1,105	805	320	11,497,500	cuft	$ 0.37	$ 2,977,853	Deduct 30% for no interior walls per RS Means
Explosives Shed (Powder Storage)		Open Pit	STEEL	13	8	8	832	cuft	$ 0.28	$ 163	Deduct 30% for no interior walls per RS Means
3-Dam Pump Station		3-Dam	STEEL	63	30	30	56,700	cuft	$ 0.28	$ 11,113	Deduct 30% for no interior walls per RS Means
Mayflower Coherex Station		5-Dam	STEEL	7	8	19	1,064	cuft	$ 0.28	$ 298	
Mayflower Coherex Station		5-Dam	concrete floor	36	30	2	2,160	sqft	$ 0.58	$ 1,253	
Mayflower Coherex Station		5-Dam	concrete floor	50	30	1	1,500	sqft	$ 0.58	$ 870	Bury remaining slab and footers with local soils
Supply Canal No. 2 Pipeline		3-Dam	pipe grouting	5	2.5	N/A	393	cuft	$ 31.00	$ 12,168	Assume 4 end sections
Supply Canal No. 2 Pipeline		3-Dam	concrete footing	80	2	8	1,280	LF	$ 9.71	$ 12,429	Searle Gulch Diversion Structure
Mill Return Pipeline		Searle Gulch	pipe grouting	5	1.3	N/A	56	cuft	$ 31.00	$ 1,722	Assume 2 end sections (Searle Gulch W slope)
Coarse Ore Dome		Mine Mill	STEEL				1	LS	$250,000.00	$ 175,000	Deduct 30% for no interior walls per RS Means
New Scale House		Mine Mill	STEEL	80.00	16.00	16.00	20,480	cuft	$ 0.28	$ 4,014	Deduct 30% for no interior walls per RS Means
Mayflower Flood Bypass Tunnel		Mayflower TSF	pipe grouting				1	LS	$530,000.00	$ 530,000	TR-21 response 5/24/12
5-Dam Powerline		Utility Lines	WOOD/WIRE	1	1	2,500	2,500	LF	$ 0.78	$ 1,948	

	Total Cost	
TOTAL COSTS	**$ 3,728,829**	

Notes:

Financial Reporting Unit Rates

Mtnce & Environmental Control

Assumptions

Tasks
General maintenance and environmental control tasks
Interceptor drainage control incl. N and S pit interceptors (AM-06, G.5)

Timing
LOM
Total Costs
$521,178

Calculations

Specific Tasks	Total Cost	Comment
Rill and gully maintenance	$ 33,585	
Road maintenance (assume imported roadbase only)	$ 31,687	
Dust control (general, not project specific)	$ 37,637	
Interceptor drainage control	$ 418,268	

	Total Cost
TOTAL COSTS	**$ 521,178**

Notes:

AutoCAD FILE: CLX Site Reclaim.dwg

Pump Station List

1	5-Shaft Pump Station
2	Storke Wastewater Pump Station
3	Arkansas Well (Fresh Water)
4	4 Dam Seepwater Pump Station
5	Robinson Lake Seepwater Pump Station
6	Robinson Lake Pump Station
8	Chalk Mtn. Reservoir Pump Station (Fresh Water)
9	Warren Pump Station
11	Buffehrs Lake Pump Station (Fresh Water)
13	Mayflower Seepwater Pump Station
15	3 Dam Seepwater Pump Station
16	East Fork Pump Station (Eagle Park Res. Co.)
17	PDWTP Barge
18	Millwater Barge
19	PDWTP Return Pump Station

Note: Pump stations 7, 10, 12, and 14 have been decommissioned.

