Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-DOH1323

September 12, 2016

Licensing Department
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0

Sent via email: licensing@nwb-oen.ca

Re: Updated reclamation cost estimate for Amendment Application No.1 to Nunavut Water Licence 2AM-DOH1323 – TMAC Resources Inc.'s Doris North Gold Mine Project

To whom it may concern,

The Water Resources Division of Indigenous and Northern Affairs Canada (INAC or the Department) has been discussing the reclamation cost estimate with TMAC Resources Inc. (TMAC) to better understand assumptions and calculations used to develop the respective estimates from each party. The Department retained the services of Amec Foster Wheeler to assist in the development of a reclamation cost estimate, which they have modified following the discussions with TMAC. Please find attached this updated estimate.

The Department's cost estimate for reclamation of the Doris North site based on the Interim Closure and Reclamation Plan submitted as part of amendment application #1 of water licence 2AM-DOH1323 is $37,446,565. Of this amount, $36,826,102 is for project components covered under the water licence.

Comments have been provided pursuant to INAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

If there are any questions or concerns, please do not hesitate to contact me by phone at (867) 975-3876 or by e-mail at sarah.forte@aandc-aadnc.gc.ca.

Sincerely,

Sarah Forté
Water Management Coordinator

cc. John Roberts TMAC Resources Inc.
John Roesch, Kitikmeot Inuit Association

Canada

2015 RECLAMATION COST ESTIMATE
(SEPTEMBER 2016 UPDATE)
AMENDMENT No. 1 to NUNAVUT WATER BOARD LICENCE No. 2AM-DOH1323
DORIS NORTH PROJECT
KITIKMEOT REGION, NUNAVUT

Submitted to:

David Abernethy, Water Resources Regional Coordinator, Resource Management Directorate,
Indigenous and Northern Affairs Canada / Government of Canada, Nunavut Region

Submitted by:

Amec Foster Wheeler Environment & Infrastructure
a Division of Amec Foster Wheeler Americas Limited
Dartmouth, Nova Scotia

September 12, 2016

TV154011

TV154011

David Abernethy
Regional Coordinator
Water Resources Division
Resource Management Directorate
Indigenous and Northern Affairs Canada / Government of Canada, Nunavut Region
IQALUIT, NU X0A 0H0

Re: 2015 Independent Reclamation Cost Estimate (September 2016 Update)
Nunavut Water Board Licence No. 2AM-DOH1323
Doris North Project
Kitikmeot Region, Nunavut

We are submitting this updated report describing the development of a reclamation cost estimate for the Doris North Project, situated in Nunavut's Kitikmeot Region. It has been developed to assist Indigenous and Northern Affairs Canada (INAC) in the Technical Review of TMAC Resources Inc.'s (TMAC) application amendment No. 1 to Nunavut Water Board Licence No. 2AM-DOH1323. The original 2015 reclamation cost estimate was submitted in December 2015, and has subsequently been updated based on discussions with INAC and TMAC.

The following costs have been estimated using the RECLAIM 7.0 Model for Reclamation and Closure Security Estimate (RECLAIM Model):

Land related liabilities under the Water Licence -	$17,438,750.00
Water related liabilities under the Water Licence -	$19,378,352.00
Reclamation Cost Estimate related to the Water Licence -	$36,826,102.00
Reclamation Costs not included under the Water Licence (Roberts Bay jetty and marine outfall) -	$620,463.00
Reclamation Cost Estimate related to the Water Licence -	$36,826,102.00
Total Reclamation Cost Estimate for Doris North -	$37,446,565.00

The amount of security that should be held under the amended water licence was determined to be $36,826,102.00. The amount estimated in the TMAC model is $29,143,759.00 (September 12, 2016 SRK spreadsheet).

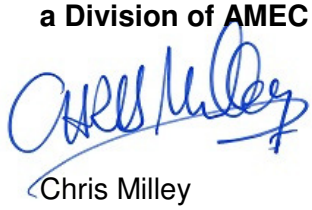
The direct costs developed for the water licence in the RECLAIM Model are approximately 11% higher than the direct costs developed in the TMAC Estimate, stemming mostly from water management activities and interim care and maintenance costs. The indirect costs developed in the RECLAIM Model for components included under the water licence are almost 46% higher than the indirect costs developed in the TMAC Estimate, primarily due to costs associated with mobilization / demobilization, fuel, and project management.

This reclamation cost estimate is based on a review of the activities outlined in the TMAC interim closure plan. It is also based on the quantities from the TMAC closure cost estimate as there was insufficient site time to carry out an on-site inventory of all structures and infrastructure.

We trust that this report meets your requirements. If you have any questions or comments, please contact the undersigned.

Sincerely,

AMEC Foster Wheeler Environment & Infrastructure,
a Division of AMEC Foster Wheeler Americas Limited



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EXECUTIVE SUMMARY

This report provides an estimate of reclamation costs for the Doris North Project, situated in Nunavut's Kitikmeot Region. It has been developed to assist Indigenous and Northern Affairs Canada (INAC) in the Technical Review of TMAC Resources Inc.'s (TMAC) application amendment No. 1 to Nunavut Water Board Licence No. 2AM-DOH1323.

The total cost estimated in the RECLAIM 7.0 Model for Reclamation and Closure Security for the Doris North Project (RECLAIM Model) is $37,446,565.00. Reclamation costs related to the Water Licence were determined to be $36,826,102.00, and reclamation costs not included under the Water Licence (Roberts Bay jetty and marine outfall) were determined to be $620,463.00.

The amount of security recommended to be held under the amended water licence is $36,826,102.00. Land related liabilities have been determined to total $17,438,750.00 (47.4% of the Reclamation Cost Estimate related to the Water Licence). Water related liabilities make up $19,378,352.00, or 52.6%.

The reclamation and closure cost estimate was developed based on rates provided in the RECLAIM Model spreadsheet, the TMAC reclamation cost estimate, internet research and comparison with rates used in similar projects in the Yukon and Northwest Territories. The reclamation and closure cost estimate also incorporates the results of discussions with INAC, TMAC and their Consultant (SRK Consulting Canada Inc.), during the technical meetings held in Cambridge Bay, NU on January 26 to 29, 2016, and subsequent conference call discussions.

The direct costs developed for the water licence in the RECLAIM Model are approximately 11% higher than the direct costs developed in the TMAC Estimate, stemming mostly from water management activities and interim care and maintenance costs. The indirect costs developed in the RECLAIM Model for the components included under the water licence are almost 46% higher than the indirect costs developed in the TMAC Estimate, primarily due to costs associated with mobilization / demobilization, fuel, and project management.

Costs for Engineering, Project Management, Health and Safety, Monitoring (QA/QC) were applied at between 1 and 6% of the capital or direct costs. These percentages reflect a situation where a Consultant is selected to lead the reclamation process, who may have relatively little experience with the site.

A contingency of 20% of the direct costs was included.

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1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited (Amec Foster Wheeler) was retained by Indigenous and Northern Affairs Canada (INAC or the Department) to carry out an independent reclamation cost estimate for the Doris North Project. This work was carried out under Standing Offer Agreement 46-0000-1035, Call-up No. 1.

The Doris North Project is a gold mine located in the Kitikmeot Region of Nunavut, approximately 125 km southwest of Cambridge Bay. The mine is situated primarily on Inuit Owned Land administered by the Kitikmeot Inuit Association, and partly on a Crown land lease.

The mine is owned by TMAC Resources Inc. (TMAC). TMAC is applying to amend its Nunavut Water Board (NWB) Type A Water Licence No. 2AM-DOH1323 and the Nunavut Impact Review Board Project Certificate No. 003. The amendment applications will allow increased production rates, an increased mine size, changes to the management of tailings, the discharge of effluent reporting from the tailings impoundment area to the marine environment rather than to an approved creek, and other associated project changes.

TMAC's water licence amendment application includes a revised reclamation cost estimate based on the proposed project changes. The Department's 2002 *Mine Site Reclamation Policy for Nunavut* requires that adequate security be provided to ensure the entire cost of reclamation, including shutdown, closure, and post-closure, is born by the operator of the mine rather than the Crown. Reclamation security is required for the full reclamation of the mine site should TMAC abandon its project and not be able to carry out this responsibility.

The purpose of this work is to provide technical support for INAC's review of the NWB water licence amendment application, by the completion of an independent reclamation financial security cost estimate for the closure of the Doris North Project using the RECLAIM 7.0 Model for Reclamation and Closure Security Estimate (RECLAIM Model). This estimate is based on the following:

- A review of documentation included in TMAC's application amendment No. 1 to Nunavut Water Board Licence No. 2AM-DOH1323;
- A site visit carried out from August 25th to 28th, 2015;
- Discussion with INAC, TMAC and their Consultant (SRK Consulting Canada Inc.), during the technical meetings held in Cambridge Bay, NU on January 26 to 29, 2016;
- Discussion with INAC personnel (Ms. Sarah Forte) during a conference call on June 30, 2016; and

- Subsequent discussion with INAC, TMAC and SRK personnel.

In accordance with direction given by INAC, this report has been organized in the following manner:

- Section 2 provides information the basis for development of the 2015 INAC reclamation cost estimate (September 2016 update), including the person-days required to complete the closure activities.

- Section 3 provides a general comparison of the 2015 INAC reclamation cost estimate (September 2016 update) and TMAC reclamation cost estimate (revised 2016), (hereinafter referred to as the TMAC estimate or TMAC reclamation cost estimate), with respect to organization of the costs for the various mine site components;

- Section 4 provides an overview of the 2015 INAC reclamation cost estimate (September 2016 update), including the separation of costs with respect to land and water related liabilities, as well as Inuit Owned and Crown Liabilities;

- Section 5 provides a comparison of the 2015 INAC reclamation cost estimate originally submitted in December 2015, with the 2015 INAC reclamation cost estimate (September 2016 Update); and

- Section 6 provides a comparison of the 2015 INAC reclamation cost estimate (September 2016 update), with the TMAC reclamation cost estimate (revised 2015).

- Section 7 provides details with respect to the assumptions made in determining the person-days required to complete the direct closure activities.

2.0 BASIS OF ESTIMATE

2.1 Direct Costs

The development of the direct closure costs were based on the following assumptions:

- There will be an 18 month period where the site will be managed under interim care and maintenance (ICM). This will involve general maintenance activities to keep clear access to the site, water management activities during 8 months of each year, annual inspections and maintenance as recommended by the on-site inspections. Water quality sampling and testing will also continue to be carried out, as also indicated in the TMAC estimate.

- Site closure activities will be carried out over a minimum period of 31 months. Closure activities would be carried out during 7 months of the year, with a camp population of approximately 25 persons. During off-months, a 2 to 3 person crew would be resident in the camp. Following ICM, closure activities would be carried out during the spring, summer and fall, approximately 7 months of the year, as follows:

    - Year 1 - 7 months of closure activities
    - Year 1 - 5 months of winter shutdown
    - Year 2 - 7 month closure activities
    - Year 2 - 5 months of winter shutdown
    - Year 3 - 7 months of closure activities

    Details with respect to the person-hours required to complete the closure activities are described further in Section 7.

- Water management activities will be carried out for a period of approximately 3 years, beginning with the commencement of closure activities.

- Generally, the quantities and structures outlined in the document *TMAC Interim Closure and Reclamation Plan, July 2015 – Detailed Cost Estimate*, were assumed to be correct. Previous reports and scaled drawings were used to confirm some quantities where possible (e.g. pad sizes, tanks, pipeline lengths).

- Labor rates were selected based on rates provided in the RECLAIM Model spreadsheet, the TMAC reclamation cost estimate, and comparison with rates used in similar projects in the Yukon and NWT. Enquiries were also made with the existing site Contractor, Nuna Logistics.

- Equipment rates were determined considering rates provided in the RECLAIM Model spreadsheet, the TMAC reclamation cost estimate, and rates used in similar projects in the Yukon and NWT. Enquiries were also made with the existing site Contractor, Nuna Logistics.

- The task unit costs and relocation unit rates developed in the TMAC reclamation cost estimate were reviewed to confirm that the assumptions were reasonable, and if considered necessary, revised.

2.2 Indirect Costs

The development of indirect closure costs included the following assumptions:

- There is a detailed, approved closure plan that has been updated as required to be current with site operations and infrastructure. It has been assumed that tender documents and construction drawings will need to be developed based on the existing closure plan.

- All equipment, personnel and camp facilities required to carry out the required activities during interim care and maintenance and closure activities, will need to be mobilized to the site, and demobilized upon completion of closure activities.

- Equipment for the completion of reclamation activities will be mobilized out of Edmonton, AB, hauled by truck to Hay River, NT, and then shipped by barge to Roberts Bay, NU.

- Post closure monitoring and surveillance will continue for 10 years or until a lesser frequency is appropriate. Annual geotechnical inspections will be carried out in Years 1, 2, 3, 6 and 10, and cover inspections in Years 1, 3, 5, 7 and 10. Water quality sampling will be carried out in Years 1, 2, 3, 5, 7 and 10.

- Engineering costs to advance the approved closure plan to a detailed construction work scope and drawings will be 5% of the estimated direct costs.

- Project management costs will be 6% of the estimated direct costs.

- Health and Safety planning and implementation, and quality assurance monitoring will be 1% of the estimated direct costs, assuming that established standard operating procedures, and safety, health and the environment (SHE) plans are available.

- Bonding and Insurance was assumed to be 1%.

- A contingency of 20% of the estimated closure costs has been assumed. The RECLAIM 7.0 Guidance suggests that for a ‘feasibility or advanced conceptual’ estimate type, a contingency of ±20% is appropriate. The guidance also says that virtually all reclamation plans and associated cost estimates are in the ‘feasibility or advanced conceptual’ stage until possibly the last few years of the mine life.

3.0 GENERAL COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE (2016 UPDATE) (RECLAIM MODEL) AND TMAC ESTIMATE

The TMAC reclamation cost estimate model separates the direct closure costs by location or facility, following the interim closure plan. The specific tasks related to each location or facility are grouped together, making it straightforward to track that all of the required closure activities have been incorporated into the plan. The indirect costs cover mobilization / demobilization, contingency, general and administration costs, field support, hydrocarbon decontamination and post-closure monitoring.

The RECLAIM Model cost estimation breaks down the reclamation costs into three broad operations - the underground, tailings, and rockpile operations. There are also additional categories for Chemicals, Buildings/Equipment and Water Management, which introduces some crossover between spreadsheets for a particular mine component. The indirect costs cover mobilization / demobilization, contingency, post-closure monitoring and maintenance, engineering, project management, health and safety plans/monitoring and QA/QC, bonding/insurance, contingency and market price factor adjustment. An 18 month period of interim care and maintenance is also included in the direct costs.

The costs for the 2015 INAC reclamation cost estimate (September 2016 update) have generally been organized similar to the TMAC Model, which is by facility. Table 3.1 provides clarification of where these costs (by facility) are located within the RECLAIM Model spreadsheet tabs.

In general, the methods used in both estimates are similar. The TMAC model however, is considerably more detailed with respect to how task unit costs and relocation unit rates are developed.

Table 3.1 Location of Costs by Facility for Reclamation Cost Estimates (INAC and TMAC) Within the RECLAIM MODEL Spreadsheet

RECLAIM MODEL	Facilities as Listed in INAC and TMAC Reclamation Cost Estimates
Direct Cost Spreadsheet Tabs)	
Open Pit	Roberts Bay Area Airstrip
Underground Mine	Underground Workings Reagent Pads
Tailings	Tailings Facility
Rockpile	Quarry A, B, D and Explosives Secondary Rd
Chemicals	Quarry #2 Quarry #3 Doris Mountain Doris Waste Area Ocean Discharge System Off-site Shipping for Disposal Off-Site Disposal Fees

Buildings and Equipment	Doris Camp
Water Management	Closure Water Management
Interim Care and Maintenance	Interim Care and Maintenance
Indirect Costs (Summary Tab)	
Mobilization/Demobilization	Mobilization/Demobilization
Post-Closure Monitoring And Maintenance	Post Closure Monitoring Field Support
Engineering	Engineering
Project Management	General and Administrative Costs
Health And Safety Plans/Monitoring & QA/QC	Health And Safety Plans/Monitoring & QA/QC
Bonding/Insurance	Included in INAC Estimate but not TMAC Estimate
Contingency	Contingency
Market Price Factor Adjustment	not used

4.0 INAC 2015 RECLAMATION COST ESTIMATE (SEPTEMBER 2016 UPDATE)

4.1 General

Table 4.1 provides a summary of the 2015 INAC reclamation costs developed for the closure measures for the Doris North Project using the (September 2016 Update). Detailed costing sheets are included in Appendix A.

