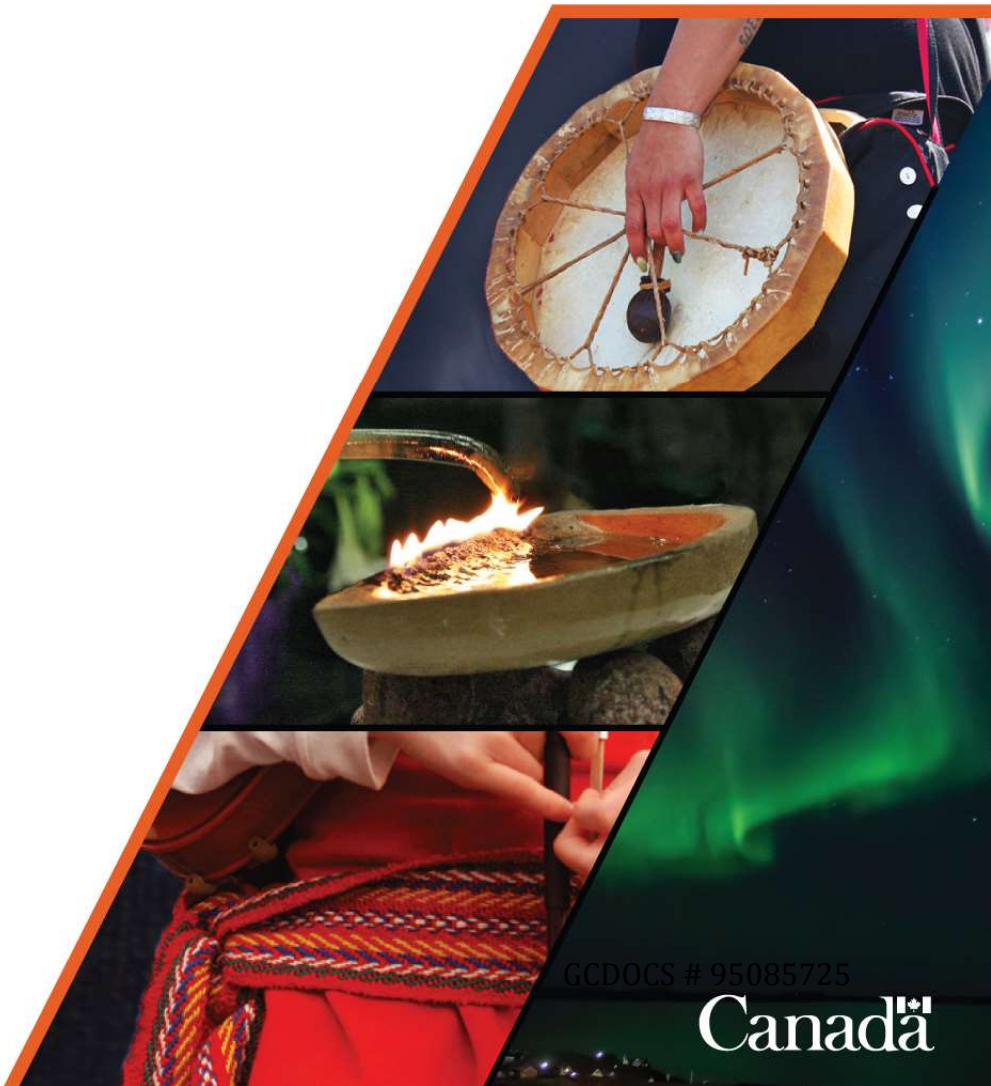
Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Final submission for amendment of water licence 2AM-BRP1831

Back River Project (Sabina Gold & Silver Limited)

June 15, 2021



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EXECUTIVE SUMMARY

Crown-Indigenous Relations and Northern Affairs Canada has participated as an Intervener in the ongoing review of Sabina Gold and Silver Corp.'s application to amend their Nunavut Water Board type A water licence 2AM-BRP1831 for the Back River gold mine project. This project is situated approximately 400 kilometers southwest of Cambridge Bay in Nunavut's Kitikmeot region.

The licensed project allows for the operation of four open pits and four underground mines at the Goose property, a marine laydown area on Bathurst Inlet, and a 160 km long winter road. The amendment currently under review by the Nunavut Water Board is called the 2020 Modification Package and includes requests for changes at Goose Property, at the Marine Laydown Area and on the Winter Ice Road.

Discussion during the technical review covered the following topics:

- **Scope of amendment** – what permissions are added to the water licence with this amendment
- **Water management and quality** – how much water can be used and what is done with the wastewater
- **Predictions of water quantity and quality, management plans and reports** – how good models are at predicting how much water will be on site and how clean it will be, and plans for how the mine will be run to protect the environment
- **Monitoring and reporting** – what to look at to make sure things are going according to plans and how to report on findings
- **Closure, reclamation & security** – how the site will be cleaned up at the end and how much money needs to be set aside in case Sabina cannot do that
- **Draft amended water licence** – suggestions of changes that could be made to the current water licence

Crown-Indigenous Relations and Northern Affairs Canada had nine technical comments and most have been addressed by Sabina. Two areas where we have outstanding concerns are the long term water quality in Goose Lake and the cost of cleaning up the site after mining. CIRNAC is continuing discussions with Sabina and the Kitikmeot Inuit Association to sort out the second concern.

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RÉSUMÉ

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INTRODUCTION

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act,* is an Intervenor in the Nunavut Water Board water licensing process for the amendment of water licence 2AM-BRP1831 for the Back River gold mine project, as proposed by Sabina Gold and Silver Corp. (Sabina).

CIRNAC reviewed Sabina's application for the water licence amendment and provided technical comments to the Nunavut Water Board (Board) for their consideration. The review process included Information Requests (IR) and a Technical Review submission, both of which received responses from Sabina. This was followed by a Technical Meeting and a Pre-Hearing Conference on March 26, 2021 held through videoconference. On April 19, 2021 the Board distributed the Pre-Hearing Conference Decision inviting interested parties to submit final written submissions.

The amendment under consideration involves increasing the scope of water licence 2AM-BRP1831 to include greater water use, all-weather airstrip expansions at the mine site and marine laydown area, extension of the Umwelt Underground mine and shoreline pad, changes to timing of construction and use of water and wastewater management infrastructure, and improvements to the winter ice road. Previously approved elements of the Back River project, such as Echo Open Pit, Llama Underground, Goose Main Underground and Echo Underground, are no longer in the current mine plan, though they are to be retained within the scope of an amended licence.

The Board has provided a list of issues to be discussed at the public hearing. The topics have been used as headings in this document to organize CIRNAC's comments. Technical comments are provided in the following section. CIRNAC's current security estimate is provided as a RECLAIM model in Annex A.

During this amendment process, Sabina has provided a draft water licence proposing changes to their current 2AM-BRP1831 water licence. CIRNAC is providing comments on those sections of the proposed draft water licence pertaining to the amendment in Annex B.

TECHNICAL COMMENTS

CIRNAC submitted nineteen Information Requests (IRs) and nine Technical Review Comments (TCs). Exchanges and discussion with Sabina during the water licence amendment process so far have allowed CIRNAC to clarify most of the issues we identified. CIRNAC has outstanding concerns on two topics: water quality in Goose Lake and reclamation security. Ongoing discussions with Sabina and the Kitikmeot Inuit Association should allow us to resolve the second concern, at which time a further submission would be made to the Board.

Comments submitted by CIRNAC have been assigned to one of the topics in the Nunavut Water Board's list of issues, even though several comments could be assigned to more than one heading. Comments have been developed with the support of Tetra Tech Canada Inc.

1. Scope of amendment

CIRNAC is of the opinion the scope of licence amendments described in Pre-hearing Conference Decision Report list of issues match those in the application.

These are:

- Goose Site
    - Airstrip Extension
    - Umwelt Underground Extension
    - Total Water Use Increase
    - Waste and Water Management Infrastructure
- Marine Laydown Area
    - Addition of Fuel Transfer Area
    - Airstrip Extension
    - Shoreline Pad Extension
- Winter Ice Road
    - Subbase Upgrade
    - Service/Emergency Camps
    - Total Water Use Increase

CIRNAC did not submit any comment pertaining directly to the scope of licence

2. Water Management

Under this application, Sabina is requesting authorization for increased water use in three areas:

- Goose Lake: increase by 218,700 m^3/year to 608,700 m^3/year;
- Big Lake: increase by 195,750 m^3/year to 273,750 m^3/year; and

- Winter ice road: increase by 1,350 m^3/km/year to 2,025 m^3/km/year.

Sabina is also proposing some changes to timing of construction and operation of water and wastewater management infrastructure on site. CIRNAC submitted seven comments regarding water management, as summarised in Table 1. They are resolved.

Table 1 Status of comments pertaining to water management

Comment #	Issue	Status
IR1	Groundwater inflow to Llama Pit	Resolved
IR2	Methodology for extrapolated water quality and quantity predictions	Resolved
IR4	Treated sewage attenuation	Resolved
IR10	Water withdrawal errors	Resolved
IR12, TC1	Saline water pond permafrost and balance	Resolved
IR16	Goose property waste and water management	Resolved

Groundwater inflow to Llama Pit (IR1): CIRNAC requested a summary of parameters and methodology to estimate the flooding of Llama Pit including groundwater inflow. Sabina directed us to the 2020 Water and Load Balance Model and explained the assumptions used to calculate flooding of the pit.