MAYFLOWER ACID PUMP STATION
PDWTP
NORTH GATE ENTRANCE
MILL RETURN PIPELINE
MAYFLOWER FLOOD BYPASS TUNNEL
IRON MASK SLIDE
Tucker Gulch
Tenmile Creek
Property Line Flume (10,300)
Mayflower Tunnel
Return Pipeline
Saints Creek
Rubburn Creek
Decant Pipeline
West Intercepter (CMP)
5 Dam
Mayflower Tailing Pond
10,685
Mayflower Canal
Highway 91
Sludge Cells
EXISTING & NEW SUBSTATION
MAYFLOWER POND SPILLWAY
EL. 10,685
Kokomo Creek
Union Canal
Mayflower TDL
Mayflower Creek
MAYFLOWER COHEREX STATION
SUPPLY CANAL NO. 2 PIPELINE
NORTH PORTAL
TENMILE RISER
TENMILE COHEREX STATION
SOUTH PORTAL
East Sheep Mtn.
3 Dam
Tenmile Tunnel Extension
POND SHOP
Cold Hill
Clinton Reservoir 11,080
Tenmile Tailing Pond 11,085
Lake Irwin
Upper North Interceptor
Eagle Park Outlet
Eagle Park Reservoir 10,718
4 Dam Seepwater Pipeline
Warren Pipeline
1 Dam
2 Dam
2 Dam Pipeline
TENMILE POND SPILLWAY
ETDL
East Intercepter
Clinton Ditch
TENMILE TDL
Lime Station
East Side Channel
McNulty Well
Robinson Lake 10,880
Tim's Pond
Robinson Pond 11,124
ROBINSON POND SPILLWAY
DSM Intercepter
Chalk Mtn. Reservoir 10,925
Chalk Mtn. Intercepter
Buffehrs Pipeline
Fremont Ditch No. 1
McNulty Intercepter
McNulty Gulch
McNULTY OSF
SLUDGE DENSIFICATION PLANT (SDP)
TRUCK WASH
RAW WATER TANK
POTABLE WATER TANK
LUBE OIL BUILDING
MAINTENANCE BUILDING PHASE I
MAINTENANCE BUILDING PHASE II
MILL WATER TANK
Columbine Pipeline (proposed)
West Gravity Line (decommissioned)
Little Bartlett Mtn. (El. 12,938)
Property Boundary
Chalk Lake
Eagle County Lake County
Buffehrs Lake 11,152
Summit County Lake County
PHILLIPSON WAREHOUSE
Columbine Ditch
County Line Vault
NORTH 40 OSF
Bartlett Mtn. (El. 13,555)
COARSE ORE DOME
PRIMARY CRUSHING OFFICE BUILDING
PRIMARY CRUSHER
FORMER CONV. NO. 62 TAKE-UP TOWER
TRANSFER TOWER
SECONDARY CRUSHER BUILDING
PEBBLE CRUSHER BUILDING
BALL STORAGE BUILDING
TRANSFER TOWER
SUBSTATION
BUCKLEY POWDER BUILDING
PRV BUILDING
WASTE STORAGE BUILDING
OTR TRUCK WASH
FLEET FUEL STATION
POTABLE WATER TREATMENT PLANT
Chalk Mtn. (El. 12,017)
Camp Drain
Open Pit
SANITARY TREATMENT BUILDING
GATE HOUSE
SCALE HOUSE
Arkansas Well Pipeline
Storke Pipeline
SWWPS Pipeline
Arkansas Pond 10,903
Highway 91
Arkansas River
Mosquito Fault
Storke Portal
No. 5 Shaft
Cerasco Ridge
XCEL SUBSTATION
NEW MILL BUILDING
3 MILL BUILDING

N

SCALE
1400' 0 1400' 2800'
CONTOUR INTERVAL 10 FT.

LEGEND

- PROPERTY LINE
- COUNTY LINE
- EXISTING TOPOGRAPHY
- EXISTING McNULTY INTERCEPTOR
- McNULTY OSF ALT #2 BOUNDARY (YR 2037)
- MAYFLOWER TSF & McNULTY OSF BOUNDARY (YR 2023)
- N40 OSF BOUNDARY (YR 2023)
- PAVED ROAD
- UNPAVED ROAD
- TRAIL
- NON-INDUSTRIAL DRAINAGE
- FRESH WATER
- ONSITE DRAINAGE
- PROCESS WATER POND
- TENMILE TUNNEL
- PAVED ROAD
- FUTURE RECLAMATION AREA
- STRUCTURE TO REMAIN POST CLOSURE
- STRUCTURE TO BE DEMOLISHED AND AREA RECLAIMED