The total reclamation cost estimate has been separated into the costs held under the water licence and those not held under the water licence, which are the costs for reclaiming Roberts Bay Jetty and the Roberts Bay Marine Outfall.

The costs for reclamation of the components held under the water licence have been further separated into water and land related liabilities.

4.2 Total Reclamation Costs

The total costs estimated in the 2015 INAC reclamation cost estimate (September 2016 update) are $37,446,565.00. The total cost includes mine site components that are not included under the water licence, totalling $620,463.00 (related to the reclamation of the Roberts Bay Jetty and the Marine Outfall).

4.3 Reclamation Costs Related to the Water Licence

The reclamation costs for the 2015 INAC reclamation cost estimate (September 2016 update), related to the water licence have been determined to be $36,826,102.00. This is the recommended amount of security that should be held under the amended water licence.

In general, the unit rates, task unit costs and relocation unit rates used in the TMAC Model are considered reasonable.

The scope of work for this assignment required that the reclamation costs related to the water licence be separated with respect to land and water related liabilities. The breakdown between

land and water related liabilities is shown in Table 4.1. In general, any work in and around water crossings or bodies of water was assigned a water liability of between 80 to 100%. Regrading or earthmoving activities, and production of run of quarry (ROQ) or other materials was assigned a water liability of between 20 and 50%. Removal of structures was assigned 90% to land liability.

Under the water licence, land related liabilities total $17,438,750.00, and water related liabilities $19,387,352.00.

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Table 4.1 Summary of Reclamation Costs for Completion of Closure Activities (September 2016 Update)

DIRECT COSTS	COMPONENT NAME	PRINCIPLE ESTIMATE	WATER LICENCE	WATER LICENCE (LAND LIABILITY)	WATER LICENCE (WATER LIABILITY)	ROBERTS BAY JETTY	MARINE OUTFALL	
							(LAND LIABILITY)	(WATER LIABILITY)
OPEN PIT	Roberts Bay Area / Airstrip	$457,188	$446,479	$345,989	$100,489	$10,709		
UG MINE	U/G Workings and Reagent Pads	$248,726	$248,726	$205,499	$43,227			
TAILINGS	North and South Dams / Interim Dyke	$7,312,645	$7,312,645	$4,162,301	$3,150,344			
ROCK PILE	Doris Windy Road / Secondary Road	$379,285	$379,285	$183,665	$195,620			
DORIS CAMP	Doris Camp	$3,876,329	$3,876,329	$3,363,412	$512,917			
CHEMICALS	Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal	$632,071	$340,231	$242,594	$97,637		$97,586	$194,254
SURFACE AND GROUNDWATER MANAGEMENT		$2,247,500	$2,247,500	-	$2,247,500			
INTERIM CARE AND MAINTENANCE (18 months)		$3,105,900	$3,105,900	-	$3,105,900			
	SUBTOTAL: Direct Costs	**$18,259,644**	**$17,957,095**	**$8,503,460**	**$9,453,635**	**$10,709**	**$97,586**	**$194,254**
	PERCENT OF SUBTOTAL		**100.00%**	**47.4%**	**52.6%**			
INDIRECT COSTS		**PRINCIPLE ESTIMATE**	**WATER LICENCE**	**WATER LICENCE (LAND LIABILITY)**	**WATER LICENCE (WATER LIABILITY)**	**ROBERTS BAY JETTY**	**MARINE OUTFALL**	
MOBILIZATION/DEMOBILIZATION		$11,841,239	$11,645,038	$5,514,428	$6,130,609	$6,945	$63,284	$125,972
POST-CLOSURE MONITORING AND MAINTENANCE		$1,320,000	$1,298,129	$614,720	$683,409	$774	$7,055	$14,043
ENGINEERING	5%	$912,982.20	$897,855	$425,173	$472,682	$535	$4,879	$9,713
PROJECT MANAGEMENT	6%	$1,095,578.64	$1,077,426	$510,208	$567,218	$643	$5,855	$11,655
HEALTH AND SAFETY PLANS/MONITORING & QA/C	1%	$182,596.44	$179,571	$85,035	$94,536	$107	$976	$1,943
BONDING/INSURANCE	1%	$182,596.44	$179,571	$85,035	$94,536	$107	$976	$1,943
CONTINGENCY	20%	$3,651,928.80	$3,591,419	$1,700,692	$1,890,727	$2,142	$19,517	$38,851
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$19,186,921**	**$18,869,008**	**$8,935,290**	**$9,933,718**	**$11,253**	**$102,542**	**$204,119**
TOTAL COSTS		**$37,446,565**	**$36,826,102**	**$17,438,750**	**$19,387,352**	**$21,963**	**$200,128**	**$398,372**

5.0 COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE WITH 2016 UPDATE

A summary of the major cost differences between the original submission of the 2015 INAC Reclamation Cost Estimate and the 2016 Update is included in Appendix B, and is listed below.

INAC 2015 Reclamation Cost Estimate (Original Submission) -	$47,818,382.00
INAC 2015 Reclamation Cost Estimate (September 2016 Update) -	$37,446,565.00

In general, the major cost differences arise from:

- The removal of Robert's Bay Jetty and Marine Outfall / Doris Windy Road costs (- $1M);
- A reduction in rates for interim care and maintenance (ICM), and mobilization costs for ICM (- $1.35M);
- An incorrect assumption with respect to camp operations rate, mobilization of workers to and from the site, and camp rental; (-$8.2 M);
- A reduction if the estimated man-days required to complete the closure activities (-$1.2M);
- An incorrect assumption that a winter road was required to move equipment (-$2.7M);
- Revised assumptions for short term water treatment / management requirements (+$732M);
- An error in the low and high camp operations (person per day rate for 10 persons and higher, and a flat rate for less than 10 persons (+$4M);
- The addition of fuel costs for reclamation activities (+$1.8M);
- A reduction in post-closure monitoring requirements (- $500k);
- A decrease in Engineering Fees from 8% to 5%, a decrease in project management costs from 7 to 6%, and a reduction in Health and Safety/ QA Costs from 2% to 1%, based on Senior Review (- $1.35M); and
- A corresponding reduction in contingency costs (- $500k).

The remaining cost differences were largely due to errors in the number of units, and a number of unit rates that were too high for the level of effort required.

6.0 COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE (SEPTEMBER 2016 UPDATE) WITH TMAC ESTIMATE

A summary of the major cost differences between the 2015 INAC Reclamation Cost Estimate (September 2016 Update) and the TMAC Estimate is included in Appendix C.

INAC 2015 Reclamation Cost Estimate (September 2016 Update) -	$37,446,565.00
TMAC Estimate -	$29,678,698.00

This amount is approximately 26% higher than the estimate developed by TMAC of $29,143,759.00.

The direct costs developed for the 2015 INAC reclamation cost estimate (September 2016 update) are approximately 11% higher than the direct costs developed in the TMAC Estimate, stemming mostly from costs developed for interim care and maintenance, and water management activities. The indirect costs developed in the RECLAIM Model for the components included under the water licence are almost 46% higher than the indirect costs developed in the TMAC Estimate, primarily due to costs associated with mobilization / demobilization, fuel, and project management.

In general, the major cost differences arise from:

- Mobilization and demobilization / camp operation costs (+$5M);
- Water management costs (+ $0.9M);
- ICM costs (+ 0.9M)
- Fuel for reclamation activities has been included in the INAC estimate at the request of INAC (+$1.8); and
- Costs for engineering and project management, and health and safety and QA/QC, assigned as percentages of the direct costs (+$375k).

The remaining cost differences were largely due to differences in derivation of unit rates, and assumptions in the level of effort and time that will be required to complete the various closure tasks.

7.0 PERSON-DAYS REQUIRED TO COMPLETE CLOSURE ACTIVITIES

As described previously, closure would be completed over a total period of 31 months as follows.

- Year 1 - 7 months of closure activities
- Year 1 - 5 months of winter shutdown
- Year 2 - 7 month closure activities
- Year 2 - 5 months of winter shutdown
- Year 3 - 7 months of closure activities

The estimated person-days to complete the closure activities within the two, full 7 month periods and the final four month period is estimated to be 13,395. These man-days are divided into three sub-categories:

- Person-days related directly to closure activities (personnel performing the tasks to implement the approved closure plan). These man-hours are estimated to be 5,555 as detailed in Appendix D, and includes a 5% allowance for unforeseen influences (illness, weather, breakdowns);
- Person-days not directly related to closure activities. These are support roles and tasks that total 5,320 person-hours, and include:
  - A full-time project manager and site superintendent on behalf of the Contractor (1260 person-days);

- A full-time project manager (Owner's Representative or Engineering Consultant) whose role will be to ensure that the closure activities are being carried out in accordance with the approved design, and to carry out oversight on behalf of the Owner (630 person-days);
- A pumping technician that is not part of the Contractor's crew (630 person-days);
- Three other persons that will be present in the camp at any time. These persons may be technicians carrying out water sampling or other monitoring activities, experts having specific knowledge (environmental engineers, geochemists), translators, and personnel carrying out annual inspections and / or government personnel, for example. It is also expected that evaluation and repairs to required infrastructure will be required after the ICM period. (1890 person-days).
- Personnel at the beginning and end of each spring/summer/fall construction period, who will work on offloading sealifts, unpacking/setup and pack-up/winterization operations, inspection of the previous years' work, and clean-up (910 person-days).

- Person-days (2,520) for camp support including, camp maintenance, sewage treatment plant operation, security / medical and food preparation.

8.0 CONCLUSION

The reclamation and closure cost estimate was developed based on rates provided in the RECLAIM Model spreadsheet, the TMAC reclamation cost estimate, internet research and comparison with rates used in similar projects in the Yukon and NWT. It also incorporates the results of discussions with INAC, TMAC and their Consultant (SRK Consulting Canada Inc.), during the technical meetings held in Cambridge Bay, NU on January 26 to 29, 2016, and during subsequent conference calls.

8.1 Total Reclamation Cost Estimate

The total cost estimated in the 2015 INAC reclamation cost estimate (September 2016 update) for the Doris North Project is $37,446,565.00. The total cost includes mine site components that are not included under the water licence, totalling $620,463.00 (related to the reclamation of the Roberts Bay Jetty and the Marine Outfall).

The total cost estimated in the TMAC estimate is $29,678,698.00. The costs associated with non-water licence components is $543,939.00.

8.2 Reclamation Cost Estimate Related to the Water Licence

The amount of security recommended to be held under the amended water licence in the 2015 INAC reclamation cost estimate (September 2016 update) is $36,826,102.00. Land related liabilities have been determined to total $17,438,750.00 (47.4% of the Reclamation Cost Estimate related to the Water Licence). Water related liabilities make up $19,378,352.00, or 52.6%.

The estimated costs for components under the water licence in the TMAC estimate is $29,143,759.00. This is approximately 26% lower than the INAC estimate. Land related liabilities are $15,287,958.00, with water related liabilities totalling $13,846,800.00.

The direct costs developed for the water licence in the RECLAIM Model are approximately 11% higher than the direct costs developed in the TMAC Estimate, stemming mostly from water management activities and interim care and maintenance costs. The indirect costs developed in the RECLAIM Model for components included under the water licence are almost 46% higher than the indirect costs developed in the TMAC Estimate, primarily due to costs associated with mobilization / demobilization, fuel, and project management.

9.0 CLOSING REMARKS

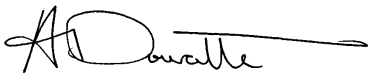
This report has been prepared by Ms. Jane Doucette, P.Eng, of Amec Foster Wheeler.

This report is for the exclusive use of the INAC, for specific application to the area within this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. Amec Foster Wheeler accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. It has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Respectfully submitted,

Amec Foster Wheeler Environnent & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

Prepared by:



Jane Doucette, P.Eng.
Geotechnical Engineer (NAPEG)

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Brodie Consulting Ltd., (2014) User Manual for RECLAIM 7.0 Model for Reclamation and Closure Security Estimates, March 2014.

Unit Price Averages Reports, Provincial Weighted Unit Price Averages – North Central Region, based on 2015 Construction Prices, October 2015.

Indian and Northern Affairs Canada, Mine Site Reclamation Policy for Nunavut, 2002.

APPENDIX A
Detailed Cost Estimate Sheets

Appendix A
Doris North Project
2015 INAC Reclamation Cost Estimate (September 2016 Update)

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
JETTY									
Remove rock fill to 0.3 m below LLWL, place in surrounding water		m3	1013.8	SB1H	$5.90	$5,981			
Remove on-shore mooring points		LS	1	OSHRL	$1,500.00	$1,500			
Remove mooring buoy		LS	1	FSHRL	$3,000.00	$3,000			
Crown jetty for positive drainage		m2	1900	c518l	$0.12	$228			
ROBERTS BAY TANK FARM - 20ML									
Drain tanks into portable fuel storage (EnviroTanks)		each	4	C203L	$10,000.00	$40,000	50%	$20,000	$20,000
Decommission fuel transfer facilities		each	4	C102L	$550.00	$2,200	90%	$1,980	$220
Wash tanks		each	4	C204L	$1,420.00	$5,680	50%	$2,840	$2,840
Operate oil/water separator		m3	50	C208L	$30.00	$1,500	50%	$750	$750
Disconnect piping and controls		each	4	C102L	$550.00	$2,200	50%	$1,100	$1,100
Dismantle tanks and cut into manageable pieces		each	4	CUT5L	$15,000.00	$60,000	80%	$48,000	$12,000
Load pieces for transportation		m3	43.5	C401L	$13.13	$571	90%	$514	$57
Haul cut metal to Landfill		m3	51.4	C415L	$6.34	$326	90%	$293	$33
Remove and stockpile liner protection cover		m3	5455	SB1L	$4.30	$23,457	90%	$21,111	$2,346
load contained contaminated soils into megabags for shipping off-site		m3	50	C412L	$100.25	$5,013	90%	$4,511	$501
haul contaminated material to Roberts Bay laydown		m3	56.8	C404L	$6.34	$360	90%	$324	$36
Clean liner		m2	10300	C210L	$0.39	$4,017	50%	$2,009	$2,009
Remove and cut liner into manageable pieces		m2	10300	C302L	$0.56	$5,768	90%	$5,191	$577
Load Debris into Waste Trucks		m3	92.7	C401L	$13.13	$1,217	90%	$1,095	$122
Haul containers to Quarry 3 Landfill		m3	92.7	C415L	$6.34	$588	90%	$529	$59
Level containment berms		m2	231.3	C505L	$1.58	$365	50%	$183	$183
Regrade area for positive drainage		m2	11530	C518L	$0.12	$1,384	50%	$692	$692
QUARRY 1 TANK FARM									
5ML Drain tanks into portable fuel storage (EnviroTanks)		each	1	C203L	$10,000.00	$10,000	50%	$5,000	$5,000
1ML Drain tanks into portable fuel storage (EnviroTanks)		each	1	C203L	$10,000.00	$10,000	50%	$5,000	$5,000
Decommission fuel transfer facilities		each	2	C102L	$550.00	$1,100	90%	$990	$110
Wash tanks		each	2	C204L	$1,420.00	$2,840	50%	$1,420	$1,420
Operate oil/water separator		m3	220	C208L	$30.00	$6,600	50%	$3,300	$3,300
Disconnect piping and controls		each	2	C102L	$550.00	$1,100	90%	$990	$110
Dismantle 5ML diesel fuel tank and cut into manageable pieces		each	1	CUT5L	$15,000.00	$15,000	90%	$13,500	$1,500
Dismantle 1ML jet fuel tank and cut into manageable pieces		each	1	CUT1L	$15,000.00	$15,000	90%	$13,500	$1,500
Prepare pieces for transportation		m3	174	C401L	$13.13	$2,285	90%	$2,056	$228
Haul cut metal to Landfill		m3	174	C415L	$6.34	$1,103	90%	$993	$110