Methodology for extrapolated water quality and quantity predictions (IR2): The amendment application includes a 250 m extension of the Umwelt Underground. CIRNAC requested further details on the hydraulic and water quality parameters used for the extension zone in the groundwater model. Sabina explained they used a scaling approach and provided details.

Treated sewage attenuation (IR4): The Water Management Plan proposes the use of land discharge for treated sewage without providing details on attenuation prior to entering a watercourse. Sabina responded that the proposed land discharge was assessed in 2018, concentration in the effluent have not changed since then and the adjusted discharge location is accounted for in the updated Water and Load Balance Model.

Water withdrawal errors (IR10): CIRNAC identified some inconsistencies in the additional withdrawal amounts requested between the table and text in section 2.3.3 of the Modification Package. Sabina clarified the differences were because one quantity referred to the total amount requested and the other was for the additional amount requested.

Saline Water Pond permafrost and balance (IR12, TC1): Umwelt Lake will be used to store saline groundwater and the mine plan involves construction of a dam to increase capacity and form the Saline Water Pond. CIRNAC requested more information on the

talik below the pond and yearly volumes in the pond. Sabina directed CIRNAC to a 2017 memo for information on the talik below Umwelt Lake, provided clarifications on the annual water volumes and underlined their commitment to provide an annual comparison of measured groundwater inflow rates to model predictions in the Annual Report.

Goose Property waste and water management (IR16): CIRNAC requested rationale for the nearly two-fold increase in water requested from Goose Property, and information on how the proportionate increase in wastewater was integrated into the Water Management Plan. Sabina responded the additional freshwater need was identified through detailed engineering during the Feasibility Study and that wastewater volumes should only increase marginally and would be managed to meet licence requirements.

3. Water Quality

Sabina provided an updated Water and Load Balance Model that estimated water quantities and quality on site for the duration of the mine operations. CIRNAC submitted five comments regarding water quality, as summarised in Table 2. They were principally requests for clarification and have all been resolved.

Table 2 Status of comments pertaining to water quality

Comment #	Issue	Status
IR8, IR9	Water and Load Balance Model update and incorporation of climate change	Resolved
IR13	Water quality in Saline Water Pond	Resolved
IR14	Lake mixing model	Resolved
TC3	Arsenic concentration in tailings beach sediments	Resolved

Water and Load Balance Model update and incorporation of climate change (IR8, IR9): CIRNAC requested details on what was updated in the 2017 Water and Load Balance Model to create the 2020 model, and how climate change impacts will be captured in sizing of containment infrastructure. Sabina provided a table that clearly identified the changes between the 2017 and 2020 versions of the model and confirmed that climate change predictions had been incorporated when designing berms, culverts and ponds.

Water quality in Saline Water Pond (IR13): Extreme maximum values for many water quality constituents in the Saline Water Pond were presented in Appendix D of the Water and Load Balance and CIRNAC requested a time series model projections to confirm if the values were spurious. Sabina provided time series model projections for ammonia, chloride, sulphate, arsenic and copper for the duration of use of the Saline Water Pond.

Lake mixing model (IR14): Since the salinity of water discharged from the Saline Water Pond to the pit lake has an incidence on development of meromitic conditions in the pit lake, CIRNAC requested discussion on how the salinity and water quantity in the Saline Water Pond might vary during operations and an unexpected work stoppage. Sabina's discussion included graphs of salinity of the different water sources over the duration of the project.

Arsenic concentration in tailings beach sediments (TC3): CIRNAC identified a discrepancy in the concentration of arsenic in the tailings beach in the Water and Load Balance Model and Sabina confirmed the correct concentration for this geochemical source term is 0.081 mg/L, which was used in the model.

4. Modelling, Management Plans, Manuals and Reports

For the 2020 amendment five management plans were updated including: Water Management Plan, Interim Closure and Reclamation Plan, Tailings Management Plan, Waste Rock Management Plan and Borrow Pits and Quarry Management Plan. The Water Management Plan includes the Saline Water Management Plan and Water and Load Balance Report as appendices. The hydrodynamic model for Goose Lake was also reviewed, and results from the latest version are integrated in the Effluent Quality Criteria Report for Effluent Discharged from Tailings Facilities, Tailings Storage Facilities, or Reservoirs - Version 1.

CIRNAC submitted 12 comments regarding modelling, management plans, manuals and reports, as summarised in Table 3. Most of the comments on the plans were requests for clarifications, and those requiring follow-up have been flagged to ensure commitments made by Sabina are incorporated into subsequent versions of management plans. CIRNAC has one unresolved comment on the hydrodynamic model for Goose Lake and our concerns relate to the long term water quality in the lake.

Table 3 Status of comments pertaining to modelling, management plans, manuals and reports

Comment #	Issue	Status
IR3	Unanticipated groundwater quantities	Resolved
IR11, TC2	Hydrodynamic model	Unresolved
IR15, IR17	Increase in tailings and waste rock	Resolved
IR18	Mass balance assessment	Resolved
TC4	Criteria for segregating rock	Resolved, follow-up
TC5	Use of ponds as tailings facilities	Resolved
TC6	Temporary PAG stockpiles	Resolved, follow-up
TC7	Quarry site development plans	Resolved, follow-up
TC8	Additional infrastructure in Tailings Management Plan	Resolved, follow-up
TC9	Saline Water Management Plan title	Resolved, follow-up

Unanticipated groundwater quantities (IR3): CIRNAC requested Sabina's standard operating procedures (SOP) for when unanticipated groundwater volumes are encountered during mining. Though Sabina did not provide an SOP, they directed us to the Saline Water Management Plan which includes contingency measures for such encounters and committed to incorporating locations of historic drillholes in a future SOP.

Hydrodynamic model (IR11, TC2): The hydrodynamic model of Goose Lake predicts water quantity and quality in the lake and can be used as a tool to assess the impacts of different water management strategies. Sabina provided a hydrodynamic model on February 12, 2021 which had several deficiencies and the concerning conclusion that the concentration of several parameters (nitrate, nitrite, aluminum, arsenic, chromium, copper and iron) were expected to be above chronic water quality benchmarks for the protection of aquatic life at the outlet of Goose Lake, including during closure and post-closure.

Discussion at the technical meeting led to commitments from Sabina to update the model twice:

- once prior to the public hearing to explore the effect of changes to water management on site including discharging during operations instead of waiting for closure to discharge; and
- a second time 90 days following licence approval to incorporate further site data into the model inputs and allow for more time for optimization.

Results from the first update to the model were used to calculate effluent quality criteria in the May 27, 2021 report Effluent Quality Criteria Report for Effluent Discharged from

Tailings Facilities, Tailings Storage Facilities, or Reservoirs - Version 1. It is difficult to compare the results with the previous model because the modelling period is shorter, time series data are not presented for the same point, and benchmarks have changed for some of the parameters.

CIRNAC is still concerned with long term water quality based on the data presented, even though modelling was restricted to the 12 year operational period. Many parameters appear to increase in maximum concentration over the 12 years of operation, particularly in the final 3 years. For example, total lead stays below the 0.001 mg/L line until the final three years of operations, and remains below the applicable guideline because the guideline increases with hardness. Similar dynamics are evident in plots of nickel, cadmium, and aluminum. Other parameters increase towards a constant guideline, including arsenic, copper and iron.

During the May 5, 2021 teleconference regarding updates to the model, Sabina's rationale for not modelling the closure and post-closure periods was based on the anticipated expiration of the current water licence prior to closure. CIRNAC is of the opinion that restricting the model to operations defeats one of the purposes of modelling, and argues that the February 12, 2021 model identified problems during closure and post closure prior to them occurring, which will lead to changes in operations to avoid the problem. Likewise, CIRNAC would like to see projected water quality in Goose Lake during closure and post-closure to have confidence that the currently proposed site water management strategy will protect water quality in Goose Lake during operations, closure and post-closure.

CIRNAC recommends the next update to the hydrodynamic model, due 90 days after potential licence approval incorporate more detailed inputs, including field data to be collected this summer, and the forecast period cover operations, closure and post-closure. Furthermore, CIRNAC recommends the Water Management Plan be updated to integrate changes to water management on site that are being proposed based on hydrodynamic model findings.

Increase in tailings and waste rock (IR15, IR17): The proposed amendment would lead to a 27.6 Mt increase in waste rock and 7.4 Mt increase in tailings, which were not reflected in the Tailings Management Plan and Waste Rock Management Plan. These have since been updated by Sabina.

Mass balance assessment (IR18): Terms used in the Water and Load Balance Report created confusion between the tailings production volume and settled tailings volume, but Sabina has clarified that 2 500 m^3/day in section 3.2.7 refers to total settled tailings volume and confirmed the correct quantity was used in the model.

Criteria for segregating rock (TC4): CIRNAC identified an inconsistency in how potentially acid generating (PAG) rock was defined in the Mine Waste Rock Management Plan and the 2020 Borrow Pit and Quarry Management Plan. Sabina clarified that PAG rock is defined as having a neutralization potential ratio (NPR) < 3 and

total sulphur (S) > 0.15%, and an addendum will be added to the Mine Waste Rock Management Plan at the next opportunity.