REV	DESCRIPTION OF REVISION	BY	DATE
1	FINAL DRAFT	RLM	2/19
0	DRAFT	RLM	11/16

AJAX
PROJECT & CONSTRUCTION MANAGEMENT ENGINEERING, GEOLOGY, SURVEYING

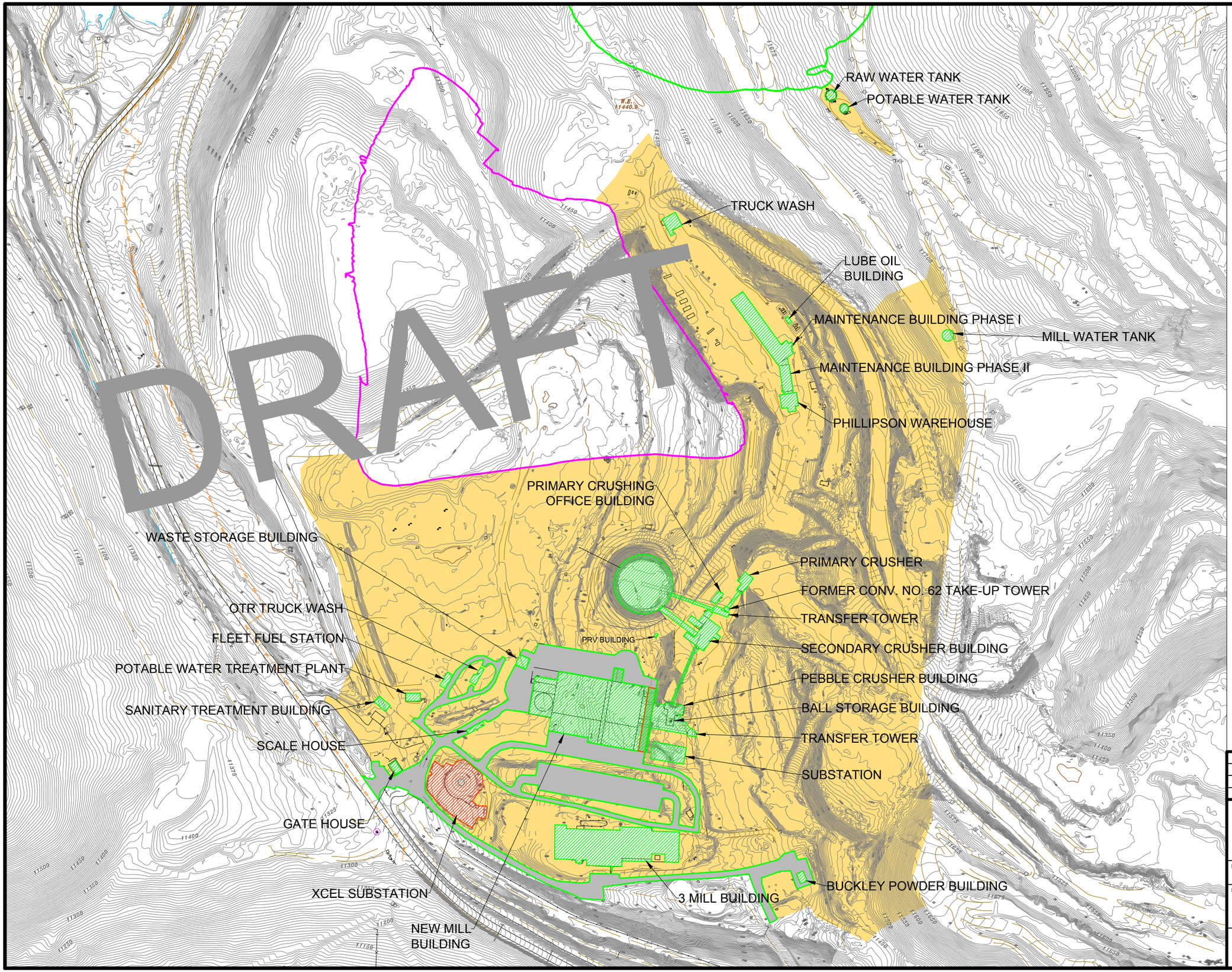
WARNING
0 0.5 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	VARIOUS
DRAWN	RLM
CHECKED	AJH
REVIEWED	AJH
CLIENT	RL
DATE	2/8/19

Climax Molybdenum
A Freeport-McMoRan Company

CLIMAX SITE RECLAMATION PLAN

REVISION 1
PROJECT NO. 12026
FIGURE: 1
SHEET 1 OF 1



LEGEND

- EXISTING TOPOGRAPHY
- PAVED ROADS
- EXISTING DIRT ROADS
- NORTH 40 OSF BOUNDARY (YR 2023)
- McNULTY OSF BOUNDARY (YR 2023)
- PAVED ROAD TO BE RECLAIMED
- PLANT SITE WASTE AREA TO BE RECLAIMED
- STRUCTURE TO REMAIN POST CLOSURE
- STRUCTURE TO BE DEMOLISHED AND AREA RECLAIMED

N

SCALE

250' 0 250' 500'

CONTOUR INTERVAL 2 FT.