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Remove and stockpile liner protection cover		m3	2190	SB1L	$4.30	$9,417	90%	$8,475	$942
load contained contaminated soils into megabags for shipping off-site		m3	50	C412L	$100.25	$5,013	90%	$4,511	$501
haul megabags to Roberts Bay laydown		m3	53.4	C404L	$6.34	$339	90%	$305	$34
Clean liner		m2	6521	C210L	$0.39	$2,543	50%	$1,272	$1,272
Remove and cut liner into manageable pieces		m2	6521	C302L	$0.56	$3,652	90%	$3,287	$365
Drain and wash empty fuel drums		each	150	C205L	$60.00	$9,000	50%	$4,500	$4,500
Crush empty fuel drums		each	150	C301L	$35.00	$5,250	90%	$4,725	$525
Load debris for transport to landfill		m3	68.2	C401L	$13.13	$895	90%	$806	$90
Haul waste to Landfill		m3	68.2	C415L	$6.34	$432	90%	$389	$43
Level containment berms		m2	279.3	C505L	$1.58	$441	90%	$397	$44
Regrade area for positive drainage		m2	3650	C518L	$0.12	$438	50%	$219	$219
MECHANICAL SHOP COMPLEX									
Decommission electrical, mechanical, heating (including connections to generator house & t		each	7	C105L	$640.00	$4,480	90%	$4,032	$448
Demolish (steel modular structure)		m3	2204.4	C305L	$19.00	$41,884	90%	$37,695	$4,188
Demolish wood structures (warehouse roof, crew lounge)		m3	283.2	C305L	$19.00	$5,381	90%	$4,843	$538
Demolish tent structure (light vehicle shop)		m3	460.3	C305L	$19.00	$8,746	90%	$7,871	$875
Collect Debris		m2	685.8	C310L	$0.18	$123	90%	$111	$12
Load debris for transport to landfill		m3	867.1	C401L	$13.13	$11,385	90%	$10,247	$1,139
Haul debris to Landfill		m3	867.1	C415L	$6.34	$5,497	90%	$4,948	$550
WASTE MANAGEMENT FACILITY									
Collect ashes and place in containers		m3	0.5	C207L	$13.13	$7	75%	$5	$2
Dismantle (welding crew)		each	2	C308L	$1,500.00	$3,000	95%	$2,850	$150
Demolish wood structures (roof, entryway, etc.)		m3	76.2	C305L	$19.00	$1,448	90%	$1,303	$145
Disconnect containers and prep for shipping off-site		each	11	C108L	$1,325.00	$14,575	90%	$13,118	$1,458
Collect all debris		m2	128.7	C310L	$0.18	$23	90%	$21	$2
Load debris for transport to landfill		m3	152.5	C401L	$13.13	$2,002	90%	$1,802	$200
Haul debris to Landfill		m3	152.5	C415L	$6.34	$967	90%	$870	$97
LAYDOWN AREA									
Decommission vehicle plug system		each	1	C105L	$640.00	$640	90%	$576	$64
Remove cables and posts		each	8	C314L	$150.00	$1,200	90%	$1,080	$120
Collect all debris		m2	24491.6	C310L	$0.18	$4,408	90%	$3,968	$441
Load debris for transport to landfill		m3	10	C401L	$13.13	$131	90%	$118	$13
Haul debris to Landfill		m3	10	C415L	$6.34	$63	90%	$57	$6
Regrade area for positive drainage		m2	24491.6	C518L	$0.12	$2,939	90%	$2,645	$294
Laydown Area Expansion Collect all debris		m2	38800	C310L	$0.18	$6,984	90%	$6,286	$698

Appendix A
Doris North Project
2015 INAC Reclamation Cost Estimate (September 2016 Update)

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Load waste into containers for shipping off-site		m3	10	C401L	$13.13	$131	90%	$118	$13
Haul debris to Landfill		m3	10	C415L	$6.34	$63	90%	$57	$6
Breach safety berms and Regrade area for positive drainage		m2	38800	C518L	$0.12	$4,656	50%	$2,328	$2,328
OVERBURDEN DUMP									
Collect all debris		m2	10448	C310L	$0.18	$1,881	90%	$1,693	$188
Load waste into containers for shipping off-site		m3	10	C401L	$13.13	$131	90%	$118	$13
Haul debris to Landfill		m3	10	C415L	$6.34	$63	90%	$57	$6
Grade for positive drainage		m2	10448	C505L	$1.58	$16,508	50%	$8,254	$8,254
Breach the berm to original ground in several locations (4 locations) to restore natural flow p		m2	378	C505L	$1.58	$597	50%	$299	$299
ROBERTS BAY ACCESS ROAD									
Crown road for positive drainage		m2	3378	C518L	$0.12	$405	50%	$203	$203
COMMUNICATIONS TOWER									
Decommission Tower		each	1	C105L	$640.00	$640	90%	$576	$64
Remove communication equipment		each	4	C107L	$350.00	$1,400	90%	$1,260	$140
Dismantle towers		each	1	C311L	$15,500.00	$15,500	90%	$13,950	$1,550
Prep tower sections for shipping off-site		m	8	C312L	$1,500.00	$12,000	90%	$10,800	$1,200
Collect all debris		m2	1.4	C310L	$0.18	$0	90%	$0	$0
Load waste into containers for shipping off-site		m3	10.5	C401L	$13.13	$138	90%	$124	$14
Haul hazardous waste to Roberts Bay		m3	5	C404L	$6.34	$32	90%	$29	$3
Haul debris to Landfill		m2	5.5	C415L	$6.34	$35	90%	$31	$3
ALL WEATHER AIRSTRIP									
Decommission Airstrip		each	1	C109L	$1,500.00	$1,500	90%	$1,350	$150
Remove lighting fixtures (airstrip lighting, approach lights)		each	70	C110L	$50.00	$3,500	90%	$3,150	$350
collect all debris		m2	2850	C310L	$0.18	$513	90%	$462	$51
load waste for transport to landfill		m3	1.2	C401L	$13.13	$16	90%	$14	$2
Haul debris to Landfill		m3	1.2	C416L	$6.34	$8	90%	$7	$1
crown airstrip and airstrip expansion for positive drainage		m2	42000	C518L	$0.12	$5,040	50%	$2,520	$2,520
Other				#N/A	$0.00	$0		$0	$0
SOUTH APRON									
crown for positive drainage		m2	4500	C518L	$0.12	$540	50%	$270	$270
Other				#N/A	$0.00	$0		$0	$0
NORTH APRON									
Decommission electrical, and heating from traffic control tower		each	1	C107L	$350.00	$350	90%	$315	$35
demolish control tower structure (wood shack)		m3	11.7	C305L	$19.00	$222	90%	$200	$22
disconnect containers and prep for shipping off-site		each	5	C108L	$1,325.00	$6,625	90%	$5,963	$663

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
collect all debris		m2	12.2	C310L	$0.18	$2	90%	$2	$0
load waste for transport to landfill		m3	17.6	C401L	$13.13	$231	90%	$208	$23
haul debris to landfill		m3	17.6	C416L	$6.34	$112	90%	$100	$11
crown for positive drainage		m2	5517.2	C518L	$0.12	$662	50%	$331	$331
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$457,188		$345,989	$100,489
					% of Total			76%	22%

Underground Mine Name **U/G Workings and Reagent Pads** **UG Mine # *1***

ACTIVITY/MATERIAL	Notes	Unit	Qty	Code	Unit Cost	Cost	Land	Land Cost	Water Cost
Remove misc. haz. mat & explosives		kg		#N/A	$0.00	$0		$0	$0
DORIS NORTH DECLINE PORTAL									
remove ducts, pipes, electrical cables		lm	100	C316L	$113.00	$11,300	90%	$10,170	$1,130
construct portal plug		m3	707	C503L	$24.53	$17,343	90%	$15,608	$1,734
regrade area for positive drainage		m2	1446	C518L	$0.12	$174	50%	$87	$87
DORIS NORTH VENT RAISE									
Remove ducts, pipes, and cables		lm	100	C316L	$113.00	$11,300	90%	$10,170	$1,130
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	$40,000.00	$40,000	90%	$36,000	$4,000
Decommission and dismantle all ventilation and heating facilities		each	4	C105L	$640.00	$2,560	90%	$2,304	$256
Prepare units for shipping off-site		each	1	C108L	$1,325.00	$1,325	90%	$1,192.50	$133
Haul units to Roberts Bay		hrs	3	C404AL	$155.00	$465	90%	$419	$47
Regrade pads for positive drainage		m2	4150	C518L	$0.12	$498	50%	$249	$249
Drain and decommission Enviro Tank		each	1	C203L	$10,000.00	$10,000	50%	$5,000	$5,000
Haul Enviro Tank to Roberts Bay		hrs	1.5	C404AL	$155.00	$233	90%	$209	$23
Remove liner and cut into manageable pieces		m2	1230	C302L	$0.56	$689	90%	$620	$69
Load waste for transport to landfill		m3	11	C401L	$13.13	$144	90%	$130	$14
Haul waste to landfill		m3	11	C414L	$6.34	$70	90%	$63	$7
Backfill area to prevent permanent ponding		m2	4150	C505L	$1.58	$6,557	90%	$5,901	$656
DORIS CONNECTOR VENT RAISE									
Remove ducts, pipes, and cables		lm	100	C316L	$113.00	$11,300	90%	$10,170	$1,130
Decommission and dismantle all ventilation facilities		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
Prepare units for shipping off-site		each	1	C108L	$1,325.00	$1,325	90%	$1,192.50	$133
Haul units to Roberts Bay		hrs	1.5	C404L	$6.34	$10	90%	$9	$1
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	$40,000.00	$40,000	80%	$32,000	$8,000
Remove culvert		each	1	RCULL	$2,625.00	$2,625	90%	$2,363	$263
Crown road for positive drainage		km	0.2	CRWNL	$1,190.00	$238	50%	$119	$119
DORIS CENTRAL VENT RAISE									
Remove ducts, pipes, and cables		lm	100	C316L	$113.00	$11,300	90%	$10,170	$1,130
Decommission and dismantle all ventilation facilities		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
Prepare units for shipping off-site		each	1	C108L	$1,325.00	$1,325	90%	$1,192.50	$133
Haul units to Roberts Bay		hrs	1.5	C404L	$6.34	$10	90%	$9	$1
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	$40,000.00	$40,000	80%	$32,000	$8,000
Remove culvert		each	1	RCULL	$2,625.00	$2,625	0%	$0	$2,625
Crown road for positive drainage		km	0.7	CRWNL	$1,190.00	$833	50%	$417	$417
Other				#N/A	$0.00	$0		$0	$0

Underground Mine Name **U/G Workings and Reagent Pads** **UG Mine # *1***

ACTIVITY/MATERIAL	Notes	Unit	Qty	Code	Unit Cost	Cost	Land	Land Cost	Water Cost
EQUIPMENT LAYDOWN AREA									
collect all debris		m2	21870	C310L	$0.18	$3,937	90%	$3,543	$394
load waste for transport to landfill		m3	20	C401L	$13.13	$263	90%	$236	$26
regrade area for positive drainage		m2	21870	C518L	$0.12	$2,624	50%	$1,312	$1,312
haul waste to Landfill		m3	20	C417L	$6.34	$127	90%	$114	$13
Other				#N/A	$0.00	$0		$0	$0
MATERIALS LAYDOWN AREA									
collect all debris		m2	33399	C310L	$0.18	$6,012	90%	$5,411	$601
load waste to ship to Landfill		m3	20	C401L	$13.13	$263	90%	$236	$26
regrade area for positive drainage		m2	33399	C518L	$0.12	$4,008	50%	$2,004	$2,004
haul waste to Landfill		m3	20	C417L	$6.34	$127	90%	$114	$13
Other				#N/A	$0.00	$0		$0	$0
AMMONIUM NITARATE STORAGE BUILDING									
remove and stockpile liner protection cover		m3	1505	SB1L	$4.30	$6,472	90%	$5,824	$647
clean liner		m2	2800	C210L	$0.39	$1,092	50%	$546	$546
remove and cut liner into manageable pieces		m2	2800	C302L	$0.56	$1,568	90%	$1,411	$157
load waste for transport to landfill		m3	25.2	C401L	$13.13	$331	90%	$298	$33
Haul waste to Landfill		m3	25.2	C417L	$6.34	$160	90%	$144	$16
level containment berms		m2	32	C505L	$1.58	$51	50%	$25	$25
regrade area for positive drainage		m2	3858	C518L	$0.12	$463	50%	$231	$231
Other				#N/A	$0.00	$0		$0	$0
EXPLORATION DRILLING SUPPORT BUILDING									
Decommission electrical, mechanical, heating		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
demolish building (tent structure)		m3	149.6	C305L	$19.00	$2,842	90%	$2,558	$284
collect all debris		m2	335	C310L	$0.18	$60	90%	$54	$6
load waste for transport to landfill		m3	12.4	C401L	$13.13	$163	90%	$147	$16
haul waste to Landfill		m3	12.4	C417L	$6.34	$79	90%	$71	$8
					Total	$248,726		$205,499	$43,227
					% of Total			83%	17%

Tailings Impoundment Name: **North and South Dams / Interim Dyke**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Crown Access Roads		km	0.2	CRWNL	$1,190.00	$238	50%	$119	$119
STABILIZE EMBANKMENT(S)									
Breach North dam by cutting a 20 m slot down to original ground (drill and blast)		m3	7028	RB1H	$31.99	$224,826	50%	$112,413	$112,413
Load and haul material		m3	31021.1	SB3H	$8.90	$276,088	50%	$138,044	$138,044
Clad the cut core faces for thermal protection		m3	614.2	RR2H	$20.65	$12,683	50%	$6,342	$6,342
SHORELINE PROTECTION									
Install separation geotextile		m2	54340	GSTH	$18.00	$978,120	95%	$929,214	$48,906
Haul and place riprap to prevent erosion		m3	24,700	SBSH	$6.30	$155,610	95%	$147,830	$7,781
Recontour Interim Dyke Crest		m3	2000	DRH	$2.40	$4,800	50%	$2,400	$2,400
COVER TAILINGS									
Grade/shape tailings surface		m2	440000	SBTL	$1.35	$594,000	50%	$297,000	$297,000
Produce ROQ (quarry drill and blast		m3	132000	RB1H	$31.99	$4,222,680	50%	$2,111,340	$2,111,340
LHDP ROQ (0.3m thick cover)		m3	132000	SBSH	$6.30	$831,600	50%	$415,800	$415,800
SPECIALIZED ITEMS									
Remove thermosyphons radiators and towers		each	12	THRL	$1,000.00	$12,000	15%	$1,800	$10,200

Tailings Impoundment Name: **North and South Dams / Interim Dyke**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
					Total	$7,312,645		$4,162,301	$3,150,344
					% of Total			57%	43%

Rock Pile Name: **Doris Windy Road / Secondary Road**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
ALL WEATHER ROAD									
NOT PART OF DORIS RECLAMATION COSTS									
QUARRY A									
No decomm required				#N/A	$0.00	$0		$0	$0
QUARRY B									
No decomm required				#N/A	$0.00	$0		$0	$0
QUARRY D									
Scale vertical walls				#N/A	$0.00	$0		$0	$0
EXPLOSIVES STORAGE FACILITY									
Remove all explosive magazines		m3	66.4	C305L	$19.00	$1,262	90%	$1,135	$126
Demolish entry gates		m3	0.5	C305L	$19.00	$10	90%	$9	$1
Load all debris for transport to landfill		m3	25.4	C401L	$13.13	$334	90%	$300	$33
Haul waste to the landfill		m3	25.4	C414L	$6.34	$161	90%	$145	$16
Regrade area for positive drainage		m3	2805.8	DSL	$0.95	$2,666	50%	$1,333	$1,333
Secondary Road									
Remove Doris Creek bridge		ls	1	RBRGL	$50,000.00	$50,000	0%	$0	$50,000
Cut tailings line running alongside the road into manageable pieces		m	5750	PLDL	$11.50	$66,125	50%	$33,063	$33,063
Strap together or load pipe sections in containers for transport to landfill		m3	2760	C401L	$13.13	$36,239	90%	$32,615	$3,624
Haul waste to the landfill		m3	2760	C404L	$6.34	$17,498	90%	$15,749	$1,750
Remove pipe culvert east of the bridge		lm	18.8	RCULL	$2,625.00	$49,350	0%	$0	$49,350
Tailings Discharge And Reclaim Water Pipelines									
Cut pipelines into manageable pieces		lm	8125	PLDL	$11.50	$93,438	50%	$46,719	$46,719
decommission electrical (heat tracing)		each	4	C105L	$640.00	$2,560	90%	$2,304	$256
collect electrical cables and controllers and prep for shipping off-site		m2	4062.5	C310L	$0.18	$731	90%	$658	$73
Load debris for transport to landfill		m3	306.3	C401L	$13.13	$4,022	90%	$3,620	$402
Haul waste to the landfill		m3	306.3	C404L	$6.34	$1,942	90%	$1,748	$194
TIA Access Road (Chainage 0+725)									
Crown road for positive drainage		km	0.29	CRWNL	$1,190.00	$345	50%	$173	$173
Remove floating dock and bridge		m3	132	C401L	$13.13	$1,733	0%	$0	$1,733
Load all debris to haul to Landfill		m3	132	C401L	$13.13	$1,733	90%	$1,560	$173
Haul waste to the landfill		m3	132	C404L	$6.34	$837	90%	$753	$84