Use of containment ponds as tailings facilities (TC5): The updated Water Management Plan allows for the possibility of using all containment ponds as tailings storage facilities, but Sabina has confirmed this would be restricted to ponds and facilities appropriate for the storage of tailings.

Temporary PAG stockpiles (TC6): The Borrow Pit and Quarry Management Plan allows for the temporary stockpiling of PAG rock, about which CIRNAC requested further information. Sabina has clarified that temporary PAG stockpiles will be within quarry footprints, runoff from the quarries will be monitored, and piles will be in place a shorter period of time than the time for onset of acidic conditions from the rock.

Quarry site development plans (TC7): Sabina still intends to develop quarry development plans specific to each rock quarry, which was unclear but has been clarified.

Additional infrastructure in Tailings Management Plan (TC8): To help track project components still included in the water licence but not part of the current mine plan, CIRNAC recommended the Tailings Management Plan include a section for "other approved infrastructure", as is found in other plans. Sabina agreed to add this as an addendum to the plan at the next opportunity.

Saline Water Management Plan title (TC9): An inconsistency was identified in the title of the Saline Water Management Plan and will be corrected at the next opportunity.

5. For-construction Drawings and Reports

Drawings provided with this 2020 amendment are for the shoreline pad extension at the marine laydown area on Bathurst Inlet. As well, maps highlighting areas where winter ice road subbase upgrade and realignment are planned were provided. CIRNAC submitted two comments regarding for-construction drawings and reports, as summarised in Table 4. They have been resolved.

Table 4 Status of comments pertaining to for-construction drawings and reports

Comment #	Issue	Status
IR6, IR7	Design criteria for event ponds, diversion berms and culverts	Resolved

Design criteria for event ponds, diversion berms and culverts (IR6, IR7): CIRNAC requested justification on the use of a 24-hour event for containment pond design criteria, further information on design conveyance capacities for diversion berms and culverts, and watershed areas for five culverts. Sabina referred to information presented

in 2018, stating this amendment did not involve changing design criteria, which still follow best practice.

6. Monitoring Program

Most of the discussions on the monitoring program are regarding proposed changes to water management on site and criteria for effluent discharge to Goose Lake. CIRNAC submitted a single comment regarding the monitoring program, as summarised in Table 5. It has been resolved.

CIRNAC supports Environment and Climate Change Canada's efforts to ensure that any effluent discharge criteria are protective of the environment and maintain Goose Lake's aquatic health in both the short and long term.

Table 5 Status of comment pertaining to wastewater management and treatment

Comment #	Issue	Status
IR5	Active layer groundwater monitoring	Resolved

Active layer groundwater monitoring (IR5): CIRNAC requested information on how shallow groundwater would be monitored near mine infrastructure. Sabina replied that any potentially impacted shallow groundwater would be kept within the containment systems, since diversion berms and dams are keyed into permafrost, and therefore monitoring specific to active layer groundwater is not necessary. Moreover, they underlined how the seep surveys and dam inspections will flag any potential shallow groundwater concerns.

7. Annual Reporting Requirements under Schedule B

CIRNAC did not submit any comment regarding annual reporting requirements under Schedule B. However, during discussions on other comments some additions to annual reporting requirements have been identified, including:

1. **Groundwater:** in response to TC1, Sabina has committed to including "*an annual comparison of measured groundwater inflow rates to model predictions in the NWB Annual Report, as described in Section 5.1 of the Saline Water Management Plan*"
2. **Progressive reclamation:** CIRNAC is in ongoing discussions with Sabina and the Kitikmeot Inuit Association regarding how best to evaluate progressive reclamation and how that could be captured in the annual reporting requirements. We hope to make a joint submission on this topic.

8. Closure and Reclamation Planning

Sabina shared an Interim Closure and Reclamation Plan with Kitikmeot Inuit Association and CIRNAC in November 2020, accompanied by an updated closure cost re-evaluation. CIRNAC has submitted a single comment regarding closure and reclamation planning to the Board, as summarised in Table 6. This issue is unresolved and CIRNAC is continuing discussions on the topic with the objective of participating in a joint submission to the Board prior to the public hearing scheduled in mid-July 2021.

Table 6 Status of comment pertaining to closure and reclamation planning

Comment #	Issue	Status
IR19	Reclamation plan and cost estimate	Unresolved

Reclamation plan and cost estimate (IR19): Three party discussions have continued with Sabina November 2020 have allowed us to clarify many points, bringing our respective cost estimates closer together. We have yet to agree on a total amount, and have yet to discuss the breakdown of the estimate between land and water owners and between stages/phases. CIRNAC's understanding is that Sabina will be submitting an Interim Closure and Reclamation Plan to the Board that incorporates some of our recommendations. CIRNAC's current reclamation cost estimate is shared in Annex B, though we will be making a further submission that may modify the total amount, and will include split between the holders of security and stages.

The mine plan incorporates progressive reclamation, which is an activity CIRNAC wishes to encourage on all sites. As such, our estimate assumes progressive reclamation will occur as per the mine plan, resulting in a smaller cost estimate than the total of each project component costed individually. CIRNAC and Sabina are discussing mechanisms that would help provide assurance to CIRNAC that progressive reclamation is proceeding as planned. These will likely be presented to the Board in the form of suggested items for the annual report, specifically for Schedule B of an amended water licence.

9. Discussion on Amended Water Licence Framework

CIRNAC has reviewed the Draft Water Licence Framework "Addendum" To Support Water Licence Amendment submitted by Sabina on March 16, 2021. Our review has been limited to those terms and conditions pertaining to the amendment. The lack of comments on other proposed changes does not constitute agreement or disagreement on CIRNAC's behalf. We note many proposed changes do not seem to have been discussed during this amendment process.

Detailed comments are included as Annex B.

Annex A

RECLAIM Reclamation Cost Estimate

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	TOTAL LIABILITY	LAND LIABILITY	WATER LIABILITY
OPEN PIT	Umwelt	$51 017	$51 017	$25 098	$25 919
	Llama	$57 577	$57 577	$23 203	$34 375
	Echo	$55 055	$55 055	$20 985	$34 070
	Goose Main	$88 472	$88 472	$28 832	$59 640
QUARRY (under OPEN PIT TAB estimate)	Airstrip Quarry	$3 865	$3 865	$3 865	$0
UNDERGROUND MINE	Umwelt	$378 099	$378 099	$197 122	$180 977
	Llama	$105 418	$105 418	$74 399	$31 019
	Goose Main	$289 250	$289 250	$64 229	$225 020
	Echo	$97 841	$97 841	$96 061	$1 780
TAILINGS FACILITIES	TSF	$1 730 394	$1 730 394	$1 510 245	$220 149
ROCK PILE	Umwelt, Llama, Echo and TSF	$18 310 068	$18 310 068	$16 479 061	$1 831 007
BUILDINGS AND EQUIPMENT		$2 502 133	$2 502 133	$2 194 910	$307 222
CHEMICALS AND CONTAMINATED SOIL MANAGEMENT		$1 386 303	$1 386 303	$1 179 589	$206 714
SURFACE AND GROUNDWATER MANAGEMENT		$2 131 642	$2 131 642	$ -	$2 131 642
INTERIM CARE AND MAINTENANCE		$968 813	$968 813	$ -	$968 813
	SUBTOTAL: Capital Costs	**$28 155 946**	**$28 155 946**	**$21 897 600**	**$6 258 346**
	PERCENT OF SUBTOTAL			**78%**	**22%**

INDIRECT COSTS		COST		LAND LIABILITY	WATER LIABILITY
MOBILIZATION/DEMOBILIZATION		$4 316 542	$4 316 542	$3 357 086	$959 457
POST-CLOSURE MONITORING AND MAINTENANCE		$1 981 838	$1 981 838	$1 179 974	$801 864
ENGINEERING	10%	$2 815 595	$2 815 595	$2 189 760	$625 835
PROJECT MANAGEMENT	5%	$1 407 797	$1 407 797	$1 094 880	$312 917
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	1%	$281 559	$281 559	$218 976	$62 583
BONDING/INSURANCE	1%	$281 559	$281 559	$218 976	$62 583
CONTINGENCY	20%	$5 631 189	$5 631 189	$4 379 520	$1 251 669
MARKET PRICE FACTOR ADJUSTMENT	0.0%	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$16 716 080**	**$16 716 080**	**$12 639 172**	**$4 076 909**