NOTES:

1. BASE TOPOGRAPHY (DATE: 7-20-2016) PROVIDED BY CLIMAX.

REV.	REVISIONS	DATE	CLIENT	DRAWN BY	REVIEWED AND SIGNED BY
1	FINAL DRAFT	2/8/2019	RL	RLM	AJH
0	DRAFT	11/18/2016	RL	RLM	AJH

Climax Molybdenum
A Freeport–McMoRan Company

PROJECT: MINE & MILL COMPLEX

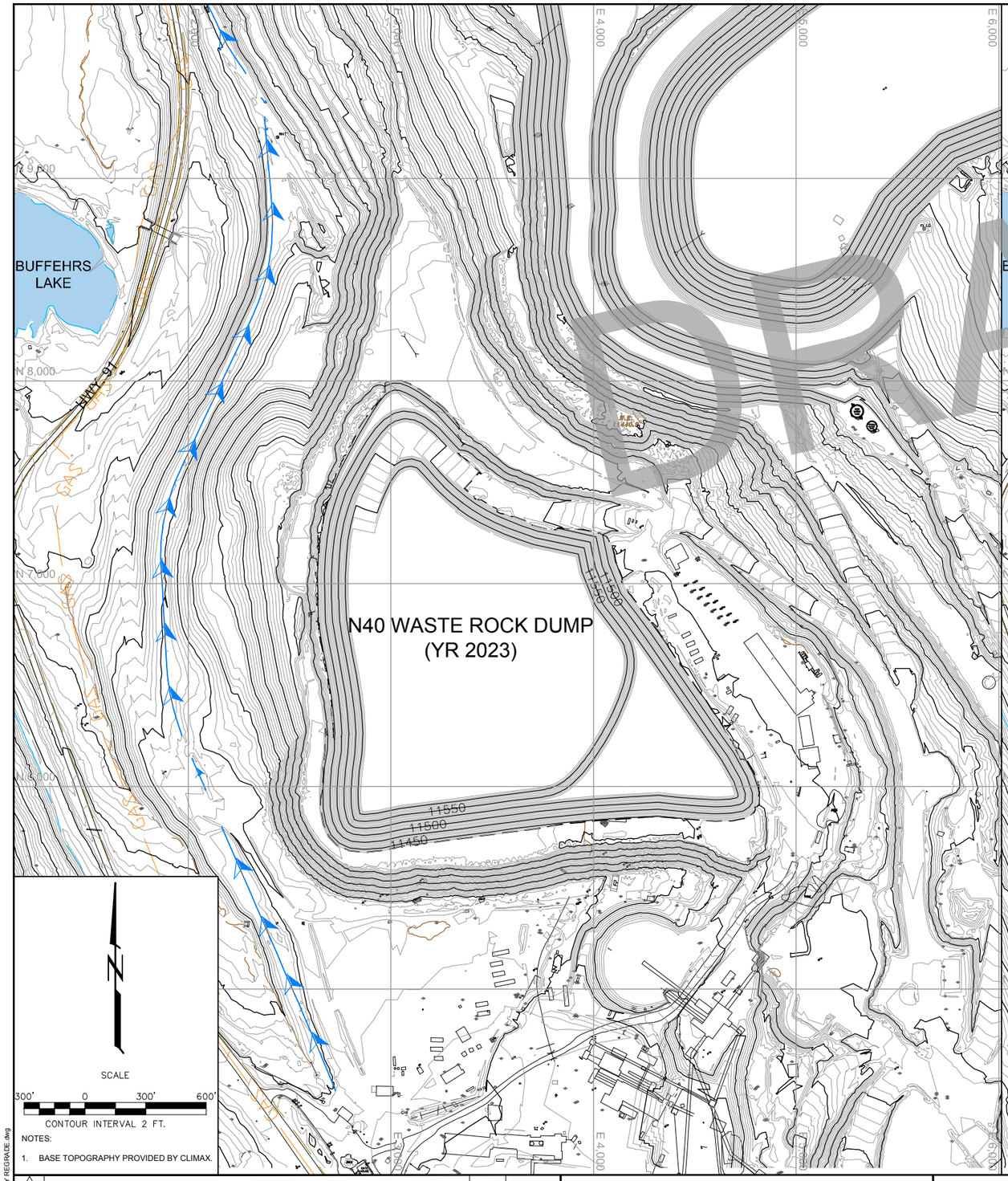
DRAWING TITLE: RECLAMATION PLAN

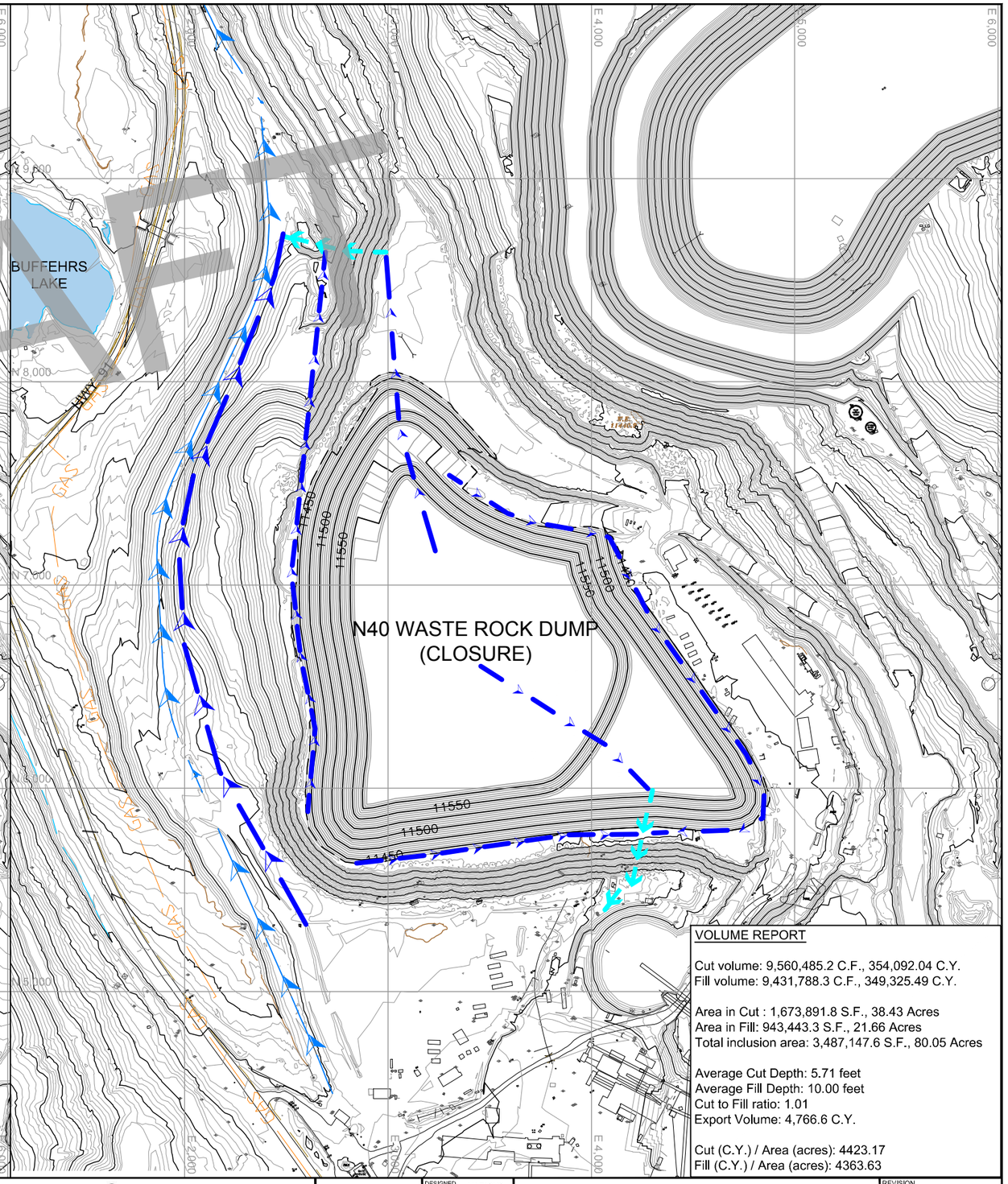
AJAX PROJECT & CONSTRUCTION MANAGEMENT ENGINEERING, GEOLOGY, SURVEYING

PROJ. NO. 12026

SCALE: 1" = 800'