Rock Pile Name: **Doris Windy Road / Secondary Road**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Explosives Facility									
Remove all explosive magazines		m3	265.6	C305L	$19.00	$5,046	90%	$4,542	$505
Demolish entry gates		m3	0.5	C305L	$19.00	$10	90%	$9	$1
remove and stockpile liner protection cover		m3	3031	SB1L	$4.30	$13,033	90%	$11,730	$1,303
clean liner		m2	4442	C210L	$0.39	$1,732	50%	$866	$866
remove and cut liner into manageable pieces		m2	4442	C302L	$0.56	$2,488	90%	$2,239	$249
load waste into containers for shipping off-site		m3	200	C401L	$13.13	$2,626	90%	$2,363	$263
Decommission electrical and heating from facilities		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
Demolish building (tent structure)		m3	430	C305L	$19.00	$8,170	90%	$7,353	$817
disconnect containers and prep for shipping off-site		each	2	C108L	$1,325.00	$2,650	90%	$2,385	$265
load waste into containers for shipping off-site		m3	41.5	C401L	$13.13	$545	90%	$490	$54
collect all debris		m2	18558	C310L	$0.18	$3,340	90%	$3,006	$334
Load all waste and debris and waste into containers		m2	18558	C310L	$0.18	$3,340	90%	$3,006	$334
Haul waste to landfill		m3	245	C404L	$6.34	$1,553	90%	$1,398	$155
Regrade pad area for positive drainage		m2	18558	C518L	$0.12	$2,227	50%	$1,113	$1,113
Recontour berms to blend in with topography		m2	2166	C518L	$0.12	$260	50%	$130	$130
					Total	$379,285		$183,665	$195,620
					% of Total			48%	52%

Chemicals/Soil Area Name: **Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Glycol		litre		#N/A	$0.00	$0		$0	$0
QUARRY #2			60						
No decomm required			60	#N/A	$0.00	$0		$0	$0
OVERBURDEN DUMP									
reslope to 3H:1V		m3	8781.3	SC1L	$6.80	$59,713	50%	$29,856	$29,856
grade top for positive drainage		m2	18441	C505L	$1.58	$29,137	50%	$14,568	$14,568
install erosion protection measures (coconut matting)		m2	2634	GSTH	$18.00	$47,412	90%	$42,671	$4,741
Remove culvert		ls	1	RCULL	$2,625.00	$2,625	0%	$0	$2,625
Other				#N/A	$0.00	$0		$0	$0
TREATED SEWAGE DISCHARGE AREAS									
Fill in low-lying areas (assumed sourced within 0.5km)		m3	69.1	SB4H	$11.00	$760	50%	$380	$380
erosion protection: Supply and place cocoa matting		m2	53.2	GSTH	$18.00	$958	90%	$862	$96
Other				#N/A	$0.00	$0		$0	$0
Quarry #3 -									
No decomm required				#N/A	$0.00	$0		$0	$0
Q#3 Access Road									
crown road for positive drainage		km	0.2	CRWNL	$1,190.00	$238	50%	$119	$119
Quarry #3 Landfill									
LHDP ROQ to construct 1m landfill cap[1]		m3	19520	DRH	$2.40	$46,848	80%	$37,478.40	$9,370
COMMUNICATIONS TOWER									
Remove communications equipment		each	12	C107L	$350.00	$4,200	90%	$3,780	$420
Dismantle the communications towers and prepare for shipping off-site		each	2	C311L	$15,500.00	$31,000	90%	$27,900	$3,100
Demolish equipment housing shack		m3	9	C305L	$19.00	$171	90%	$154	$17
Remove electrical and fiber optics cables		each	12	C105L	$640.00	$7,680	90%	$6,912	$768
Remove all equipment, material, and waste from Doris Mountain (helicopter)		m3	11	DEB1L	$2,500.00	$27,500	90%	$24,750	$2,750
load waste into trucks for transport to landfill		m3	11	C401L	$13.13	$144	90%	$130	$14
Transport Waste to Landfill		m3	11	C415L	$6.34	$70	90%	$63	$7
Transport Communications tower equipment to Roberts Bay		m3	33.2	C404L	$6.34	$210	90%	$189	$21
Land FARM									
load contained contaminated soils into megabags for shipping off-site		m3	100	C412L	$100.25	$10,025	90%	$9,023	$1,003
haul megabags to Roberts Bay laydown		m3	100	C404L	$6.34	$634	90%	$571	$63
treat contained water and discharge		ls	1	TRTL	$6,500.00	$6,500	0%	$0	$6,500
remove and stockpile liner protection cover		m3	2591	SB1L	$4.30	$11,141	90%	$10,027	$1,114
clean liner		m2	4384	C210L	$0.39	$1,710	50%	$855	$855
remove and cut liner into manageable pieces		m2	13152	C302L	$0.56	$7,365	90%	$6,629	$737
load waste for transport to landfill		m3	118.4	C401L	$13.13	$1,555	90%	$1,399	$155
Haul Material to Landfill		m3	118.4	C414L	$6.34	$751	90%	$676	$75
level containment berms		m2	3134.8	C505L	$1.58	$4,953	90%	$4,458	$495
regrade area for positive drainage		m2	4384	C518L	$0.12	$526	50%	$263	$263
Other				#N/A	$0.00	$0		$0	$0

Chemicals/Soil Area Name: **Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal**

BATCH PLANT PAD								
collect all debris	m2	740.3	C310L	$0.18	$133	90%	$120	$13
load waste for transport to landfill	m3	3	C401L	$13.13	$39	90%	$35	$4
haul waste to Landfill	m3	3	C414L	$6.34	$19	90%	$17	$2
regrade area for positive drainage	m2	740.3	C518L	$0.12	$89	50%	$44	$44
Other			#N/A	$0.00	$0		$0	$0
BURN PAD								
Collect ashes and place in containers	m3	0.1	C207L	$13.13	$1	90%	$1	$0
Dismantle (welding crew)	each	1	C308L	$1,500.00	$1,500	90%	$1,350	$150
load waste into containers for shipping off-site	m3	0.2	C401L	$13.13	$3	90%	$2	$0
haul containers to Roberts Bay laydown	m3	0.2	C404L	$6.34	$1	90%	$1	$0
regrade area for positive drainage	m2	400	C518L	$0.12	$48	50%	$24	$24
Other			#N/A	$0.00	$0		$0	$0
OFF-SITE SHIPPING BY BARGE								
hazardous waste	m3	120	hz1l	$218.81	$26,257	50%	$13,129	$13,129
hazardous solid waste	m3	38	hz2l	$218.81	$8,315	50%	$4,157	$4,157
hydrocarbon contaminated soils	m3	0	hy1l	$1,082.00	$0	50%	$0	$0
ROBERTS BAY DISCHARGE SYSTEM (MARINE BASED)								
Retrieve Pipeline; cut pipelines into manageable pieces	lm	2461	PLRH	$72.00	$177,192			
Load debris for transport to landfill	m3	525	C401L	$13.13	$6,893			
haul debris to landfill	m3	525	C404L	$6.34	$3,329			
Retrieve and dismantle diffuser	lm	95	PLRH	$72.00	$6,840			
ROBERTS BAY DISCHARGE SYSTEM (LAND BASED)								
Cut pipelines into manageable pieces	lm	5470	PLDL	$11.50	$62,905			
Decommission electrical (heat tracing)	each	11	C106L	$750.00	$8,250			
Collect electrical cables and controllers and prep for shipping off-site	m2	5470	C310L	$0.18	$985			
Load debris for transport to landfill	m3	1160	C401L	$13.13	$15,231			
haul debris to landfill	m3	1160	C404L	$6.34	$7,354			
Remove rock fill to 0.3 m below LLWL	m3	485	SB1H	$5.90	$2,862			
				Total	$632,071		$242,594	$97,637
				% of Total			38%	15%

1. The landfill cap will be 1 m thick; therefore no processing to produce a specific gradation will be required. Assumed rock will be present in the Quarry for use as it is landfilled; therefore no loading / transport required.

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Airstrip lighting, navigation, electrician		mandays		#N/A	$0.00	$0		$0	$0
ACCOMODATION COMPLEX									
Decommission (electrical, mechanical, plumbing)		each	103	C105L	$640.00	$65,920	90%	$59,328	$6,592
disconnect trailers and prep for moving (remove boards/piping, etc.; wrap in plastic)		each	83	C108L	$1,325.00	$109,975	90%	$98,978	$10,998
haul trailers to Roberts Bay for shipping off-site		m3	2756	C404L	$6.34	$17,473	90%	$15,726	$1,747
demolish cabins		m3	319.1	C305L	$19.00	$6,063	90%	$5,457	$606
demolish cribbing, stairs, entryways, etc.		m3	250.3	C305L	$19.00	$4,756	90%	$4,280	$476
demolish arctic corridor		m3	132.5	C305L	$19.00	$2,518	90%	$2,266	$252
collect all debris		m2	380.9	C310L	$0.18	$69	90%	$62	$7
load waste for transport to Landfill		m3	623.1	C401L	$13.13	$8,181	90%	$7,363	$818
Haul waste to Landfill		m3	623.1	C414L	$6.34	$3,950	90%	$3,555	$395
regrade area for positive drainage		m2	21050	C518L	$0.12	$2,526	90%	$2,273	$253
regrade pad transitions to blend in with topography		m2	15200	C505L	$1.58	$24,016	50%	$12,008	$12,008
regrade surface to prevent ponding		m2	152000	C518L	$0.12	$18,240	50%	$9,120	$9,120
TANK FARM									
Drain tanks into portable fuel storage (EnviroTanks)		each	5	C203L	$10,000.00	$50,000	10%	$5,000	$45,000
Decommission Fuel Transfer Facilities		each	5	C102L	$550.00	$2,750	90%	$2,475	$275
Wash tanks		each	5	C204L	$1,420.00	$7,100	10%	$710	$6,390
Operate oil/water separator		m3	10	C208L	$30.00	$300	10%	$30	$270
Disconnect piping and controls		each	5	C102L	$550.00	$2,750	90%	$2,475	$275
Dismantle tanks and cut into manageable pieces		each	5	CUT1L	$15,000.00	$75,000	90%	$67,500	$7,500
prepare pieces for transportation		m3	22.8	C401L	$13.13	$299	90%	$269	$30
haul cut metal to landfill		m3	22.8	C414L	$6.34	$145	90%	$130	$14
remove and stockpile liner protection cover		m3	3360	SB1L	$4.30	$14,448	90%	$13,003	$1,445
load contaminated soils into megabags for shipping off-site (assumed worst case)		m3	50	C412L	$100.25	$5,013	90%	$4,511	$501
haul contaminated material to Roberts Bay laydown		m3	62	C404L	$6.34	$393	90%	$354	$39
clean liner		m2	5500	C210L	$0.39	$2,145	50%	$1,073	$1,073
remove and cut geosynthetics into manageable pieces		m2	5500	C302L	$0.56	$3,080	90%	$2,772	$308
load waste into containers for transport to landfill		m3	176.6	C401L	$13.13	$2,319	90%	$2,087	$232
haul waste to landfill		m3	176.6	C414L	$6.34	$1,120	90%	$1,008	$112
level containment berms		m2	962	C505L	$1.58	$1,520	50%	$760	$760
regrade area for positive drainage		m2	4927.7	C518L	$0.12	$591	50%	$296	$296
PERMANAENT POWER GENERATOR									
Decommission (electrical)		each	8	C106L	$750.00	$6,000	90%	$5,400	$600
Disconnect containers and prep for shipping off-site		each	8	C108L	$1,325.00	$10,600	90%	$9,540	$1,060

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
haul containers to Roberts Bay laydown		m3	265.66	C404L	$6.34	$1,684	90%	$1,516	$168
dismantle stacks		each	2	C313L	$20,000.00	$40,000	90%	$36,000	$4,000
prep stacks for shipping off-site		each	2	C312L	$1,500.00	$3,000	90%	$2,700	$300
haul stack sections to Roberts Bay laydown		m3	166	C404L	$6.34	$1,052	90%	$947	$105
collect all debris		m2	2103	C310L	$0.18	$379	90%	$341	$38
load waste for shipping to landfill		m3	2	C401L	$13.13	$26	90%	$24	$3
haul waste to landfill		m3	2	C414L	$6.34	$13	90%	$11	$1
BACKUP POWER GENERATOR									
Decommission (electrical)		each	4	c105l	$640.00	$2,560	90%	$2,304	$256
Disconnect generator units and prep for shipping off-site		each	2	c106l	$750.00	$1,500	90%	$1,350	$150
haul units to Roberts Bay laydown		m3	67.6	C404L	$6.34	$429	90%	$386	$43
demolish tent housing structure		m3	94.1	C305L	$19.00	$1,788	90%	$1,609	$179
collect all debris		m2	259.3	C310L	$0.18	$47	90%	$42	$5
load waste for shipping to landfill		m3	122.4	C401L	$13.13	$1,607	90%	$1,446	$161
haul waste to landfill		m3	122.4	C414L	$6.34	$776	90%	$698	$78
SEWAGE TREATMENT PLANT									
Flush & remove sewage plumbing, collect sewage sludge/waste water in 55 gallon drums		each	9	C206L	$657.86	$5,921	0%	$0	$5,921
Decommission (electrical) 9.0 each		each	9	C105L	$640.00	$5,760	90%	$5,184	$576
Disconnect containers and prep for shipping off-site		each	9	C108L	$1,325.00	$11,925	90%	$10,733	$1,193
haul containers to Roberts Bay laydown		m3	597.6	C404L	$6.34	$3,789	90%	$3,410	$379
Collect Debris		m2	29.8	C310L	$0.18	$5	90%	$5	$1
Load debris into containers for transport (to Roberts Bay)		m3	23.8	C401L	$13.13	$312	90%	$281	$31
Haul debris to Roberts Bay		m3	23.8	C414L	$6.34	$151	90%	$136	$15
FIRE WATER STORAGE TANK									
decommission and disconnect electrical and plumbing		each	3	C105L	$640.00	$1,920	90%	$1,728	$192
disconnect & remove container housing pumps & controls; prep for shipping		each	1	C108L	$1,325.00	$1,325	90%	$1,193	$133
haul container to Roberts Bay laydown		m3	33.2	C404L	$6.34	$210	90%	$189	$21
remove tank insulation		m3	53	C315L	$720.00	$38,160	90%	$34,344	$3,816
Dismantle tanks and cut into manageable pieces		m3	2	C307L	$19.00	$38	90%	$34	$4
prepare pieces for transportation		m3	3.4	C401L	$13.13	$45	90%	$40	$4
haul cut metal to Roberts Bay laydown		m3	3.4	C404L	$6.34	$22	90%	$19	$2
Collect Debris		m3	73.2	C310L	$0.18	$13	90%	$12	$1
Load debris for transport Landfill		m2	29.7	C401L	$13.13	$390	90%	$351	$39
Haul debris to landfill		m3	29.7	C404L	$6.34	$188	90%	$169	$19
Muster Station									
demolish tent structure		m3	227.3	C305L	$19.00	$4,319	90%	$3,887	$432
dismantle wood flooring		m3	27.3	C305L	$19.00	$519	90%	$467	$52