TOTAL COSTS	**$44 872 026**	**$44 872 026**	**$34 536 772**	**$10 335 255**

Open Pit Name:	Umwelt			Pit #	1			1
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**% Land**	**Land Cost**	**Total Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	Assumed	each	4	Sabina	$76.28	$305		$0	$305
Berm at crest	Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m - assumed 50 % done during Operations	m3	433	RR1H	$18.05	$7 809	100%	$7 809	$0
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5 085.00	$5 085		$0	$5 085
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow	1	Sabina	$17 289.00	$17 289	100%	$17 289	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel	200 m long, 6 m wide and 1 m deep	m3	1 200	SB1L	$4.37	$5 248		$0	$5 248
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3	400	RR1H	$18.05	$7 221		$0	$7 221
Other	Geotextile	m2	2 304	GSTL	$3.50	$8 060		$0	$8 060
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Capital									
Remove stationary equipment (sump pumps) and Pipeline	In Year 3, the exhausted Umwelt Pit will be converted to a water reservoir. Water from the Saline Water Pond will be pumped into Umwelt Reservoir between Year 3 and 4. The Umwelt Reservoir will continue to passively flood with site runoff and direct precipitation through the remainder of Operations and into the Closure Phase. Pipelines/pumps will be relocated for use in the other active pits (Goose Main Pit) and removed to closure landfill once they are no longer needed. Dispose of fuel in diesel day tank and oil from pump and landfill cleaned pump. Remove of pumps and pipelines will occur during Operations	m		#N/A	$0.00	$0		$0	$0
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost									
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0		$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0		$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0		$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
				Annual pumping costs		$0			
Number of years of pump flooding	passive pit flooding	years	0						
				Total pumping costs		$0		$0	$0
					Total	$51 017		$25 098	$25 919
					% of Total			49%	51%

Open Pit Name:	Llama				Pit #	2			2
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**% Land**	**Land Cost**	**Total Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	Assumed	each	4	Sabina	$76.28	$305		$0	$305
Berm at crest	Estimated for berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m; berm needed only where pit edge will not abute the final flooded lake footprint.	m3	327.6	RR1H	$18.05	$5 914	100%	$5 914	$0
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5 085.00	$5 085		$0	$5 085
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow	1	Sabina	$17 289.00	$17 289	100%	$17 289	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel	Spillway not required; will follow natural drainage to Umwelt Lake.	m3		#N/A	$0.00	$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Captital									
Remove stationary equipment (sump pumps) and Pipeline	Llama TF will be used to store tailings in Years 5 to 12; it will be passively flooded from Year 5 through Year 11 with site runoff and direct precipitation throughout the end of Operations. At Closure, pump will be at top of TF and pipeline leads to WTP. Remove pipeline to closure landfill; dispose of fuel in diesel day tank and oil from pump and landfill cleaned pump.	m	2 850	Sabina	$10.17	$28 985		$0	$28 985
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost									
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0		$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0		$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0		$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding	passive pit flooding	years	0						
					Total pumping costs	$0		$0	$0
					Total	$57 577		$23 203	$34 375
					% of Total			40%	60%

Open Pit Name:	Echo				Pit #	3			3
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**% Land**	**Land Cost**	**Total Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	Assumed	each	4	Sabina	$76.28	$305		$0	$305
Berm at crest	Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m - assumed 50 % done during Operations	m3	204.75	RR1H	$18.05	$3 696	100%	$3 696	$0
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5 085.00	$5 085		$0	$5 085
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow	1	Sabina	$17 289.00	$17 289	100%	$17 289	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel	Spillway not required; will follow natural drainage to Goose Lake.	m3		#N/A	$0.00	$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Captital									
Remove stationary equipment (sump pumps) and Pipeline	Deposit not in current mine plan. No changes to costs to keep the stage intact, except: Allotment added for future potential usage of Echo Pit for permenant tailings storage. At Closure, pump and pipeline removed to closure landfill; dispose of fuel in diesel day tank and oil from pump and landfill cleaned pump.	m	2820	Sabina	$10.17	$28 679		$0	$28 679
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost									
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0		$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0		$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0		$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding	passive pit flooding	years	0						
					Total pumping costs	$0		$0	$0
					Total	$55 055		$20 985	$34 070
					% of Total			38%	62%

Open Pit Name:	Goose Main				Pit #	4			4
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**% Land**	**Land Cost**	**Total Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	Assumed	each	4	Sabina	$76.28	$305		$0	$305
Berm at crest	Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m - assumed 50 % done during Operations	m3	639.45	RR1H	$18.05	$11 543	100%	$11 543	$0
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5 085.00	$5 085		$0	$5 085
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow	1	Sabina	$17 289.00	$17 289	100%	$17 289	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel	100 m long, 6 m wide and 1 m deep	m3	600	SB1L	$4.37	$2 624		$0	$2 624
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3	200	RR1H	$18.05	$3 610		$0	$3 610
Other	Geotextile	m2	1 152	GSTL	$3.50	$4 030		$0	$4 030
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Captital									
Remove stationary equipment (sump pumps) and Pipeline	At closure, pump will be at top of Goose Reservoir. Remove pipeline to closure landfill; dispose of fuel in diesel day tank and oil from pump and landfill cleaned pump.	m	4 325	Sabina	$10.17	$43 985		$0	$43 985
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost									
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0		$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0		$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0		$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding	passive pit flooding	years	0						
					Total pumping costs	$0		$0	$0
					Total	$88 472		$28 832	$59 640
					% of Total			33%	67%

Quarry Name:	Airstrip Quarry				Quarry #	1			1
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**% Land**	**Land Cost**	**Total Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Berm at crest		m3		RB1H	$17.34	$0		$0	$0
Block roads		allow		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study	Not required for quarry	allow		#N/A	$0.00	$0		$0	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other	Backhoe to pull down loose rock on bedrock backslope - assumed	hrs	20	exc-sL	$193.23	$3 865	100%	$3 865	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes	Allow to revegetate naturally	ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel	Not required. Quarry base will be graded for sheet drainage.	m3		SB1L	$4.37	$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		RR1L	$13.73	$0		$0	$0
Other		m2		GSTL	$3.50	$0		$0	$0
RECLAIM QUARRIES									
Contour slopes	Quarry will not be flooded - development will occur below water level and the areas will be contoured to drain positively	m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Capital									
Remove stationary equipment (sump pumps) and Pipeline		m		#N/A	$0.00	$0		$0	$0
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost									
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0		$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0		$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0		$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
				Annual pumping costs		$0			
Number of years of pump flooding	No flooding	years	0						
				Total pumping costs		$0		$0	$0
					Total	$3 865		$3 865	$0
					% of Total			100%	0%

Underground Mine Name **Umwelt** **UG Mine #** **1** **1**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$19.12	$2 868	100%	$2 868	$0
Backfill portal #2		m3		#N/A	$0.00	$0		$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap raise #2	Concrete plug over 4m-dia. vent raise	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap shaft #1	Concrete plug over 4m-dia. fresh air vent	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap shaft #2		m3		#N/A	$0.00	$0		$0	$0
Backfill adits		m3		#N/A	$0.00	$0		$0	$0
Backfill open stope		m3		#N/A	$0.00	$0		$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE HAZARDOUS MATERIALS									
Remove hazardous materials, U/G labor	Three shifts with loader, incl. operator and fuel	manhour	30	load-s	$177.98	$5 339		$0	$5 339
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0		$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0		$0	$0
Remove misc. haz. mat & explosives	Dispose of up to 1 week's inventory of explosives	kg	100	Sabina	$50.85	$5 085		$0	$5 085
Decommission Pipeline	UG is passively flooded with saline water (previously - Clean Umwelt UG to SWP pipeline, decommission and landfill)	m	1 662	Sabina	$10.17	$16 903		$0	$16 903
INSTALL BULKHEADS									
Bulkheads to control water flow		each		#N/A	$0.00	$0		$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0		$0	$0
FLOOD MINE									
Supply/install pump	UG mine is expected to be flooded in Year 10 and active flooding will take about a year, relocation of pipelines and flooding will occur as part of operations but cost is provided as a conservative approach	each		#N/A	$0.00	$0		$0	$0
Relocate Pipeline	Move SWP-Llama UG pipeline discharge to Umwelt UG	m	800	Sabina	$10.17	$8 136		$0	$8 136
Operate pumps to flood workings	UG is passively flooded with saline water	m3	1 071 225	Sabina	$0.14	$145 514		$0	$145 514
Decommission of pipeline				#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m2		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install water quality monitoring pipes		each		#N/A	$0.00	$0		$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0		$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10 170.00	$10 170	100%	$10 170	$0
					Total	$378 099		$197 122	$180 977
					% of Total			52%	48%

Underground Mine Name **Llama** **UG Mine #** **2** **2**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$19.12	$2 868	100%	$2 868	$0
Backfill portal #2		m3		#N/A	$0.00	$0		$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap raise #2		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0		$0	$0
Backfill adits		m3		#N/A	$0.00	$0		$0	$0
Backfill open stope		m3		#N/A	$0.00	$0		$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0		$0	$0
Other									
REMOVE HAZARDOUS MATERIALS									
Remove hazardous materials, U/G labor	Two shifts with loader, incl. operator and fuel	manhour	20	load-s	$177.98	$3 560		$0	$3 560
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0		$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0		$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0		$0	$0
Decommission Pipeline	Clean Llama UG to SWP pipeline, decommission and landfill	m	2700	Sabina	$10.17	$27 459		$0	$27 459
INSTALL BULKHEADS									
Bulkheads to control water flow		each		#N/A	$0.00	$0		$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0		$0	$0
FLOOD MINE									
Supply/install pump	UG mine is expected to be flooded in Year 5 and active flooding will take about a year, relocation of pipelines and flooding will occur as part of operations	each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		m		#N/A	$0.00	$0		$0	$0
Operate pumps to flood workings		m3		#N/A	$0.00	$0		$0	$0
Decommission of pipelines				#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m2		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install water quality monitoring pipes		each		#N/A	$0.00	$0		$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0		$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10 170.00	$10 170	100%	$10 170	$0
					Total	$105 418		$74 399	$31 019
					% of Total			71%	29%