FIGURE: 2





N

SCALE

300' 0 300' 600'

CONTOUR INTERVAL 2 FT.

NOTES:

1. BASE TOPOGRAPHY PROVIDED BY CLIMAX.

VOLUME REPORT

Cut volume: 9,560,485.2 C.F., 354,092.04 C.Y.
Fill volume: 9,431,788.3 C.F., 349,325.49 C.Y.

Area in Cut : 1,673,891.8 S.F., 38.43 Acres
Area in Fill: 943,443.3 S.F., 21.66 Acres
Total inclusion area: 3,487,147.6 S.F., 80.05 Acres

Average Cut Depth: 5.71 feet
Average Fill Depth: 10.00 feet
Cut to Fill ratio: 1.01
Export Volume: 4,766.6 C.Y.

Cut (C.Y.) / Area (acres): 4423.17
Fill (C.Y.) / Area (acres): 4363.63

REV	DESCRIPTION OF REVISION	BY	DATE
1	DRAFT	RLM	2/19

AutoCAD FILE: CLX McNULTY REGRADE.dwg

Climax Molybdenum
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WARNING
0 0.5 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	VARIOUS
DRAWN	RLM
CHECKED	AJH
REVIEWED	AJH
CLIENT	RL
DATE	2/7/19

CLIMAX MINE

NORTH 40 OSF
RECLAMATION PLAN

REVISION 1
PROJECT NO. 12026
FIGURE: 3
SHEET 1 OF 1

McNULTY WASTE ROCK DUMP
(YR 2023)

McNULTY WASTE
ROCK DUMP
(CLOSURE)

N 14,000
N 13,000
E 7,000
E 8,000

SCALE
400' 0 400' 800'
CONTOUR INTERVAL 2 FT.

NOTES:
1. BASE TOPOGRAPHY PROVIDED BY CLIMAX.

VOLUME REPORT

Cut volume: 59,617,985.2 C.F., 2,208,073.53 C.Y.
Fill volume: 59,494,031.3 C.F., 2,203,482.64 C.Y.

Area in Cut : 8,012,676.4 S.F., 183.95 Acres
Area in Fill: 5,345,076.8 S.F., 122.71 Acres
Total inclusion area: 15,623,627.3 S.F., 358.67 Acres

Average Cut Depth: 7.44 feet
Average Fill Depth: 11.13 feet
Cut to Fill ratio: 1.00
Export Volume: 4,590.9 C.Y.