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Collect Debris		m2	90.9	C310L	$0.18	$16	90%	$15	$2
Load debris for transport to landfill		m3	42.7	C404L	$6.34	$271	90%	$244	$27
Haul Debris to landfill		m3	42.7	C414L	$6.34	$271	90%	$244	$27
WAREHOUSE / CORE SHACK									
demolish tent structure		m3	269.5	C305L	$19.00	$5,121	90%	$4,608	$512
dismantle wood flooring, shelving, and lofts		m3	186.2	C305L	$19.00	$3,538	90%	$3,184	$354
Collect Debris		m2	720.1	C310L	$0.18	$130	90%	$117	$13
Load debris for transport to landfill		m3	350.3	C401L	$13.13	$4,599	90%	$4,139	$460
Haul debris to landfill		m3	350.3	C414L	$6.34	$2,221	90%	$1,999	$222
haul all warehouse containers to Roberts Bay		m3	796.8	C404L	$6.34	$5,052	90%	$4,547	$505
OFFICE & MINE DRY COMPLEX									
Decommission (electrical, mechanical, plumbing)		each	3	C105L	$640.00	$1,920	90%	$1,728	$192
disconnect trailers and prep for moving (remove boards, cladding, etc.; wrap in plastic)		each	17	C108L	$1,325.00	$22,525	90%	$20,273	$2,253
haul trailers to Roberts Bay for shipping off-site		m3	564.4	C404L	$6.34	$3,578	90%	$3,220	$358
demolish arctic corridor		m3	219.5	C305L	$19.00	$4,171	90%	$3,753	$417
demolish cribbing, stairs, entryways, etc.		m3	998.2	C305L	$19.00	$18,966	90%	$17,069	$1,897
collect all debris		m3	998.2	C310L	$0.18	$180	90%	$162	$18
Load debris for transport to landfill		m3	2325.6	C401L	$13.13	$30,535	90%	$27,482	$3,054
haul debris to landfill		m3	2325.6	C414L	$6.34	$14,744	90%	$13,270	$1,474
regrade area for positive drainage		m2	6910	C518L	$0.12	$829	70%	$580	$249
CRUSHING, MILLING & PROCESSING PLANT									
decommission crusher, milling, and process plants		each	1	PLNT1L	$150,000.00	$150,000	90%	$135,000	$15,000
Drain chemicals and reagents into containers for shipping off site		m3	8.3	c208al	$100.00	$830	0%	$0	$830
disassemble equipment		each	1	PLNT2L	$200,000.00	$200,000	90%	$180,000	$20,000
prepare equipment for shipping off-site		each	1	PLNT3L	$50,000.00	$50,000	90%	$45,000	$5,000
demolish / dismantle mill building		m3	123515	C305L	$19.00	$2,346,785	90%	$2,112,107	$234,679
Collect Debris		m2	8700	C310L	$0.18	$1,566	90%	$1,409	$157
load waste for transport to Landfill		m3	4381.8	C401L	$13.13	$57,533	90%	$51,780	$5,753
Haul debris to landfill		m3	4381.8	C414L	$6.34	$27,781	90%	$25,003	$2,778
transport drums to Roberts Bay		m3	8.3	C404L	$6.34	$53	90%	$47	$5
UNDERGROUND WASHBAY			0.74						
demolish tent structure		m3	776.9	C305L	$19.00	$14,761	90%	$13,285	$1,476
Collect Debris		m2	155.4	C310L	$0.18	$28	90%	$25	$3
Load debris for transport to landfill		m3	15.5	C401L	$13.13	$204	90%	$183	$20
Haul debris to landfill		m3	15.5	C414L	$6.34	$98	90%	$88	$10
UNDERGROUND DRILLING SUPPORT SHOP									
demolish tent structure		m3	859.2	C305L	$19.00	$16,325	90%	$14,692	$1,632

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Collect Debris		m2	229.1	C310L	$0.18	$41	90%	$37	$4
Load debris for transport to landfill		m3	17.7	C401L	$13.13	$232	90%	$209	$23
Haul debris to landfill		m3	17.7	C414L	$6.34	$112	90%	$101	$11
WATER INTAKE STRUCTURE AND PUMPING FACILITY									
remove water intake line from Doris Lake		lm	25	PLRL	$22.00	$550	0%	$0	$550
decommission pumping facility (remove electrical)		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
prep containers for shipping off-site		each	2	C108L	$1,325.00	$2,650	90%	$2,385	$265
disconnect and remove generator fuel tank (place in Doris tank farm for cleaning)		each	1	C105L	$640.00	$640	0%	$0	$640
clean TidyTank and prep for shipping off-site		each	1	C204L	$1,420.00	$1,420	0%	$0	$1,420
run oil-water separator		m3	3	C208L	$30.00	$90	0%	$0	$90
prep generator container for shipping off-site		each	1	C108L	$1,325.00	$1,325	90%	$1,193	$133
haul containers to Roberts Bay laydown		m3	66.4	C404L	$6.34	$421	90%	$379	$42
Collect Debris		m2	2226.2	C310L	$0.18	$401	90%	$361	$40
Load debris for transport to landfill		m3	20	C401L	$13.13	$263	90%	$236	$26
Haul debris to landfill		m3	20	C414L	$6.34	$127	90%	$114	$13
SEDIMENTATION / POLLUTION CONTROL POND									
disconnect piping and electrical wiring, remove sump pumps		each	2	C105L	$640.00	$1,280	90%	$1,152	$128
remove and cut liner into manageable pieces (Sedimentation Pond only)		m2	14110	C302L	$0.56	$7,902	50%	$3,951	$3,951
load waste for transport to Landfill		m3	42.3	C401L	$13.13	$555	90%	$500	$56
Haul Debris to landfill		m3	42.3	C414L	$6.34	$268	90%	$241	$27
breach Pollution Control pond and Sedimentation Pond containment berms		m3	2608.2	SB1L	$4.30	$11,215	70%	$7,851	$3,365
rip-rap breach for erosion protection		m3	13.8	RR1L	$13.50	$186	70%	$130	$56
UNDERGROUND SUPPORT MECHANICAL SHOP									
Decommission electrical, mechanical (including connections to generator house & transform		each	3	C105L	$640.00	$1,920	90%	$1,728	$192
demolish building		m3	2281.6	C305L	$19.00	$43,350	90%	$39,015	$4,335
Collect Debris		m2	456.3	C310L	$0.18	$82	90%	$74	$8
load waste for transport to Landfill		m3	504.5	C401L	$13.13	$6,624	90%	$5,962	$662
haul debris to landfill		m3	504.5	C414L	$6.34	$3,199	90%	$2,879	$320
Load hazardous waste into container for transport off site		m3	33.2	C401L	$13.13	$436	90%	$392	$44
Haul Waste container to Roberts Bay		m3	33.2	C414L	$6.34	$210	90%	$189	$21
FRESH WATER PIPELINES									
Cut pipelines into manageable pieces		lm	830	PLDL	$11.50	$9,545	50%	$4,773	$4,773
decommission electrical (heat tracing)		each	4	C105L	$640.00	$2,560	90%	$2,304	$256
collect electrical cables and controllers and prep for shipping off-site		m2	1600	C310L	$0.18	$288	90%	$259	$29
Load debris for transport to landfill		m3	28.2	C404L	$6.34	$179	90%	$161	$18
haul debris to landfill		m3	28.2	C414L	$6.34	$179	90%	$161	$18
HELECOPTER SUPPORT FACILITIES									

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
dismantle helicopter pads and walkway		m3	15	C305L	$19.00	$285	90%	$257	$29
demolish Heli shack		m3	27.9	C305L	$19.00	$530	90%	$477	$53
demolish washcar and other facilities		m3	81.8	C305L	$19.00	$1,554	90%	$1,399	$155
Collect Debris		m2	154.2	C310L	$0.18	$28	90%	$25	$3
Load debris for transport to landfill		m3	234.4	C401L	$13.13	$3,078	90%	$2,770	$308
Haul debris to landfill		m3	234.4	C414L	$6.34	$1,486	90%	$1,337	$149
Regrade surface for positive drainage		m2	1582.4	C518L	$0.12	$190	50%	$95	$95
WASTE ROCK PAD									
no decomm required		m2	11500	#N/A	$0.00	$0		$0	$0
RUN-OFF DIVERSION BERM									
Breach the berm to original ground in several locations (4 locations) to restore natural flow p		m3	378	SB1L	$4.30	$1,625	70%	$1,138	$488
Remove cut liners and load for transport to landfill		m3	0.3	C302L	$0.56	$0	90%	$0	$0
Haul debris to landfill		m3	0.3	C414L	$6.34	$2	90%	$2	$0
SEWAGE DISCHARGE LINE									
Flush pipeline prior to decommissioning		each	1	SEWL	$770.00	$770	0%	$0	$770
Cut pipelines into manageable pieces and place in containers for shipping off-site		lm	1190	PLDL	$11.50	$13,685	50%	$6,843	$6,843
Remove electrical cables and controllers		each	1	C105L	$640.00	$640	90%	$576	$64
Load debris into containers for shipping off-site		m3	90.8	C412L	$100.25	$9,103	90%	$8,192	$910
Haul debris to landfill		m3	90.8	C414L	$6.34	$576	90%	$518	$58
SEDIMENTATION BERM									
Breach the berm to restore a free drainage path		m2	24	SB1L	$4.30	$103	70%	$72	$31
rip-rap breach for erosion protection		m3	3.6	RR1L	$13.50	$49	10%	$5	$44
SUMPS									
decommission sumps		each	2	C102L	$550.00	$1,100	90%	$990	$110
remove pumps, pipes, cables, culverts		ls	2	RPPCL	$2,000.00	$4,000	0%	$0	$4,000
backfill sump excavation		m3	28.3	SBSL	$3.20	$91	0%	$0	$91
EXPANDED WASTE ROCK STORAGE (PAD T)									
Regrade Stockpile		m2	50400	SBSL	$3.20	$161,280	70%	$112,896	$48,384
Load waste for transport to landfill		m3	10	C401L	$13.13	$131	90%	$118	$13
Haul debris to landfill		m3	10	C404L	$6.34	$63	90%	$57	$6

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
EXPANDED LAYDOWN AREA (PAD U)									
remove pumps, pipes, cables, culverts		ls	1						
breach Sedimentation Pond containment berms		m3	120	SB1L	$4.30	$516	50%	$258	$258
collect all debris		m2	35200						
LHD remaining ore to TIA		m3	1760	SBSH	$6.30	$11,088	90%	$9,979	$1,109
load waste into containers for shipping off-site		m3	10	C412L	$100.25	$1,003	90%	$902	$100
haul containers to landfill		m3	10	C414L	$6.34	$63		$0	$63
					Total	$3,876,329		$3,363,412	$512,917
					% of Total			87%	13%

Appendix A
Doris North Project
2015 INAC Reclamation Cost Estimate (September 2016 Update)
Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Remove pump		LS		#N/A	$0.00	$0
PUMPS						
Pump capital cost		LS	5	pcl	$25,000.00	$125,000
Pump shipping		LS	5	psl	$2,500.00	$12,500
Pump maintenance		allow	5	pml	$25,000.00	$125,000
Install pumping system		LS		#N/A	$0.00	$0
Remove pumping system		LS		#N/A	$0.00	$0
INSPECT AND MAINTAIN WATER MANAGEMENT STRUCTURES						
Inspect and maintain water management structures[2]		ls	3	WTR3L	$70,000.00	$210,000
OPERATE / MAINTAIN WATER MANAGEMENT SYSTEM						
technician (camp rental / operations incl under Mob)		month	24	WTR1L	$34,200.00	$820,800
site support, consumables		month	24	WTR2L	$5,800.00	$139,200
WATER TESTING & REPORTING DURING CLOSUREACTIVITES (3 YEARS)						
Annual geotechnical inspection (during closure activites)[3]		each	3	GEOIL	$25,000.00	$75,000
Regulatory costs[4]	EACH YEAR	each	3	RPTL	$20,000.00	$60,000
Water sampling and testing[5]	EACH YEAR	each	3	WTR4L	$60,000.00	$180,000
Build treatment plant		LS		#N/A	$0.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
NORTH DAM BREACH (after year 7)						
Mobilization/demobilization of personnel and equipment		LS	1	DITCL	$500,000.00	$500,000
					Total	$2,247,500

2. Water management will be carried out for 5 years (3 years closure activities and 2 years afterwards). Inspections and oversite of maintenance activites carried out by Consultants.

3, 4 and 5. Regulatory and Water sampling /testing costs beyond Year 3 are included in Post-Closure

Appendix A
Doris North Project
2015 INAC Reclamation Cost Estimate (September 2016 Update)

Interim Care and Maintenance **18 MONTHS**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker / pump technician		manmonths	8	MM1L	$17,550.00	$140,400
extra personnel		manmonths				$0
-electrician		manmonths	8	MM2L	$25,650.00	$205,200
-mechanic		manmonths	8	MM3L	$20,250.00	$162,000
flights (yellowknife - cambridge bay)				#N/A	$0.00	$0
mobile camp rental		year	1	camrl	$425,000.00	$425,000
camp operation (<10 persons) - 3 persons		day	240	CPOPAL	$2,000.00	$480,000
annual fuel		litre	35000	FCGH	$1.40	$49,000
misc. supplies		allow		#N/A	$0.00	$0
pick-up truck		month	24	EQP1L	$2,000.00	$48,000
small dozer		month	12	EQP2L	$8,000.00	$96,000
small excavator		month	12	EQP3L	$10,000.00	$120,000
snow machine		month	12	EQP4L	$10,000.00	$120,000
articulated dump truck		month	12	EQP5L	$10,000.00	$120,000
communications		month		#N/A	$0.00	$0
SNP/AEMP water sampling & reporting		each	1	WSH	$10,000.00	$10,000
geotechnical assessment[3]		each	1	GEOIL	$25,000.00	$25,000
Water Management						
Inspect and maintain water management structures		ls	1	WTR3L	$70,000.00	$70,000
Operate / maintain pumping system						
technician (camp rental /operations incl under Mob)		month	0	WTR1L	$34,200.00	$0
site support, consumables		month	0	WTR2L	$5,800.00	$0
				Annual	Interim C&M Cost	$2,070,600
Number of years of ICM		years	1.5		**Total**	$3,105,900.00

3. Geotechnical inspection is to assess the stability of the dams, thermal pads, look for obvious permafrost degredation, assess stability of road embankments.

Appendix A
Doris North Project
2015 INAC Reclamation Cost Estimate (September 2016 Update)

Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	(years 1, 2, 3, 6 and 10 after closure activitie	each	0.5	GEOI2L	$70,000.00	$35,000
Cover monitoring	(years 1, 3, 5, 7, 10)	each	0.5	GEOI2L	$70,000.00	$35,000
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*	every year	each	1	RPTL	$20,000.00	$20,000
Water sampling and testing	(years 1, 2, 3, 4, 5, 7 and 10)	each	0.7	WTR4L	$60,000.00	$42,000
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

Subtotal, Annual post-closure costs			$132,000
Discount rate for calculation of net present value of post-closure cost, %			
Number of years of post-closure activity	10	years	
Present Value of payment stream			$1,320,000

*Regulatory costs - annual reporting, management plans, progress reports etc.

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
Excavators						
Edmonton to Hay River	(2 x 36.1 tonnes)	tonne	108.3	MOB1L	$443.00	$47,977
Hay River to Roberts Bay	(2 x 36.1 tonnes)	tonne	108.3	MOB1L	$443.00	$47,977
Dump trucks						
Edmonton to Hay River	(3 x 34.4 tonnes)	tonne	137.6	MOB1L	$443.00	$60,957
Hay River to Roberts Bay	(3 x 34.4 tonnes)	tonne	137.6	MOB1L	$443.00	$60,957
Dozers						
Edmonton to Hay River	(2 x 33.5 tonnes)	tonne	67	MOB1L	$443.00	$29,681
Hay River to Roberts Bay	(2 x 33.5 tonnes)	tonne	67	MOB1L	$443.00	$29,681
Loaders						
Edmonton to Hay River	(2 x 30 tonnes)	tonne	90	MOB1L	$443.00	$39,870
Hay River to Roberts Bay	(2 x 30 tonnes)	tonne	90	MOB1L	$443.00	$39,870
Light duty vehicles						
Edmonton to Hay River		each	8	MOB3L	$5,050.00	$40,400
Hay River to Roberts Bay		each	8	MOB3L	$5,050.00	$40,400
Standard 20' containers						
Edmonton to Hay River		each	12	MOB2L	$13,400.00	$160,800
Hay River to Roberts Bay		each	12	MOB2L	$13,400.00	$160,800
MOBILIZE CAMP						
ICM activities		year	0	CPRTL	425000	$0
Reclamation / Closure activities		year	3	CPRTL	425000	$1,275,000
Long term reclamation activities (eg pump flooding)		allow		#N/A	0	$0
WORKER ACCOMODATIONS						
Closure Activities - camp operations (winter months , <10 persons, incl food, maintenance, air travel)		day	300	CPOPAL	2000	$600,000