Underground Mine Name **Goose Main** **UG Mine #** **3** **3**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$19.12	$2 868	100%	$2 868	$0
Backfill portal #2		m3		#N/A	$0.00	$0		$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap raise #2		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0		$0	$0
Backfill adits		m3		#N/A	$0.00	$0		$0	$0
Backfill open stope		m3		#N/A	$0.00	$0		$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0		$0	$0
Other									
REMOVE HAZARDOUS MATERIALS									
Remove hazardous materials, U/G labor	Two shifts with loader, incl. operator and fuel	manhour	20	load-s	$177.98	$3 560		$0	$3 560
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0		$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0		$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0		$0	$0
Decommission WTP - Goose Lake Pipeline	In Water Management tab	m		#N/A	$0.00	$0		$0	$0
INSTALL BULKHEADS									
Bulkheads to control water flow		each		#N/A	$0.00	$0		$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0		$0	$0
FLOOD MINE									
Supply/install pump	UG mine is expected to be flooded in Year 10 and active flooding will take about a year, relocation of pipelines and flooding will occur as progressive reclamation but cost is provided as a conservative approach	each		#N/A	$0.00	$0		$0	$0
Supply/install piping system	Adjust pipe line to route to Goose UG in Year 10	m	4 500	Sabina	$13.00	$58 478		$0	$58 478
Operate pumps to flood workings		m3	391 630	Sabina	$0.14	$53 147		$0	$53 147
Decommission SWP to Goose UG pipeline		m	10 800	#N/A	$10.17	$109 836		$0	$109 836
Other				#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m2		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install water quality monitoring pipes		each		#N/A	$0.00	$0		$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
					Total	$289 250		$64 229	$225 020
					% of Total			22%	78%

Underground Mine Name **Echo** **UG Mine #** **4** **4**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$19.12	$2 868	100%	$2 868	$0
Backfill portal #2		m3		#N/A	$0.00	$0		$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	m2	28	SRH	$2 168.24	$61 361	100%	$61 361	$0
Cap raise #2		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0		$0	$0
Backfill adits		m3		#N/A	$0.00	$0		$0	$0
Backfill open stope		m3	3 550	Sabina	$6.10	$21 662	100%	$21 662	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE HAZARDOUS MATERIALS									
Remove hazardous materials, U/G labor	One shift with loader, incl. operator and fuel	manhour	10	load-s	$177.98	$1 780		$0	$1 780
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0		$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0		$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0		$0	$0
Decommission Pipeline		m		#N/A	$0.00	$0		$0	$0
INSTALL BULKHEADS									
Bulkheads to control water flow		each		#N/A	$0.00	$0		$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0		$0	$0
FLOOD MINE									
Supply/install pump	Passive flooding of Echo UG in Year 10, complete flooding is expected to occur within a few months.	each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		each		#N/A	$0.00	$0		$0	$0
Operate pumps to flood workings		m3		#N/A	$0.00	$0		$0	$0
Decommission				#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m2		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install water quality monitoring pipes		each		#N/A	$0.00	$0		$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0		$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10 170.00	$10 170	100%	$10 170	$0
					Total	$97 841		$96 061	$1 780
					% of Total			98%	2%

Tailings Impoundment Name: **TSF** **Pond # 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILIZE EMBANKMENT(S)									
Toe buttress, drainage layer		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, bulk fill		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Raise crest		m3		#N/A	$0.00	$0		$0	$0
Flatten slopes		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER TAILINGS									
Grade/shape tailings surface		m3		sbth	$3.76	$0		$0	$0
Liner bedding		m3		#N/A	$0.00	$0		$0	$0
Subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geotextile/geosynthetic		m2		#N/A	$0.00	$0		$0	$0
Install geotextile/geosynthetic		m2		#N/A	$0.00	$0		$0	$0
Soil cover		m3		#N/A	$0.00	$0		$0	$0
Rock cover	Included in the quantity for waste rock pile cover (5m of NPAG). See Rock Pile tab.	m3	0	sb3s	$7.12	$0	100%	$0	$0
TSF WRSA Pond Sediment Removal	Assumed 0.5 m of sediments in pond basin (66 ha) to be removed and placed in TSF WRSA	m3	330 000	SBTH	$3.76	$1 241 757	100%	$1 241 757	$0
Vegetate	TSF WRSA Pond	ha	66	VHFI	$4 068.00	$268 488	100%	$268 488	$0
Other		m3		#N/A	$0.00	$0		$0	$0
BURY PAG ROCK									
Relocate PAG rock		m3		#N/A	$0.00	$0		$0	$0
Place cover over PAG rock		m3		#N/A	$0.00	$0		$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILIZE DECANT SYSTEM									
Excavate and replace		m3		#N/A	$0.00	$0		$0	$0
Plug/backfill with concrete or clay		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE TAILINGS DISCHARGE									
Cyclones		m3		#N/A	$0.00	$0		$0	$0
Pipe		m3		#N/A	$0.00	$0		$0	$0
Remove reclaim barge		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base (liner)		m2		#N/A	$0.00	$0		$0	$0
FLOOD TAILINGS									
Doze tailings to final contour		m3		#N/A	$0.00	$0		$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
UPGRADE SPILLWAY									
Excavate channel on TSF	Breach west end of dam to existing drainage reporting to Goose Main Pit; 100 m channel.	m3	11 000.0	Sabina	$7.42	$81 665		$0	$81 665
Excavate channel, soil		m3		#N/A	$0.00	$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3	7 000	RR1H	$18.05	$126 362		$0	$126 362
Other	Geotextile	m2	2 860	GSTL	$3.50	$10 006		$0	$10 006
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
Breach seepage diversion berm		m3	285	Sabina	$7.42	$2 116		$0	$2 116
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install permanent instrumentation, supply & technican		each		#N/A	$0.00	$0		$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0			$0
TREAT SEEPAGE - see "Water Management" and "Water Treatment"									
TREAT SUPERNATANT									
Pump from TSF to WTP	INCLUDED UNDER WATER MANAGEMENT TAB	m3	-	POCL	$0.12	$0		$0	$0
Treat water in WTP		m3	-	Sabina	$0.66	$0		$0	$0
Pump water out of WTP		m3	-	POCL	$0.12	$0		$0	$0
Pump water (to pit, U/G)		m3		#N/A	$0.00	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
Supply reagents		tonne		#N/A	$0.00	$0		$0	$0
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
					Total	$1 730 394		$1 510 245	$220 149
					% of Total			87%	13%

* for construction of passive treatment system refer to "Water Management"