Cut (C.Y.) / Area (acres): 6156.30
Fill (C.Y.) / Area (acres): 6143.50

REV	DESCRIPTION OF REVISION	BY	DATE
1	DRAFT	RLM	2/19

AutoCAD FILE: CLX McNULTY REGRADE.dwg

Climax Molybdenum
A Freeport-McMoRan Company

AJAX
PROJECT & CONSTRUCTION MANAGEMENT
ENGINEERING, GEOLOGY, SURVEYING

WARNING
0 0.5 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

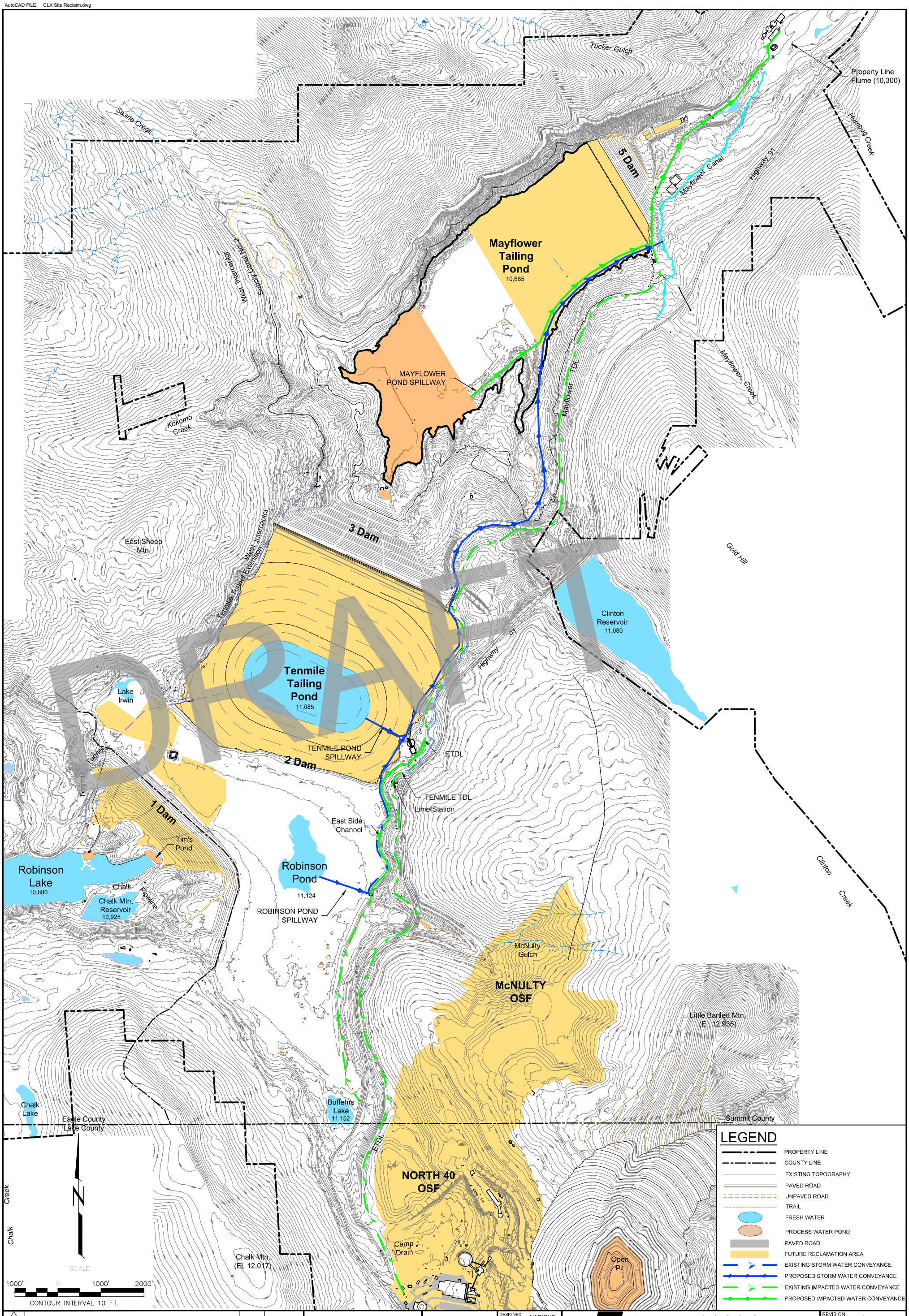
DESIGNED	VARIOUS
DRAWN	RLM
CHECKED	AJH
REVIEWED	AJH
CLIENT	RL
DATE	2/8/19

CLIMAX MINE

McNULTY OSF
RECLAMATION PLAN

REVISION 1
PROJECT NO. 12026
FIGURE: 4
SHEET 1 OF 1

AutoCAD FILE: CLX Site Reclaim.dwg



REV	DESCRIPTION OF REVISION	BY	DATE
1			
0	DRAFT	RLM	1/19

AJAX
PROJECT & CONSTRUCTION MANAGEMENT
ENGINEERING, GEOLOGY, SURVEYING

WARNING
0 0.5 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	VARIOUS
DRAWN	RLM
CHECKED	AJH
REVIEWED	AJH
CLIENT	RL
DATE	1/25/19

Climax Molybdenum
A Freeport-McMoRan Company

CLIMAX SITE
ESC/ESP WATER CONVEYANCE PLAN

REVISION 0
PROJECT NO. 12026
FIGURE: 5
SHEET 1 OF 1