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Closure Activities - camp operations (non-winter months , 25 persons, incl food, maintenance, air travel)		person/day	13395	CPOPL	500	$6,697,500
MOBILIZE FUEL						
Fuel freight - reclamation activities		litre	1250000	FCGH	1.4	$1,750,000
Fuel freight - long term reclamation activities		litre		#N/A	0	$0
Fuel freight accommodations		litre		#N/A	0	$0
DEMOBILIZE HEAVY EQUIPMENT			60			
Excavators			60			
Edmonton to Hay River	(3 x 36.1 tonnes)	tonne	108.3	MOB1L	$443.00	$47,977
Hay River to Roberts Bay	(3 x 36.1 tonnes)	tonne	108.3	MOB1L	$443.00	$47,977
Dump trucks						
Edmonton to Hay River	(4 x 34.4 tonnes)	tonne	137.6	MOB1L	$443.00	$60,957
Hay River to Roberts Bay	(4 x 34.4 tonnes)	tonne	137.6	MOB1L	$443.00	$60,957
Dozers						
Edmonton to Hay River	(2 x 33.5 tonnes)	tonne	67	MOB1L	$443.00	$29,681
Hay River to Roberts Bay	(2 x 33.5 tonnes)	tonne	67	MOB1L	$443.00	$29,681
Loaders						
Edmonton to Hay River	(3 x 30 tonnes)	tonne	90	MOB1L	$443.00	$39,870
Hay River to Roberts Bay	(3 x 30 tonnes)	tonne	90	MOB1L	$443.00	$39,870
Light duty vehicles						
Edmonton to Hay River		each	8	MOB3L	$5,050.00	$40,400
Hay River to Roberts Bay		each	8	MOB3L	$5,050.00	$40,400
Standard 20' containers						
Edmonton to Hay River		each	12	MOB2L	$13,400.00	$160,800
Hay River to Roberts Bay		each	12	MOB2L	$13,400.00	$160,800
					Total	**$11,841,239**

APPENDIX B

Comparison of INAC 2015 Reclamation Cost Estimate with September 2016 Update

COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE AND UPDATED ESTIMATE (September 2016)

Activity / Material	2015 Reclamation Cost Estimate	Updated September 2016 Reclamation Cost Estimate	Difference	Reason for Difference	Comments
CAPITAL COSTS					
ROBERTS BAY AREA					
20 ML Tank Farm - Wash tanks	$1,420	$5,680	$4,260		wrong number of tanks
20 ML Tank Farm - Disconnect piping and controls	$550	$2,200	$1,650		wrong number of tanks
20 ML Tank Farm - Dismantle tanks and cut into manageable pie	$100,000	$60,000	-$40,000		wrong number of tanks, and unit rate too high
Quarry 1 - Drain tanks into portable fuel storage (EnviroTanks)	$40,000	$10,000	-$30,000		wrong number of tanks
Quarry 1 -Disconnect piping and controls	$2,750	$1,100	-$1,650		wrong number of tanks
Quarry 1 -dismantle 5ML tank and cut into manageable pieces	$400,000	$15,000	-$385,000		wrong number of tanks, and unit rate too high
TAILINGS IMPOUNDMENT AREA					
Shoreline Protection - Install separation geotextile	$326,040	$978,120	$652,080	unit rate	unit rate increased from $6.00/m2 to $18.00/m2 based on project experience in YT
Shoreline Protection - Haul and place rip rap	$510,055	$155,610	-$354,445	unit rate	unit rate decreased - haul and place only.
Cover Tailings - LHDP ROQ (0.3 m thick cover). Source from Quarry #3, adjacent to the TIA.	$2,158,200	$831,600	-$1,326,600	unit rate	unit rate decreased for haul and place only instead of produce, haul and place..
QUARRY A, B, D AND EXPLOSIVES STORAGE FACILITIES					
Doris Windy Road	$261,900	$0	-$261,900		Doris Windy Road not part of Water Licence
SECONDARY ROAD					
cut tailings line running along the road	$126,500	$66,125	-$60,375	unit rate	revised to $11.50/m from $22.00/m (reflects appropriate production rate)
cut pipeline into manageable pieces	$178,750	$93,438	-$85,312	unit rate	revised to $11.50/m from $22.00/m (reflects appropriate production rate)
QUARRY #2 AND #3					
Overburden Dump - install erosion protection measures (coconut matting)	$15,804	$47,412	$31,608	unit rate	unit rate increased from $6.00/m2 to $18.00/m2 based on project experience in YT
ROBERTS BAY DISCHARGE SYSTEM (LAND BASED)					
Cut pipelines into manageable pieces	$393,840	$62,905	-$330,935	unit rate	revised to $11.50/m from $72.00/m. Original unit rate changed from underwater removal / dismantling to land based.
ROBERTS BAY DISCHARGE SYSTEM (MARINE BASED)					
Retrieve Pipeline; cut pipelines into manageable pieces	$0	$177,192			was not included (missed) in original estimate
Load debris for transport to landfill	$0	$6,893			was not included (missed) in original estimate
haul debris to landfill	$0	$3,329			was not included (missed) in original estimate
Retrieve and dismantle diffuser	$0	$6,840			was not included (missed) in original estimate
DORIS CAMP					
Accommodation Complex - disconnect trailers and prep for removal (remove boards/piping, etc.; wrap in plastic)	$374,975	$109,975	-$265,000	# of units	# of units corrected (revised to 83 trailers from 283 trailers)
Cut pipelines into manageable pieces	$18,260	$9,545	-$8,715	unit rate	revised to $11.50/m from $22.00/m (reflects appropriate production rate)
Fire Storage tank - prepare pieces for transportation (includes water tank for Boston)	$38	$58	$20	# of units	revised to 2.9 m3 from 4.4 m3 (removal of Boston tank from scope)
Fire Storage tank - collect debris	$1	$13	$12	# of units	revised to 73.2 m3 from 4.4 m3 (removal of Boston tank from scope)
remove water intake line from Doris lake	$1,800	$550	-$1,250	unit rate	revised to $11.50/m from $22.00/m (reflects appropriate production rate)
Cut pipelines into manageable pieces and place in containers for shipping off-site	$26,180	$9,545	-$16,635	unit rate	revised to $11.50/m from $22.00/m (reflects appropriate production rate)

COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE AND UPDATED ESTIMATE (September 2016)

Activity / Material	2015 Reclamation Cost Estimate	Updated September 2016 Reclamation Cost Estimate	Difference	Reason for Difference	Comments
WATER MANAGEMENT					
Pumps - Capital costs	$0	$125,000	$125,000	# of units	Assumed no pumps available on-site. This was not included (missed) in original estimate
Pumps - shipping	$0	$12,500	$12,500	# of units	
Pumps- maintenance	$0	$125,000	$125,000	# of units	
Inspect and maintain water management structures	$100,000	$210,000	$110,000	# of units	Was included in 2015 estimate under water management. Rate revised to reflect 12 hrs/day for 30days at $95/hr, 8 months/yr, for 3 years
Operate / maintain H2O Mgmt structures - technician	$567,000	$820,800	$253,800	# of units	
Operate / maintain H2O Mgmt structures - support/consumables	$348,000	$139,200	-$208,800	# of units	
H20 testing/reporting during closure (3 yrs)- annual geotech insp	$0	$75,000	$75,000	# of units	was not included (missed) in original estimate
H20 testing/reporting during closure (3 yrs)- regulatory costs	$0	$60,000	$60,000	# of units	was not included (missed) in original estimate
H20 testing/reporting during closure (3 yrs)-samples and lab	$0	$180,000	$180,000	# of units	was not included (missed) in original estimate
INTERIM CARE AND MAINTENANCE (18 MONTHS)					
caretaker*	$87,750	$140,400	$52,650	# of units	revised to 8 manmonths (reflects overlap, training)
electrician*	$128,250	$205,200	$76,950	# of units	revised to 8 manmonths (reflects overlap, training)
mechanic*	$101,250	$162,000	$60,750	# of units	revised to 8 manmonths (reflects overlap, training)
camp operation (<10 persons)*	$540,000	$480,000	-$60,000	# of units	revised for 18 months (12 manmonths), using daily camp operation rate per person
annual fuel*	$47,250	$49,000	$1,750	# of units	revised units from 22,500 L to 35,000L
pick-up truck*	$72,000	$48,000	-$24,000	# of units	revised units from 48 months to 24 months, from 1 unit to 2 units
geotechnical assessment*	$56,250	$25,000	-$31,250	# of units	revised units from 2 years to 1 year x 1.5 yrs
Inspect and maintain water management structures	$30,000	$70,000	$40,000	unit rate	revised unit rate from $20k per inspection to $70k/inspection x 1.5 yrs. Assumed this will require equipment / operator and laborer for maintenance.
technician (camp support incl under Mob)	$85,050	$0	-$85,050	# of units	Included under 3 year Water Management plan (Mob/Demob)
site support, consumables	$52,200	$0	-$52,200	# of units	Included under 3 year Water Management plan (Mob/Demob)
Winter Road - construct and operate	$1,334,000	$0	-$1,334,000		winter road not required
Winter - road - limited winter use	34	0	-34		winter road not required
OFF SITE SHIPPING BY BARGE					
hazardous waste	$0	$26,257	$26,257		was not included (missed) in original estimate
hazardous solid waste	$0	$8,316	$8,316		was not included (missed) in original estimate
INDIRECT COSTS					
MOBILIZATION					
Mobilize workers - flights from Yellowknife to Cambridge Bay in summer months	$3,060,000	$0	-$3,060,000		removed rom 2016 estimate b/c they are included in camp rental costs
Mobilize workers - flights from Yellowknife to Cambridge Bay in winter months	$612,000	$0	-$612,000		removed rom 2016 estimate b/c they are included in camp rental costs
Mobilize camp	$2,125,000	$1,275,000			Reduction for camp rental from 5 years to 3 years
camp operations (10 winter months , <10 persons, incl food, maintenance, air travel)	$3,600,000	$600,000	-$3,000,000		changed from 60 mos to 10 months; Used daily unit rate of $2k/day.
camp operations (18 months, 25 persons, incl food, maintenance, air travel)	$270,000	$6,697,500	$6,427,500		Revised units to reflect 18 months (over 3 years) for a 25 person camp. Per person perday rate of $500.
Winter Road - construction and operation (DURING CLOSURE)	$1,334,000	$0	-$1,334,000		Winter road not required.
Demobilize workers - flights from Yellowknife to Cambridge Bay in summer months	$3,060,000	$0	-$3,060,000		not required - these costs included in Camp operations
Demobilize workers - flights from Yellowknife to Cambridge Bay in winter months	$612,000	$0	-$612,000		not required - these costs included in Camp operations
Winter Road - construction and operation	$1,334,000	$0	-$1,334,000		Winter road not required.
Fuel costs for closure activites	$0	$1,750,000	$1,750,000		Included as per diection by INAC.

COMPARISON OF INAC 2015 RECLAMATION COST ESTIMATE AND UPDATED ESTIMATE (September 2016)

Activity / Material	2015 Reclamation Cost Estimate	Updated September 2016 Reclamation Cost Estimate	Difference	Reason for Difference	Comments
POST CLOSURE MONITORING AND MAINTENANCE					
Water sampling and testing (years 1, 2, 3, 4, 5, 7 and 10)	$60,000	$42,000	-$18,000	# of units	revised water sampling schedule (years 1, 2, 3,5 ,7 and 10)
Vegetation Monitoring	$35,000	$0	-$35,000	# of units	removed from 2016 estimate - no revegetation measures
ENGINEERING	$1,408,063	$0.00	-$1,408,063		difference results from changes in direct costs
PROJECT MANAGEMENT	$1,173,386	$0.00	-$1,173,386		increased from 7% to 11% of direct costs, based on senior review
H&S PLANS / MONITORING & QA/QC	$469,354	$0.00	-$469,354		difference results from changes in direct costs
BONDING INSURANCE	$234,677	$0.00	-$234,677		difference results from changes in direct costs
CONTINGENCY[1], 20%	$4,693,545	$0.00	-$4,693,545		difference results from changes in direct costs
MARKET PRICE FACTOR ADJUSTMENT	$0	$0	$0		not applicable

1. A contingency of 20% of the direct costs was included. The RECLAIM 7.0 Guidance suggests that for a 'feasibility or advanced conceptual' estimate type, a contingency of ±20% is appropriate. The guidance also says that virtually all reclamation plans and associated cost estimates are in the 'feasibility or advanced conceptual' stage until possibly the last few years of the mine life.

* - These are costs/year and need to be multiplied by 1.5 for 18 months.

APPENDIX C

Comparison of INAC 2015 Reclamation Cost Estimate (September 2016 Update) and TMAC Estimate - revised 2015 (September 12, 2016 Spreadsheet)

Significant Cost Differences Between 2015 INAC Reclamation Cost Estimate (September 2016 Update) and TMAC Estimate (September 2016)

	INAC Estimate	TMAC Estimate	Difference	Basis for Significant Differences
DIRECT COSTS				
SURFACE AND GROUNDWATER MANAGEMENT	$2,247,500	$1,370,000	$877,500.00	- reduced number of pumps (5 vs. 3) - no allowance for site visits to inspect of water management structures - no mob/demob allowance for equipment and personnel for dam breach
INTERIM CARE AND MAINTENANCE (18 months)	$3,105,900	$2,231,625	$874,275.00	- reduced number of months for pumping (8 mos/year vs. 6 mos/year) - no allowance for site visits to inspect of water management structures - no full-time electrician on site - use of fleet equipment for snow clearing - unit fuel costs ($1.05/litre vs. $1.40/litre)
Subtotal of Significant Differences in Direct Costs			**$1,751,775.00**	
INDIRECT COSTS				
MOBILIZATION/DEMOBILIZATION	$11,841,239	$6,867,688	$4,973,550.80	Camp operation costs - INAC estimate assumes closure activities will be carried out over 3 years (21 months at a high camp costs (25 persons) and 10 months at a lower camp cost (<10 persons). Accounts for +$5M.
ENGINEERING	$912,982.20	$825,393.00	$87,589.20	INAC estimate uses 5% of direct costs for engineering vs. TMAC estimate at 5%
PROJECT MANAGEMENT	$1,095,578.64	$825,393.00	$270,185.64	INAC estimate uses 6% of direct costs for engineering vs. TMAC estimate at 5%
BONDING/INSURANCE	$182,596.44	$0	$182,596.44	
Subtotal of Significant Differences in Indirect Costs			**$5,513,922.08**	

Note - Does not include contingency

APPENDIX D
Person Days to Complete Direct Closure Activities

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Vegetate pit floor		ha		#N/A				
JETTY								
Remove rock fill to 0.3 m below LLWL, place in surrounding water		m3	1013.8	SB1H	1.0	1.0	1.0	100m3/hr
Remove on-shore mooring points		LS	1	OSHRL	2.0	0.5	1.0	
Remove mooring buoy		LS	1	FSHRL	2.0	1.0	2.0	
Crown jetty for positive drainage		m2	1900	c518l	2.0	0.1	0.2	15,000m2/day
ROBERTS BAY TANK FARM - 20ML							0.0	
Drain tanks into portable fuel storage (EnviroTanks)		each	4	C203L	3.0	4.0	12.0	
Decommission fuel transfer facilities		each	4	C102L	3.0	2.0	6.0	0.5 days each
Wash tanks		each	4	C204L	3.0	4.0	12.0	1 day/tank
Operate oil/water separator		m3	50	C208L	3.0	0.7	2.1	7m3/hour
Disconnect piping and controls		each	4	C102L	3.0	2.0	6.0	0.5 days each
Dismantle tanks and cut into manageable pieces		each	4	CUT5L	8.0	4.0	32.0	8 persons/ 1 day per tank
Load pieces for transportation		m3	43.5	C401L	2.0	0.1	0.2	2 persons/ 480 m3/day
Haul cut metal to Landfill		m3	51.4	C415L	1.0	0.1	0.1	1 persons/ 520 m3/day
Remove and stockpile liner protection cover		m3	5455	SB1L	2.0	9.0	18.0	600/m3/day
load contained contaminated soils into megabags for shipping off-site		m3	50	C412L	2.0	1.3	2.5	40m3/day
haul contaminated material to Roberts Bay laydown		m3	56.8	C404L	1.0	0.9	0.9	1 person / 60m3 per hour
Clean liner		m2	10300	C210L	2.0	0.5	1.0	2 persons /20,000m2/day
Remove and cut liner into manageable pieces		m2	10300	C302L	3.0	2.5	7.5	3 persons@4,100 m2/day
Load Debris into Waste Trucks		m3	92.7	C401L	2.0	0.2	0.4	2 persons/ 480 m3/day
Haul containers to Quarry 3 Landfill		m3	92.7	C415L	1.0	0.1	0.1	2 persons/ 520 m3/day
Level containment berms		m2	231.3	C505L	2.0	1.0	2.0	2,000m2/day
Regrade area for positive drainage		m2	11530	C518L	1.0	0.8	0.8	15,000m2/day
QUARRY 1 TANK FARM								
5ML Drain tanks into portable fuel storage (EnviroTanks)		each	1	C203L	3.0	1.0	3.0	
1ML Drain tanks into portable fuel storage (EnviroTanks)		each	1	C203L	3.0	1.0	3.0	
Decommission fuel transfer facilities		each	2	C102L	3.0	1.0	3.0	0.5 days each
Wash tanks		each	2	C204L	3.0	2.0	6.0	1day/tank
Operate oil/water separator		m3	220	C208L	3.0	3.0	9.0	7m3/hour
Disconnect piping and controls		each	2	C102L	3.0	1.0	3.0	0.5 days each
Dismantle 5ML diesel fuel tank and cut into manageable pieces		each	1	CUT5L	8.0	1.0	8.0	8 persons/ 1 day per tank
Dismantle 1ML jet fuel tank and cut into manageable pieces		each	1	CUT1L	8.0	1.0	8.0	8 persons/ 1 day per tank
Prepare pieces for transportation		m3	174	C401L	2.0	0.5	1.0	
Haul cut metal to Landfill		m3	174	C415L	1.0	0.3	0.3	2 persons/ 520 m3/day