Rock Pile Name: **Umwelt, Llama, Echo and TSF**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
STABILIZE SLOPES									
Flatten slopes with dozer		m3		#N/A	$0.00	$0		$0	$0
Flatten "bubble dump" areas		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l A		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l B		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, drain mat'l		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l A		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l B		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER ROCK PILE									
Subgrade preparation - doze surface		m3		#N/A	$0.00	$0		$0	$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Rock cover - excavate,haul & spread	Cover rock piles in Yr 2, assuming progressive reclamation of Llama, Umwelt, and TSF WRSAs occurs as planned, Include 5m thick cover of NPAG material over Yr 2 max area of 37.6 ha, no contingency volume	m3	2 572 000	SB3S	$7.12	$18 310 068	90%	$16 479 061	$1 831 007
Excavate downslope drainage channel & chute		m3		#N/A	$0.00	$0		$0	$0
Rip rap drainage channel and chute		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha	0	VHFL	$4 068.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
VERY LOW PERMEABILITY COVER (in addition to above)									
Liner subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geomembrame		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond	See Water Management tab for berm breaching	m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		allow		#N/A	$0.00	$0		$0	$0
RELOCATE DUMPS									
Load, haul, dump or doze		m3		#N/A	$0.00	$0		$0	$0
Add lime		tonne		#N/A	$0.00	$0		$0	$0
Contour reclaimed area		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install ground temperature monitoring cables	Will be installed during Operations to meet opertional monitoring commitments	each		#N/A	$0.00	$0		$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
Cyanide destruction water treatment pumping		m3		#N/A	$0.00	$0		$0	$0
Reagents		tonnes		#N/A	$0.00	$0		$0	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
					Annual treatment costs	$0			
Number of years of treatment		years	0						
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$18 310 068		$16 479 061	$1 831 007
					% of Total			90%	10%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Building / Equip Name: **Bldg / Equip #: 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
DISPOSE MOBILE EQUIPMENT									
Decontaminate and ship off-site		allow		#N/A	$0.00	$0		$0	$0
Decontaminate and dispose on-site	Drive or transport to landfill; drain fluids; NPAG cover cost below	allow	1	Sabina	$20 340.00	$20 340	100%	$20 340	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE BUILDINGS - see note below									
Accomodation Complex	Goose Admin: Kitchen/camp. Landfill building materials and pad	m2	1 980	BRS1L	$45.77	$90 615	100%	$90 615	$0
Process Facilities		m2	6 464	BRS1H	$66.11	$427 303	100%	$427 303	$0
Crusher		m2	1 630	BRS1H	$66.11	$107 751	100%	$107 751	$0
Power plant		m2	2 040	BRS1H	$66.11	$134 854	100%	$134 854	$0
Emergency power plant		m2	300	BRS1H	$66.11	$19 832	100%	$19 832	$0
Truck Shop/Office	Goose Admin building	m2	2 349	BRS1L	$45.77	$107 523	100%	$107 523	$0
Cold storage	Goose Admin building	m2	840	BRS1L	$45.77	$38 443	100%	$38 443	$0
Storage Facilites	Waste oil storage Goose Site	Lot	1	Sabina	$44 070.00	$44 070	100%	$44 070	$0
Storage Facility	Goose frieght storage	Lot	1	Sabina	$19 577.25	$19 577	100%	$19 577	$0
Water and Wastewater Treatment Facilities	Water treatment plant Goose Building	m2	647	BRS1L	$45.77	$29 610	100%	$29 610	$0
Sewage Treatment Plant	Remove hazardous materials and dispose of at licensed facility, landfill building materials	Lot	1	Sabina	$11 746.35	$11 746	100%	$11 746	$0
Fuel Tanks	Fuel storage and distribution Goose facility	Lot	1	Sabina	$156 618.00	$156 618	100%	$156 618	$0
Offices, Repair, Lab, Warehouse	MLA infrastructure Port Office	Units	5	Sabina	$2 379.78	$11 899	100%	$11 899	$0
Pipeline	MLA Infrastructure	m	10 000	Sabina	$10.17	$101 700	100%	$101 700	$0
Warehouse, Shops and Others	MLA Infrastructure. Includes: Incinerator and waste management, Warehouses, Genset, Maintenance shop, water storage, WTP/STP, camp/office, freight storage area, waste area, MLA Fuel Storage Area. Cost includes grade and contour pads, disposal at designated areas, remove hazard material when applicable. Additional Cost included for MLA Fuel Transfer Area tank and liner removal.	LS	1	Sabina	$330 636.87	$330 637	100%	$330 637	$0
Freshwater intakes	pipes will be capped at substrate and left in place.	m2		#N/A	$0.00	$0		$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0		$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, electrician	Accounts for Goose 6,000-ft airstrip	manhours	24	elecH	$96.62	$2 319	100%	$2 319	$0
Airstrip lighting, navigation, mechanical	Accounts for Goose 6,000-ft airstrip	manhours	24	mechH	$74.09	$1 778	100%	$1 778	$0
Break foundation slabs		m2		#N/A	$0.00	$0		$0	$0
Consolidate & dump boneyard debris		m3		#N/A	$0.00	$0		$0	$0
Other	Remove Buildings - WIR Service/Emergency Camps, total of 3 1-ha area for 3 camps; assume all structures will be sprung structures.	LS	3	Sabina	$75 000.00	$225 000		$0	$225 000
LANDFILL FOR DEMOLITION WASTE									
Place rock cover		m3	25 000	rr3l	$7.12	$177 975	100%	$177 975	$0
Place soil cover		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha	-	VHFL	$4 068.00	$0	100%	$0	$0
GRADE AND CONTOUR PADS									
Accomodation Complex	Goose Admin: Kitchen/camp. no concrete foundation	ha	0.2	SCFYL	$4 373.10	$875	100%	$875	$0
Process Facilities	concrete foundation demolished to ground level	m2	6 464	BRCS	$6.10	$39 443	100%	$39 443	$0
Crusher	concrete foundation demolished to ground level	m2	1 630	BRCS	$6.10	$9 946	100%	$9 946	$0
Power plant	no concrete foundation	ha	0.3	SCFYL	$4 373.10	$1 312	100%	$1 312	$0
Emergency power plant	no concrete foundation	ha	0.10	SCFYL	$4 373.10	$437	100%	$437	$0
Truck Shop/Office	concrete foundation demolished to ground level	m2	2 349	BRCS	$6.10	$14 336	100%	$14 336	$0
Cold storage	no concrete foundation	ha	0.1	SCFYL	$4 373.10	$437	100%	$437	$0
Water and Wastewater Treatment Facilities	no concrete foundation	ha	0.1	SCFYL	$4 373.10	$437	100%	$437	$0
Sewage Treatment Plant	no concrete foundation	m2	33	BRCS	$6.10	$201	100%	$201	$0
Fuel Tanks	Fuel storage and distribution Goose facility; no concrete foundation	ha	2.2	SCFYL	$4 373.10	$9 621	100%	$9 621	$0
Warehouse, Shops and Other	MLA, includes all storage/laydown pads, Fuel Tank areas, airstrip, shoreline pads, and camp area	ha	20	SCFYL	$4 373.10	$87 462	100%	$87 462	$0
Place rock cover		m3		SB3S	$7.12	$0	100%	$0	$0
Vegetate		ha	-	VHFL	$4 068.00	$0		$0	$0
PUNCTURE LINED SUMPS									
Puncture liner and place soil cover		m3		#N/A	$0.00	$0		$0	$0
RECLAIM ROADS									
Restore drainage, remove culverts haul road	Restore drainage including culverts at Goose Property; no culverts at MLA. Roads will remain intact to facilitate long-term access.	m3	1 488	Sabina	$11.19	$16 646		$0	$16 646
Remove bridges		each		#N/A	$0.00	$0		$0	$0
Scarify and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Restore drainage airstrip	Accounts for Goose 6,000ft by 200ft airstrip dimensions	m3	1 360	Sabina	$12.20	$16 597		$0	$16 597
Scarify laydown areas	Accounts for Goose 6,000ft by 200ft airstrip (1,829 m x 61 m = 11.2 ha)	ha	11.2	SCFYL	$4 373.10	$48 979		$0	$48 979
Scarify Winter Ice Roads	Fill sections on land - 15 km x 10 m wide = 15.0 ha; plus 3 ha for WIR Service/Emergency Camps (1 ha/camp x 3)	ha	18	SCFYH	$6 132.51	$110 385	100%	$110 385	$0
Vegetate	Potential vegetation of roads to include 18 ha of scarified subbase and camps, plus a nominal area of 3 ha for spill or other road remediation area.	ha	21	VHFL	$4 068.00	$85 428	100%	$85 428	$0
Other				#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Dispose of misc. debris and laydown area refuse				#N/A	$0.00	$0		$0	$0
					Total	$2 502 133		$2 194 910	$307 222
					% of Total			88%	12%

Chemicals/Soil Area Name:

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Total Cost
HAZARDOUS MATERIALS AUDIT									
Hazardous materials audit		mandays		#N/A	$0.00	$0		$0	$0
Phase 1 audit		each	1	CS1L	$7 627.50	$7 628	70%	####	$2 288
Phase 2 audit		each	1	CS2L	$50 850.00	$50 850	70%	####	$15 255
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
Environmental technician/coordinator		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate: oil, fuel		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate maintenance shop		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate power plant		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate bulk fuel storage		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate ANFO plant		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate offices/warehouse/accom		mandays		#N/A	$0.00	$0		$0	$0
Removal of asbestos siding on buildings		m2		#N/A	$0.00	$0		$0	$0
Removal of friable asbestos on equipment		m2		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
HAZARDOUS MATERIALS REMOVAL									
Waste oils	Consume in a waste oil burner on-site	litre	10 000	ORL	$0.44	$4 373	70%	####	$1 312
Waste fuel	Consume on-site to power an incinerator, or in a waste oil burner	litre	250 000	ORL	$0.44	$109 328	70%	####	$32 798
Waste batteries	Assumed 10 20-kg batteries generated in the final year of closure	kg	200	PCRH	$2.54	$509	70%	$356	$153
Assay & environmental lab reagents		kg	500	PCRH	$2.54	$1 271	70%	$890	$381
Machine shop paints, solvents etc		litre	200	PCRH	$2.54	$509	70%	$356	$153
Glycol		litre	5 000	PCRH	$2.54	$12 713	70%	####	$3 814
Process reagents		kg	130 000	PCRH	$2.54	$330 525	70%	####	$99 158
WTP sludge from Water Treatment	All sludge created and disposed during Operations. In Year 2 (Max PAG Exposure), 3 years of sludge disposal included (9,000 kg over 3 seasons)	kg	9 000	PCRH	$2.54	$22 883	0%	$0	$22 883
Nuclear sources		allow		#N/A	$0.00	$0		$0	$0
Mobile Equipment	Remove hazardous waste from equipment not being salvaged, clean, landfill equipment	each	41	Sabina	$2 318.76	$95 069	70%	####	$28 521
HAZARDOUS MATERIALS									
Transportation to disposal facility	Included in hazardous materials removal cost	allow		#N/A	$0.00	$0		$0	$0
Disposal fees	Included in hazardous materials removal cost	allow		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONTAMINATED SOILS									
Contam. soil investigation - Phase 1		LS	1	BGC	$7 627.50	$7 628	100%	####	$0
Contam. soil investigation - Phase 2		LS	1	Sabina	$50 850.00	$50 850	100%	####	$0
CONTAMINATED SOIL REMOVAL									
Excavate and transport to onsite facility		m3	10 000	SB1H	$6.00	$60 003	100%	####	$0
Manage hydrocarbon remediation at facility	Operate landfarms	m3	10 000	CSRL	$47.80	$477 990	100%	####	$0
Reagents/stabilizing agent		m2		#N/A	$0.00	$0		$0	$0
Excavate and transport to offsite facility		m3		#N/A	$0.00	$0		$0	$0
Contour decontaminated area	Decommission 2 landfarms and confirmation soil sampling; estimated 6,000m3 at each of Goose and MLA sites.	m3	12 000	SB1L	$4.37	$52 477	100%	####	$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
Supply geomembrane, HDPE, ES3, GCL		m2		#N/A	$0.00	$0		$0	$0
Upper and lower bedding layers		m3		#N/A	$0.00	$0		$0	$0
Install geomembrane, HDPE, ES3, GCL		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m2		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
Other	Operate 2 landfarms: 1 at Goose, 1 at MLA	allow	2	Sabina	$50 850.00	$101 700	100%	####	$0
OTHER									
				#N/A	$0.00	$0		$0	$0
					Total	$1 386 303		####	$206 714
					% of Total			85%	15%

Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
BREACH DYKE EMBANKMENT						
Breach Llama Lake Diversion Berms	Breached in Year 5 when pit becomes Llama TF; removed.	m3	-	#N/A	$7.42	$0
Breach Llama WRSA Diversion Berm	Breached in Year 5 when pit becomes Llama TF; removed.	m3	-	#N/A	$7.42	$0
Breach Llama WRSA Containment Dam	Breached in Year 5 when pit becomes Llama TF; removed.	m3	-	#N/A	$7.42	$0
Breach Primary Pond Containment Dam	Breach in Year 3 once Umwelt Pit mining complete and starts as Umwelt Reservoir for saline water; Primary Pond will water will gravity flow directly.	m3		#N/A	$0.00	$0
Breach Umwelt WRSA Containment Dam	Berm has been removed from water management design	m3	-	#N/A	$0.00	$0
Breach Umwelt WRSA Diversion Berm	Berm has been removed from water management design	m3	-	#N/A	$0.00	$0
Breach Echo WRSA Containment Dam	Not in current mine plan; cost remains to keep Stage in tact.	m3	190	#N/A	$7.42	$1 411
Breach Echo Diversion Berm (East and West)	Not in current mine plan; cost remains to keep Stage in tact.	m3	190	#N/A	$7.42	$1 411
Breach Echo WRSA Diversion Berm	Not in current mine plan; cost remains to keep Stage in tact.	m3	95	#N/A	$7.42	$705
Breach East Echo Containment Dam	Not in current mine plan; cost remains to keep Stage in tact.	m3	95	#N/A	$7.42	$705
Breach Goose Main Diversion Berm	Breached in Year 5 when pit becomes Goose Main Reservoir	m3		#N/A	$7.42	$0
Breach Plant Site Pond Containment Dam		m3	215	#N/A	$7.42	$1 596
Breach SWP Containment Dam	Dewatered to Umwelt Reservoir in Year 3&4; breached in Year 4 of Operations	m3	-	#N/A	$8.14	$0
Remove Liner from all berms	Remove liner from all berms - 50% completed during Operatic	m2	15 350	Sabina	$0.71	$10 928
Contour water intake area		m3		#N/A	$0.00	$0
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
Place soil cover		m3		#N/A	$0.00	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0
Vegetate spread material		ha		#N/A	$0.00	$0
Rip rap in channel base		each		#N/A	$0.00	$0
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
Excavate ditches -soil		m3		#N/A	$0.00	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0
Stabilize side slopes		m3		#N/A	$0.00	$0
Rip rap in channel base		m3		#N/A	$0.00	$0
BREACH DITCHES						
Excavate breaches		m3		#N/A	$0.00	$0
Install flow dissipation		m3		#N/A	$0.00	$0
Vegetate remainder of ditch		m2		#N/A	$0.00	$0
DECOMISSION FRESH WATER SUPPLY						
Breach embankment		m3		#N/A	$0.00	$0
Remove pump		LS		#N/A	$0.00	$0
Remove pipelines		m		#N/A	$0.00	$0
DECOMISSION WATER RECLAIM BARGE						
Decommission reclaim barge from Llama TF		LS	1	Sabina	$10 170.00	$10 170
WATER CONTROL IN RECLAMATION QUARRY						
Install pumping system		LS		#N/A	$0.00	$0
Remove pumping system		m		#N/A	$0.00	$0
REMOVE PIPELINES						
Decommission Llama pump and pipeline		m	700	Sabina	$18.89	$13 221
Decomission WTP-Goose Lake pipeline		m	1 140	Sabina	$10.17	$11 594
Remove Saline Water Pond pump and pipeline	Decommissioned in Year 4 of Operations	m		Sabina	$18.20	$0
Remove Primary Pond pump and pipeline	Decommissioned in Year 4 of Operations	m		Sabina	$11.22	$0
Remove Echo WRSA Pond pump and pipeline	Not in current mine plan; cost remains to keep Stage in tact.	m	2 400	Sabina	$10.17	$24 408
Remove Echo NCW pond pump and pipeline	Not in current mine plan; cost remains to keep Stage in tact.	m	220	Sabina	$24.04	$5 288
Remove Plant Site Pond pump and pipeline		m	4 550	Sabina	$10.17	$46 274
Decommission WTP pump and pipeline		m	7 520	Sabina	$11.08	$83 327
Decommission WTP	Two Water Treatment Plants required	LS	2	Sabina	$9 915.75	$19 832
Concrete plug deep pipes		m3		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
OPERATE WATER TREATMENT PLANT						
Pump from TSF to WTP	For Max security year 2, Potential Water Treatment at TSF includes 2.1 Mm3 over 3 years.	m3	2 100 000	POCL	$0.12	$256 284
Treat water in WTP		m3	2 100 000	Sabina	$0.66	$1 388 205
Pump water out of WTP		m3	2 100 000	POCL	$0.12	$256 284
GROUNDWATER COLLECTION SYSTEM						
Excavate/install sumps		m3		#N/A	$0.00	$0
Install pumping wells		m3		#N/A	$0.00	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0
CONSTRUCT CONTAMINATED WATER STORAGE POND						
Excavate pond		m3		#N/A	$0.00	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0
Vegetate spread material		ha		#N/A	$0.00	$0
Bedding layer		m3		#N/A	$0.00	$0
Supply geomembrane		m2		#N/A	$0.00	$0
Install geomembrane		m2		#N/A	$0.00	$0
Erosion protection layer		m3		#N/A	$0.00	$0
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
Construct access roads		km		#N/A	$0.00	$0
Install HDPE piping system from collection pond		m		#N/A	$0.00	$0
Inter-cell flow structures		allow		#N/A	$0.00	$0
Install liners		m2		#N/A	$0.00	$0
Install growth media		m3		#N/A	$0.00	$0
Wetland vegetation		ha		#N/A	$0.00	$0
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant	Treatment Plant will be constructed as part of operations	LS		#N/A	$0.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	**$2 131 642**

For details of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"; costs included in this tab.

Interim Care and Maintenance

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
INTERIM CARE & MAINTENANCE						
Camp operation	Caretaker and summer personnel	mandays	306	Sabina	111.87	$34 232
On-site staff	Caretaker and summer personnel	manhours	3060	ENVCO	75.42	$230 787
extra personnel		manmonths		#N/A	0	$0
-electrician		manmonths		#N/A	0	$0
-mechanic		manmonths		#N/A	0	$0
annual fuel	Fuel for vehicles; fuel for pumping included in water treatment cost	litre	5 000	FCDH	1.4136	$7 068
misc. supplies		allow	1	Sabina	20340	$20 340
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow		#N/A	0	$0
SNP/AEMP water sampling & reporting	Sampling and lab costs	each	1	WSH	10170	$10 170
geotechnical assessment	Annual geotechnical inspection	each	1	RPTH	20340	$20 340
interim water treatment	Captured under Water Treatment	each	1	#N/A	0	$0
other		each		#N/A	0	$0
			Annual	Interim C&M Cost		$322 938
Number of years of ICM		years	3		**Total**	$968 813

Post Closure Water Treatment (Not Applicable this scenario)

ACTIVITY/MATERIAL - WATER TREATMENT	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year	-	#N/A	$0.00	$0
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		each		#N/A	$0.00	$0
Maintain airstrip surface		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
Annual water treatment cost, from "Water Treatment"	Water treatment for tailings pond included under tailings tab	LS	1	#N/A	$0	$0
Subtotal, Annual post-closure costs						$0
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				2	years	
Present Value of payment stream						$0
Combined NPV of payment stream						**$1 981 838**

					1 Year	
ACTIVITY/MATERIAL - GEOTECHNICAL INSPECTIONS OF TSF	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Total Cost**
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)	Annual inspection of the TSF from Closure until embankment breaching in Year 13 (1 year).	year	1	RPTH	$20 340.00	$20 340
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		each		#N/A	$0.00	$0
Maintain airstrip surface		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$20 340
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				1	years	
Present Value of payment stream						$20 340