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Remove and stockpile liner protection cover		m3	2190	SB1L	2.0	3.7	7.4	600/m3/day
load contained contaminated soils into megabags for shipping off-site		m3	50	C412L	2.0	1.3	2.6	40m3/day
haul megabags to Roberts Bay laydown		m3	53.4	C404L	1.0	0.9	0.9	1 person / 60m3 per hour
Clean liner		m2	6521	C210L	2.0	0.3	0.7	20,000m2/day
Remove and cut liner into manageable pieces		m2	6521	C302L	2.0	1.6	3.2	4,100 m2/day
Drain and wash empty fuel drums		each	150	C205L	2.0	3.8	7.5	40 bbls/day
Crush empty fuel drums		each	150	C301L	2.0	2.0	4.0	75 bbls/day
Load debris for transport to landfill		m3	68.2	C401L	2.0	0.1	0.3	2 persons/ 480 m3/day
Haul waste to Landfill		m3	68.2	C415L	1.0	0.1	0.1	2 persons/ 520 m3/day
Level containment berms		m2	279.3	C505L	2.0	1.0	2.0	2,000m2/day
Regrade area for positive drainage		m2	3650	C518L	1.0	0.2	0.2	15,000m2/day
MECHANICAL SHOP COMPLEX								
Decommission electrical, mechanical, heating (including connections to generator house & t		each	7	C105L	2.0	2.8	5.6	4 hrs each installation
Demolish (steel modular structure)		m3	2204.4	C305L	5.0	4.1	20.5	53m3/hr
Demolish wood structures (warehouse roof, crew lounge)		m3	283.2	C305L	5.0	0.5	2.5	
Demolish tent structure (light vehicle shop)		m3	460.3	C305L	5.0	0.9	4.5	
Collect Debris		m2	685.8	C310L	4.0	0.1	0.3	4 persons @10,000m2/day
Load debris for transport to landfill		m3	867.1	C401L	2.0	1.8	3.6	2 persons/ 480 m3/day
Haul debris to Landfill		m3	867.1	C415L	1.0	0.8	0.8	
WASTE MANAGEMENT FACILITY								
Collect ashes and place in containers		m3	0.5	C207L	1.0	0.5	0.5	
Dismantle (welding crew)		each	2	C308L	2.0	0.5	1.0	2 persons@0.5 days/unit
Demolish wood structures (roof, entryway, etc.)		m3	76.2	C305L	2.0	1.4	0.1	53 m3/hr
Disconnect containers and prep for shipping off-site		each	11	C108L	4.0	4.4	17.6	4 persons / 4 hrs/unitt
Collect all debris		m2	128.7	C310L	2.0	0.0	0.0	10,000m2/day
Load debris for transport to landfill		m3	152.5	C401L	2.0	0.3	0.6	2 persons/ 480 m3/day
Haul debris to Landfill		m3	152.5	C415L	1.0	0.3	0.3	2 persons/ 520 m3/day
LAYDOWN AREA								
Decommission vehicle plug system		each	1	C105L	1.0	0.4	0.4	4 hrs each installation
Remove cables and posts		each	8	C314L	2.0	0.5	1.0	
Collect all debris		m2	24491.6	C310L	2.0	2.4	4.8	10,000m2/day
Load debris for transport to landfill		m3	10	C401L	2.0	0.0	0.0	2 persons/ 480 m3/day
Haul debris to Landfill		m3	10	C415L	1.0	0.0	0.0	2 persons/ 520 m3/day
Regrade area for positive drainage		m2	24491.6	C518L	1.0	1.6	1.6	15,000m2/day
Laydown Area Expansion Collect all debris		m2	38800	C310L	1.0	4.0	4.0	10,000m2/day

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Load waste into containers for shipping off-site		m3	10	C401L	2.0	0.0	0.0	2 persons/ 480 m3/day
Haul debris to Landfill		m3	10	C415L	1.0	0.0	0.0	2 persons/ 520 m3/day
Breach safety berms and Regrade area for positive drainage		m2	38800	C518L	1.0	2.6	2.6	15,000m2/day
OVERBURDEN DUMP								
Collect all debris		m2	10448	C310L	1.0	1.0	1.0	
Load waste into containers for shipping off-site		m3	10	C401L	2.0	0.0	0.0	2 persons/ 480 m3/day
Haul debris to Landfill		m3	10	C415L	1.0	0.0	0.0	2 persons/ 520 m3/day
Grade for positive drainage		m2	10448	C505L	2.0	0.7	1.4	2,000m2/day
Breach the berm to original ground in several locations (4 locations) to restore natural flow p		m2	378	C505L	1.0	0.5	0.5	
ROBERTS BAY ACCESS ROAD								
Crown road for positive drainage		m2	3378	C518L	1.0	0.3	0.3	
COMMUNICATIONS TOWER								
Decommission Tower		each	1	C105L	5.0		25.0	
Remove communication equipment		each	4	C107L	5.0		0.0	
Dismantle towers		each	1	C311L	5.0	5.0	0.0	
Prep tower sections for shipping off-site		m	8	C312L	5.0		0.0	
Collect all debris		m2	1.4	C310L	5.0		0.0	
Load waste into containers for shipping off-site		m3	10.5	C401L	5.0		0.0	2 persons/ 480 m3/day
Haul hazardous waste to Roberts Bay		m3	5	C404L	1.0	0.1	0.1	1 person / 60m3 per hour
Haul debris to Landfill		m2	5.5	C415L	1.0	0.0	0.0	2 persons/ 520 m3/day
ALL WEATHER AIRSTRIP								
Decommission Airstrip		each	1	C109L	2.0	0.5	1.0	
Remove lighting fixtures (airstrip lighting, approach lights)		each	70	C110L	2.0	1.8	3.5	
collect all debris		m2	2850	C310L	2.0	0.3	0.6	10,000m2/day
load waste for transport to landfill		m3	1.2	C401L	2.0	0.0	0.0	2 persons/ 480 m3/day
Haul debris to Landfill		m3	1.2	C416L	1.0	0.2	0.2	
crown airstrip and airstrip expansion for positive drainage		m2	42000	C518L	1.0	2.8	2.8	15,000m2/day
Other				#N/A				
SOUTH APRON								
crown for positive drainage		m2	4500	C518L	1.0	0.3	0.3	15,000m2/day
Other				#N/A				
NORTH APRON								
Decommission electrical, and heating from traffic control tower		each	1	C107L	2.0	0.4	0.8	4 hrs each
demolish control tower structure (wood shack)		m3	11.7	C305L	2.0	0.0	0.0	
disconnect containers and prep for shipping off-site		each	5	C108L	4.0	2.0	8.0	

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Open Pit Name: **Roberts Bay Area / Airstrip**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
collect all debris		m2	12.2	C310L	1.0	0.0	0.0	10,000m2/day
load waste for transport to landfill		m3	17.6	C401L	2.0	0.1	0.2	2 persons/ 480 m3/day
haul debris to landfill		m3	17.6	C416L	1.0	0.0	0.0	
crown for positive drainage		m2	5517.2	C518L	1.0	0.4	0.4	15,000m2/day
Other				#N/A				
Number of years of pump flooding		years						
							299.7	**ManDays**

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Underground Mine Name	U/G Workings and Reagent Pads				# persons	days	Man-Days	
ACTIVITY/MATERIAL	**Notes**	**Unit**	**Qty**	**Code**				
Remove misc. haz. mat & explosives		kg		#N/A				
DORIS NORTH DECLINE PORTAL								
remove ducts, pipes, electrical cables		lm	100	C316L	3.0	5.0	15.0	20m/day
construct portal plug		m3	707	C503L	5.0	5.0	25.0	
regrade area for positive drainage		m2	1446	C518L	1.0	0.1	0.1	15,000m2/day
DORIS NORTH VENT RAISE								
Remove ducts, pipes, and cables		lm	100	C316L	3.0	5.0	15.0	20m/day
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	5.0	7.0	35.0	
Decommission and dismantle all ventilation and heating facilities		each	4	C105L	2.0	1.6	3.2	4 hours per installation
Prepare units for shipping off-site		each	1	C108L	4.0	0.5	2.0	4 hours per installation
Haul units to Roberts Bay		hrs	3	C404AL	1.0	0.3	0.3	
Regrade pads for positive drainage		m2	4150	C518L	1.0	0.3	0.3	15,000m2/day
Drain and decommission Enviro Tank		each	1	C203L	2.0	0.5	1.0	
Haul Enviro Tank to Roberts Bay		hrs	1.5	C404AL	1.0	0.2	0.2	
Remove liner and cut into manageable pieces		m2	1230	C302L	3.0	0.3	0.9	4,100 m2/day
Load waste for transport to landfill		m3	11	C401L	2.0	0.0	0.0	2 persons/ 480 m3/day
Haul waste to landfill		m3	11	C414L	1.0	0.0	0.0	480m3/day
Backfill area to prevent permanent ponding		m2	4150	C505L				
DORIS CONNECTOR VENT RAISE								
Remove ducts, pipes, and cables		lm	100	C316L	3.0	5.0	15.0	20m/day
Decommission and dismantle all ventilation facilities		each	2	C105L	2.0	1.0	2.0	4 hours per installation
Prepare units for shipping off-site		each	1	C108L	4.0	0.5	2.0	4 hours per installation
Haul units to Roberts Bay		hrs	1.5	C404L	1.0	0.2	0.2	
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	5.0	7.0	35.0	
Remove culvert		each	1	RCULL	3.0	0.6	1.8	excavator 4hrs; 1 day for 2 laborers; 2
Crown road for positive drainage		km	0.2	CRWNL	1.0	0.2	0.2	1 km/day
DORIS CENTRAL VENT RAISE								
Remove ducts, pipes, and cables		lm	100	C316L	3.0	5.0	15.0	20m/day
Decommission and dismantle all ventilation facilities		each	2	C105L	2.0	1.0	2.0	4 hours per installation
Prepare units for shipping off-site		each	1	C108L	4.0	0.5	2.0	4 hours per installation
Haul units to Roberts Bay		hrs	1.5	C404L	1.0	0.2	0.2	
Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top		each	1	C603L	5.0	7.0	35.0	
Remove culvert		each	1	RCULL	3.0	0.6	1.8	excavator 4hrs; 1 day for 2 laborers; 2
Crown road for positive drainage		km	0.7	CRWNL	1.0	0.7	0.7	1 km/day
Other				#N/A				

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Underground Mine Name	U/G Workings and Reagent Pads				# persons	days	Man-Days	
ACTIVITY/MATERIAL	**Notes**	**Unit**	**Qty**	**Code**				
EQUIPMENT LAYDOWN AREA								
collect all debris		m2	21870	C310L	2.0	2.2	4.4	10,000m2/day
load waste for transport to landfill		m3	20	C401L	2.0	0.1	0.2	
regrade area for positive drainage		m2	21870	C518L	1.0	1.5	1.5	15,000m2/day
haul waste to Landfill		m3	20	C417L	2.0	0.1	0.2	
Other				#N/A				
MATERIALS LAYDOWN AREA								
collect all debris		m2	33399	C310L	2.0	3.3	6.6	10,000m2/day
load waste to ship to Landfill		m3	20	C401L	2.0	1.0	2.0	
regrade area for positive drainage		m2	33399	C518L	1.0	2.2	2.2	15,000m2/day
haul waste to Landfill		m3	20	C417L	2.0	0.1	0.2	
Other				#N/A				
AMMONIUM NITARATE STORAGE BUILDING								
remove and stockpile liner protection cover		m3	1505	SB1L	1.0	1.5	1.5	
clean liner		m2	2800	C210L	2.0	0.1	0.3	
remove and cut liner into manageable pieces		m2	2800	C302L	3.0	0.7	2.1	
load waste for transport to landfill		m3	25.2	C401L	2.0	0.1	0.2	
Haul waste to Landfill		m3	25.2	C417L	1.0	0.1	0.1	
level containment berms		m2	32	C505L	1.0	0.0	0.0	
regrade area for positive drainage		m2	3858	C518L	1.0	0.3	0.3	15,000m2/day
Other				#N/A				
EXPLORATION DRILLING SUPPORT BUILDING								
Decommission electrical, mechanical, heating		each	2	C105L	2.0	1.0	2.0	4 hours per installation
demolish building (tent structure)		m3	149.6	C305L	5.0	0.3	1.5	
collect all debris		m2	335	C310L	2.0	0.2	0.4	
load waste for transport to landfill		m3	12.4	C401L	2.0	0.1	0.2	
haul waste to Landfill		m3	12.4	C417L	1.0	0.1	0.1	
							236.8	**ManDays**

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Tailings Impoundment Name:	North and South Dams / Interim Dyke				# persons	days	Man-Days	
ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code				
Crown Access Roads		km	0.2	CRWNL	1.0	0.2	0.2	
STABILIZE EMBANKMENT(S)								
Breach North dam by cutting a 20 m slot down to original ground (drill and blast)		m3	7028	RB1H	3.0	23.0	69.0	RS Means - daily banked production rate of 1
Load and haul material		m3	31021.1	SB3H	4.0	23.0	92.0	3 trucks, 1 loader - assume 1350m3/day
Clad the cut core faces for thermal protection		m3	614.2	RR2H	2.0	2.0	4.0	1 truck for 1.5 days haul, 1 excavator/loader t
SHORELINE PROTECTION								
Install separation geotextile		m2	54340	GSTH	5.0	20.0	100.0	2,690m2/day, 4 laborers, 1 loaders
Haul and place riprap to prevent erosion		m3	24,700	SBSH	3.0	18.0	54.0	3 trucks, 1 loader - assume 1350m3/day
Recontour Interim Dyke Crest		m3	2000	DRH	1.0	2.0	2.0	dozer @ 100m3/hr
COVER TAILINGS								
Grade/shape tailings surface		m2	440000	SBTL	1.0	110.0	110.0	assume 50% of surface area requires regradi
Produce ROQ (quarry drill and blast)		m3	132000	RB1H	3.0	440.0	1,320.0	RS Means - daily banked production rate of 1
LHDP ROQ (0.3m thick cover) from quarry #3		m3	66000	SBSH	5.0	49.0	245.0	see table below
LHDP ROQ (0.3m thick cover) from quarry #2		m3	66000	SBSH	5.0	114.0	570.0	see table below
SPECIALIZED ITEMS								
Remove thermosyphons radiators and towers		each	12	THRL	3.0	4.0	12.0	

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Tailings Impoundment Name:	North and South Dams / Interim Dyke				# persons	days	Man-Days	
ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code				
							2,578.2	ManDays

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Rock Pile Name:	Doris Windy Road / Secondary Road				# persons	days	Man-Days	
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**				
Install geomembrane		m2		#N/A				
ALL WEATHER ROAD								
NOT PART OF DORIS RECLAMATION COSTS								
QUARRY A								
No decomm required				#N/A				
QUARRY B								
No decomm required				#N/A				
QUARRY D								
Scale vertical walls				#N/A				
EXPLOSIVES STORAGE FACILITY								
Remove all explosive magazines		m3	66.4	C305L	5.0	1.0	5.0	530 m3/day
Demolish entry gates		m3	0.5	C305L	3.0	0.1	0.3	530 m3/day
Load all debris for transport to landfill		m3	25.4	C401L	2.0	0.1	0.2	480 m3/day
Haul waste to the landfill		m3	25.4	C414L	1.0	0.1	0.1	480m3/day
Regrade area for positive drainage		m3	2805.8	DSL	1.0	0.2	0.2	15,000m2/day
Secondary Road								
Remove Doris Creek bridge		ls	1	RBRGL	14.0	2.0	28.0	
Cut tailings line running alongside the road into manageable pieces		m	5750	PLDL	2.0	5.8	11.5	1,000lm/day
Strap together or load pipe sections in containers for transport to landfill		m3	2760	C401L	2.0	5.8	11.5	480 m3/day
Haul waste to the landfill		m3	2760	C404L	1.0	4.6	4.6	1 person / 60m3 per hour
Remove pipe culvert east of the bridge		lm	18.8	RCULL	3.0	0.6	1.8	excavator 4hrs; 1 day for 2 laborers; 2
Tailings Discharge And Reclaim Water Pipelines								
Cut pipelines into manageable pieces		lm	8125	PLDL	2.0	8.1	16.3	1,000lm/day
decommission electrical (heat tracing)		each	4	C105L	2.0	1.6	3.2	4 hrs each installation
collect electrical cables and controllers and prep for shipping off-site		m2	4062.5	C310L	4.0	0.4	1.6	10,000m2/day
Load debris for transport to landfill		m3	306.3	C401L	2.0	1.0	2.0	480 m3/day
Haul waste to the landfill		m3	306.3	C404L	1.0	0.5	0.5	1 person / 60m3 per hour
TIA Access Road (Chainage 0+725)								
Crown road for positive drainage		km	0.29	CRWNL	1.0	0.3	0.3	10,000m2/day
Remove floating dock and bridge		m3	132	C401L	2.0	0.3	0.6	480 m3/day
Load all debris to haul to Landfill		m3	132	C401L	2.0	0.3	0.6	480 m3/day
Haul waste to the landfill		m3	132	C404L	1.0	0.2	0.2	1 person / 60m3 per hour