					10 Years	
ACTIVITY/MATERIAL - WEMP and TERRESTRIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Total Cost**
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year		#N/A	$0.00	$0
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)	Aquatics - Non-contact water basins (10 years)	year	1	Sabina	$4 881.60	$4 882
Terrestrial Animal Monitoring	Terrestrial Animal Monitoring (10 years)	year	1	Sabina	$24 408.00	$24 408
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		year		#N/A	$0.00	$0
Maintain airstrip surface		year		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$29 290
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				10	years	
Present Value of payment stream						$292 896

						13 Years (Year 13 to 25)
ACTIVITY/MATERIAL - Monitoring & Maintenance	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Total Cost**
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year		#N/A	$0.00	$0
Waste Rock Piles	Annual inspection of WR piles from closure to post-closure (13 years)	year	1	Sabina	$8 441.10	$8 441
Pit Walls	Annual inspection of pit walls from closure to post-closure (13 years)	year	1	Sabina	$4 068.00	$4 068
WR GTC Monitoring	Umwelt, Llama, and TSF WRSA ground temp cable annual monitoring. No GTCs at Echo WRSA (13 years)	year	1	Sabina	$14 644.80	$14 645
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs	annual reporting, management plans, progress reports (13 years)	year	1	Sabina	$25 425.00	$25 425
Site water monitoring	All pits and WR piles closure and post closure monitoring (13 years)	year	1	Sabina	$9 275.04	$9 275
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface	maintence from closure to post-closure (13 years)	year	1	Sabina	$13 882.05	$13 882
Maintain airstrip surface	maintence from closure to post-closure (13 years)	year	1	Sabina	$3 966.30	$3 966
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$79 702
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				13	years	
Present Value of payment stream						$1 036 130

Beyond Post Closure (Long Term 1 to 5, 7, 10, 15, 25 poste closure)

ACTIVITY/MATERIAL - Long Term Monitoring	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
General Water Sampling and Stability Monitoring	long term general monitoring	year	1	Sabina	$40 680.00	$40 680
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		each	1	RPTH	$20 340.00	$20 340
Site water monitoring		year		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		year		#N/A	$0.00	$0
Maintain airstrip surface		year		#N/A	$0.00	$0
Other - Site Access	Float plane access	each	1	MWH	$9 254.70	$9 255
COVER MAINTENANCE						
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$70 275
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity			See Long Term	years		
Present Value of payment stream						$632 472

Annual Discout Rate: 0%

Project Phase	Project Year	Closure Year	Post-Closure Monitoring Year	Long Term Monitoring (GTCs, physical, water)	
				One Time Cost	Yearly Total NPV
Operations	1				$0
	2				$0
	3				$0
	4				$0
	5				$0
	6				$0
	7				$0
	8				$0
	9				$0
	10				$0
	11				$0
	12				$0
Active Closure	13	1			$0
	14	2			$0
Passive Closure	15	3			$0
	16	4			$0
	17	5			$0
	18	6			$0
	19	7			$0
	20	8			$0
Post Closure	21	9	1	$70 275	$70 275
	22	10	2	$70 275	$70 275
	23	11	3	$70 275	$70 275
	24	12	4	$70 275	$70 275
	25	13	5	$70 275	$70 275
Beyond Post Closure	26	14	6		$0
	27	15	7	$70 275	$70 275
	28	16	8		$0
	29	17	9		$0
	30	18	10	$70 275	$70 275
	31	19	11		$0
	32	20	12		$0
	33	21	13		$0
	34	22	14		$0
	35	23	15	$70 275	$70 275
	36	24	16		$0
	37	25	17		$0
	38	26	18		$0
	39	27	19		$0
	40	28	20		$0
	41	29	21		$0
	42	30	22		$0
	43	31	23		$0
	44	32	24		$0
	45	33	25	$70 275	$70 275
			Net Present Value:		**$632 472**

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT	Assumes mining equipment on abandoned mine site is operable and available.					
Light duty vehicles	Purchase pickups and Vans	each		#N/A	0	$0
Telehandlers	Purchase (standby)	each		#N/A	0	$0
Excavators	Purchase (320 Ex)	each		#N/A	0	$0
Dump trucks	Purchase 30T	each		#N/A	0	$0
Dozers	Purchase (D6T)	each		#N/A	0	$0
Grader	Purchase (140M)	each		#N/A	0	$0
Demolition shears	For a 320 Exc	each		#N/A	0	$0
Crane	Purchase	each		#N/A	0	$0
Loader	Purchase (966 Loader)	each		#N/A	0	$0
Manlifts	Ourchase (standby)	each		#N/A	0	$0
Small Equipment		LS		#N/A	0	$0
Compactor		each		#N/A	0	$0
MOBILIZE MISC. EQUIPMENT	Assumes mining equipment on abandoned mine site is operable and available.					
Pump shipping		each		#N/A	0	$0
Pipe shipping		m		#N/A	0	$0
Minor tools and equipment		allow		#N/A	0	$0
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
Build 20 Person Camp	Goose Closure Camp	LS	1	Sabina	$19 577.25	$19 577
Build 20 Person Power Plant	Goose Closure Camp	LS	1	Sabina	$19 577.25	$19 577
Reclamation activities		allow		#N/A	0	$0
Long term reclamation activities (eg pump flooding)		allow		#N/A	0	$0
WORKER ACCOMODATIONS						
Camp operation		mandays	12 000	Sabina	$111.87	$1 342 440
Reclamation activities		manmonths		#N/A	0	$0
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	0	$0
MOBILIZE FUEL						
Fuel freight - reclamation activities		litre		#N/A	0	$0
Fuel freight - long term reclamation activities		litre		#N/A	0	$0
Oil & Other		litre		#N/A	0	$0
Fuel freight accomodations		litre		#N/A	0	$0
GENERAL CONSTRUCTION INDIRECT						
Tooling, consumables, office & safety supplies	convered in Summary tab indirects	mandays		#N/A	0	$0
DEMOBILIZE HEAVY EQUIPMENT						
Excavators		km		#N/A	0	$0
Dump trucks		km		#N/A	0	$0
Dozers		km		#N/A	0	$0
Demolition shears		km		#N/A	0	$0
Crane		km		#N/A	0	$0
Loader		km		#N/A	0	$0
Compactor		each		#N/A	0	$0
Light duty vehicles		km		#N/A	0	$0
Other		km		#N/A	0	$0
DEMOBILIZE CAMP						
Food and Freight		kg	27 600	Sabina	$12.20	$336 830
Freight		Lot	1	Sabina	$508 500.00	$508 500
Site Services Labor		hr	-	#N/A	0	$0
Mobilization		tonnes	500	Sabina	$1 525.50	$762 750
MOBILZE & DEMOBILIZE WORKERS						
Crew travel time - inbound & outbound	16 manhours per rotation	manhours	6 864	lab-sh	$50.44	$346 242
Crew transportation - in& outbound from Yellowknife	28 day rotations - 12,000 man days - 2/3	each	286	Sabina	$582.19	$166 506
Crew transportation - in& outbound from south	28 day rotations - 12,000 man days - 1/3	each	143	Sabina	$1 141.54	$163 240
WINTER ROAD						
Construction and operation	Assumes construction and maintance of 2-160 km winter ice roads; once during Active Closure and once in approximately Year 18.	km	320	WRCL	$2 034.00	$650 880
Limited winter use		km		#N/A	0	$0
Winter road tarriff		km		#N/A	0	$0
					Total	**$4 316 542**

Annex B

Comments on draft water licence

CIRNAC has reviewed the draft water licence provided by Sabina on April 19, 2021. Our comments are compiled in the table below.

Part	Item	Page	Comment
A	1	1-3	*Additions to scope of licence.* The additions on page 3, as well as the airstrip at the marine laydown area on page 2, match what was discussed during the amendment review. CIRNAC does not recall discussing changes to include reservoirs or de-watering of additional structures and recommends leaving these additions out.
E	2	9-10	*Removal of condition to provide revised Water Management Plan within 60 days of Minister approval to replace it with a modified repetition of condition 1.* During the technical meeting, as noted in the list of commitments found in the Pre-hearing Conference Decision Report, Sabina committed to providing updated management plans, including the water management plan 90 days prior to initiation of proposed activity or within 2021 Annual Report. CIRNAC recommends the commitment be captured in an amended licence.
E	3	10	*Modification of maximum water use quantities from Goose and Big Lakes.* The modifications match the amendment application. CIRNAC agrees with the proposed change.
E	5	10	*Modification of maximum water use quantities for the winter ice road.* The modifications match the amendment application. CIRNAC agrees with the proposed change.

Part	Item	Page	Comment
E	15	11	*Replacement of condition to submit an updated Water and Load Balance Model, with condition to submit updated hydrodynamic model.* CIRNAC prefers the wording of commitment #6 in the Pre-Hearing Conference Report list of commitments, then Sabina's proposal in this draft water licence.
Sched. B	new		CIRNAC recommends integrating Sabina's commitment for an annual comparison of measured groundwater inflow rates to model predictions.