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Rock Pile Name:	Doris Windy Road / Secondary Road				# persons	days	Man-Days	
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**				
Explosives Facility								
Remove all explosive magazines		m3	265.6	C305L	3.0	0.5	1.5	530 m3/day
Demolish entry gates		m3	0.5	C305L	2.0	0.1	0.2	530 m3/day
remove and stockpile liner protection cover		m3	3031	SB1L	1.0	3.0	3.0	100m3/hr
clean liner		m2	4442	C210L	2.0	0.2	0.4	20,000m2/day
remove and cut liner into manageable pieces		m2	4442	C302L	3.0	1.1	3.2	4100m2/day
load waste into containers for shipping off-site		m3	200	C401L	2.0	0.5	1.0	480 m3/day
Decommission electrical and heating from facilities		each	2	C105L	2.0	0.8	1.6	4 hrs each installation
Demolish building (tent structure)		m3	430	C305L	3.0	9.0	27.0	530 m3/day
disconnect containers and prep for shipping off-site		each	2	C108L	4.0	0.8	3.2	4 persons / 4 hrs/unitt
load waste into containers for shipping off-site		m3	41.5	C401L	2.0	0.1	0.2	480 m3/day
collect all debris		m2	18558	C310L	4.0	1.9	7.4	10,000m2/day
Load all waste and debris and waste into containers		m2	18558	C310L	4.0	1.9	7.4	10,000m2/day
Haul waste to landfill		m3	245	C404L	1.0	0.4	0.4	1 person / 60m3 per hour
Regrade pad area for positive drainage		m2	18558	C518L	1.0	1.2	1.2	15,000m2/day
Recontour berms to blend in with topography		m2	2166	C518L	1.0	0.1	0.1	15,000m2/day
							146.3	**ManDays**

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Chemicals/Soil Area Name: **Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Glycol		litre		#N/A				
QUARRY #2			60					
No decomm required			60	#N/A				
OVERBURDEN DUMP								
reslope to 3H:1V		m3	8781.3	SC1L	1.0	0.6	0.6	1 person@ 15,000 m2/day
grade top for positive drainage		m2	18441	C505L	2.0	9.2	18.4	2 persons/2,000m2/day
install erosion protection measures (coconut matting)		m2	2634	GSTH	5.0	1.0	5.0	2,690m2/day, 4 laborers, 1 loaders
Remove culvert		ls	1	RCULL	3.0	0.6	1.8	excavator 4hrs; 1 day for 2 laborers
Other				#N/A			0.0	
TREATED SEWAGE DISCHARGE AREAS								
Fill in low-lying areas (assumed sourced within 0.5km)		m3	69.1	SB4H	2.0	0.2	0.3	2 persond @450m3/hr
erosion protection: Supply and place cocoa matting		m2	53.2	GSTH	5.0	0.0	0.1	2,690m2/day, 4 laborers, 1 loaders
Other				#N/A				
Quarry #3 -								
No decomm required				#N/A				
Q#3 Access Road								
crown road for positive drainage		km	0.2	CRWNL	1.0	0.2	0.2	1km/day
Quarry #3 Landfill								
LHDP ROQ to construct 1m landfill cap		m3	19520	DRH	5.0	14.0	70.0	5 persons at 1365m3/day
COMMUNICATIONS TOWER								
Remove communications equipment		each	12	C107L	3.0	2.4	7.2	5/day
Dismantle the communications towers and prepare for shipping off-site		each	2	C311L	4.0	5.0	20.0	0.4 units/day
Demolish equipment housing shack		m3	9	C305L	5.0	0.0	0.1	5 persons @53 m3/hr
Remove electrical and fiber optics cables		each	12	C105L	2.0	2.8	5.6	4 hrs each
Remove all equipment, material, and waste from Doris Mountain (helicopter)		m3	11	DEB1L	1.0	1.0	1.0	
load waste into trucks for transport to landfill		m3	11	C401L	4.0	0.0	0.1	480m3/day
Transport Waste to Landfill		m3	11	C415L	2.0	0.0	0.0	2 persons/ 520 m3/day
Transport Communications tower equipment to Roberts Bay		m3	33.2	C404L	1.0	0.1	0.1	1 person / 60m3 per hour
Land FARM								
load contained contaminated soils into megabags for shipping off-site		m3	100	C412L	3.0	2.5	7.5	40m3/day
haul megabags to Roberts Bay laydown		m3	100	C404L	1.0	0.2	0.2	1 person / 60m3 per hour
treat contained water and discharge		m3	100	TRTL	3.0	1.4	4.3	7m3/hr
remove and stockpile liner protection cover		m3	2591	SB1L	1.0	3.7	3.7	1 person@700m3/day
clean liner		m2	4384	C210L	2.0	0.2	0.5	2 persons /20,000m2/day
remove and cut liner into manageable pieces		m2	13152	C302L	3.0	3.2	9.6	3 persons@4,100 m2/day
load waste for transport to landfill		m3	118.4	C401L	4.0	0.3	1.0	480m3/day
Haul Material to Landfill		m3	118.4	C414L	1.0	0.1	0.1	1 person / 116m3 per hour
level containment berms		m2	3134.8	C505L	2.0	1.6	3.2	2 persons/2,000m2/day
regrade area for positive drainage		m2	4384	C518L	1.0	0.3	0.3	15,000m2/day
Other				#N/A				
BATCH PLANT PAD								
collect all debris		m2	740.3	C310L	4.0	0.1	0.3	4 persons @10,000m2/day

Chemicals/Soil Area Name:	**Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal**						
load waste for transport to landfill	m3	3	C401L	4.0	0.0	0.0	480m3/day
haul waste to Landfill	m3	3	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
regrade area for positive drainage	m2	740.3	C518L	1.0	0.1	0.1	15,000m2/day
Other			#N/A				
BURN PAD							
Collect ashes and place in containers	m3	0.1	C207L	2.0	0.0	0.1	2.5m3/day
Dismantle (welding crew)	each	1	C308L	2.0	0.5	1.0	2 persons@0.5 days/unit
load waste into containers for shipping off-site	m3	0.2	C401L	4.0	0.0	0.0	480m3/day
haul containers to Roberts Bay laydown	m3	0.2	C404L	1.0	0.0	0.0	1 person / 60m3 per hour
regrade area for positive drainage	m2	400	C518L	1.0	0.0	0.0	15,000m2/day
Other			#N/A				
OFF-SITE SHIPPING BY BARGE							
hazardous waste	m3	120	hz1l	2.0	3.0	6.0	2 persons@40m3/day
hazardous solid waste	m3	38	hz2l	2.0	1.0	1.9	2 persons@40m3/day
hydrocarbon contaminated soils	m3	0	hy1l			0.0	
ROBERTS BAY DISCHARGE SYSTEM (MARINE BASED)							
Retrieve Pipeline; cut pipelines into manageable pieces	lm	2461	PLRH	2.0	2.5	4.9	2 persons@1,000 lm/day
Load debris for transport to landfill	m3	525	C401L	4.0	1.1	4.4	480m3/day
haul debris to landfill	m3	525	C404L	1.0	0.9	0.9	1 person / 60m3 per hour
Retrieve and dismantle diffuser	lm	95	PLRH	2.0	0.1	0.2	2 persons@1,000 lm/day

Chemicals/Soil Area Name: **Quarry #2 / Doris Mtn / Doris Waste Area / Ocean Discharge System . Off-Site Disposal**

ROBERTS BAY DISCHARGE SYSTEM (LAND BASED)							
Cut pipelines into manageable pieces	lm	5470	PLDL	2.0	5.5	10.9	2 persons@1,000 lm/day
Decommission electrical (heat tracing)	each	11	C106L	2.0	4.4	8.8	2 persons @4 hours per unit
Collect electrical cables and controllers and prep for shipping off-site	m2	5470	C310L	4.0	0.5	2.2	4 persons @10,000m2/day
Load debris for transport to landfill	m3	1160	C401L	4.0	2.4	9.6	480m3/day
haul debris to landfill	m3	1160	C404L	1.0	1.9	1.9	1 person / 60m3 per hour
Remove rock fill to 0.3 m below LLWL	m3	485	SB1H	1.0	0.7	0.7	1 person@700m3/day

214.6 ManDays

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Airstrip lighting, navigation, electrician		mandays		#N/A				
ACCOMODATION COMPLEX								
Decommission (electrical, mechanical, plumbing)		each	103	C105L	2.0	41.0	82.0	4 hrs/installation
disconnect trailers and prep for moving (remove boards/piping, etc.; wrap in plastic)		each	83	C108L	4.0	33.2	132.8	4 persons / 4 hrs/unitt
haul trailers to Roberts Bay for shipping off-site		m3	2756	C404L	1.0	4.6	4.6	1 person / 60m3 per hour
demolish cabins		m3	319.1	C305L	5.0	0.6	3.0	5 persons @53 m3/hr
demolish cribbing, stairs, entryways, etc.		m3	250.3	C305L	5.0	0.6	3.0	
demolish arctic corridor		m3	132.5	C305L	5.0	0.3	1.3	
collect all debris		m2	380.9	C310L	4.0	0.0	0.0	4 persons 2529m2/hr
load waste for transport to Landfill		m3	623.1	C401L	2.0	1.3	2.6	2 persons/ 480 m3/day
Haul waste to Landfill		m3	623.1	C414L	1.0	0.5	0.5	1 person / 116m3 per hour
regrade area for positive drainage		m2	21050	C518L	1.0	1.4	1.4	15,000m2/day
regrade pad transitions to blend in with topography		m2	15200	C505L	1.0	1.0	1.0	
regrade surface to prevent ponding		m2	152000	C518L	1.0	10.0	10.0	
TANK FARM								
Drain tanks into portable fuel storage (EnviroTanks)		each	5	C203L	3.0	5.0	15.0	3 persons/ 1 tank/day
Decommission Fuel Transfer Facilities		each	5	C102L	3.0	2.5	7.5	0.5 days each
Wash tanks		each	5	C204L	3.0	5.0	15.0	1 day/tank
Operate oil/water separator		m3	10	C208L	3.0	0.1	0.4	7m3/hour
Disconnect piping and controls		each	5	C102L	3.0	2.5	7.5	0.5 dyas each
Dismantle tanks and cut into manageable pieces		each	5	CUT1L	8.0	5.0	40.0	1 day/tank
prepare pieces for transportation		m3	22.8	C401L	2.0	0.1	0.1	
haul cut metal to landfill		m3	22.8	C414L	1.0	0.1	0.1	480m3/day
remove and stockpile liner protection cover		m3	3360	SB1L	1.0	3.4	3.4	100m3/hr
load contaminated soils into megabags for shipping off-site (assumed worst case)		m3	50	C412L	2.0	1.3	2.5	2 persons@40m3/day
haul contaminated material to Roberts Bay laydown		m3	62	C404L	1.0	0.1	0.1	1 person / 60m3 per hour
clean liner		m2	5500	C210L	2.0	0.3	0.6	20,000m2/day
remove and cut geosynthetics into manageable pieces		m2	5500	C302L	3.0	1.3	4.0	4100m2/day
load waste into containers for transport to landfill		m3	176.6	C401L	2.0	0.4	0.8	
haul waste to landfill		m3	176.6	C414L	1.0	0.2	0.2	1 person / 116m3 per hour
level containment berms		m2	962	C505L	2.0	0.5	1.0	2,000m2/day
regrade area for positive drainage		m2	4927.7	C518L	1.0	0.3	0.3	15,000m2/day
PERMANAENT POWER GENERATOR								
Decommission (electrical)		each	8	C106L	2.0	3.2	6.4	2 persons @4 hours per unit

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days		
Disconnect containers and prep for shipping off-site		each	8	C108L	4.0	3.2	12.8	4 persons / 4 hrs/unitt	
haul containers to Roberts Bay laydown		m3	265.66	C404L	1.0	0.8	0.8		
dismantle stacks (20m high each)		each	2	C313L	2.0	4.0	8.0	0.5m/hr	
prep stacks for shipping off-site		each	2	C312L	2.0	4.0	8.0	0.5m/hr	
haul stack sections to Roberts Bay laydown		m3	166	C404L	1.0	0.3	0.3	1 person / 60m3 per hour	
collect all debris		m2	2103	C310L	4.0	0.1	0.4		
load waste for shipping to landfill		m3	2	C401L	2.0	0.0	0.0		
haul waste to landfill		m3	2	C414L	1.0	0.0	0.0	1 person / 116m3 per hour	
BACKUP POWER GENERATOR									
Decommission (electrical)		each	4	c105l	2.0	1.6	3.2	4 hrs each	
Disconnect generator units and prep for shipping off-site		each	2	c106l	4.0	0.8	3.2	4 persons / 4 hrs/unitt	
haul units to Roberts Bay laydown		m3	67.6	C404L	1.0	0.1	0.1	1 person / 60m3 per hour	
demolish tent housing structure		m3	94.1	C305L	5.0	0.2	0.9	53 m3/hr	
collect all debris		m2	259.3	C310L	4.0	0.0	0.0		
load waste for shipping to landfill		m3	122.4	C401L	2.0	0.2	0.4		
haul waste to landfill		m3	122.4	C414L	1.0	0.1	0.1	1 person / 116m3 per hour	
SEWAGE TREATMENT PLANT									
Flush & remove sewage plumbing, collect sewage sludge/waste water in 55 gallon drums		each	9	C206L	2.0	3.6	7.2	4 hrs/unit	
Decommission (electrical) 9.0 each		each	9	C105L	2.0	3.6	7.2		
Disconnect containers and prep for shipping off-site		each	9	C108L	4.0	3.6	14.4	4 persons / 4 hrs/unitt	
haul containers to Roberts Bay laydown		m3	597.6	C404L	1.0	1.0	1.0	1 person / 60m3 per hour	
Collect Debris		m2	29.8	C310L	4.0	0.0	0.0		
Load debris into containers for transport (to Roberts Bay)		m3	23.8	C401L	2.0	0.1	0.1		
Haul debris to Roberts Bay		m3	23.8	C414L	1.0	0.0	0.0	1 person / 116m3 per hour	
FIRE WATER STORAGE TANK									
decommission and disconnect electrical and plumbing		each	3	C105L	2.0	1.2	2.4		
disconnect & remove container housing pumps & controls; prep for shipping		each	1	C108L	4.0	0.5	2.0	4 persons / 4 hrs/unitt	
haul container to Roberts Bay laydown		m3	33.2	C404L	1.0	0.1	0.1		
remove tank insulation		m3	53	C315L	2.0	0.5	1.0		0.3
Dismantle tanks and cut into manageable pieces		m3	2	C307L	4.0	0.0	0.2	5m3/hr	
prepare pieces for transportation		m3	3.4	C401L	2.0	0.0	0.0		
haul cut metal to Roberts Bay laydown		m3	3.4	C404L	1.0	0.0	0.0		
Collect Debris		m3	73.2	C310L	4.0	0.0	0.0		
Load debris for transport Landfill		m2	29.7	C401L	2.0	0.0	0.0		
Haul debris to landfill		m3	29.7	C404L	1.0	0.1	0.1		

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Muster Station								
demolish tent structure		m3	227.3	C305L	4.0	0.4	1.7	
dismantle wood flooring		m3	27.3	C305L	4.0	0.1	0.2	
Collect Debris		m2	90.9	C310L	4.0	0.0	0.0	
Load debris for transport to landfill		m3	42.7	C404L	1.0	0.1	0.1	
Haul Debris to landfill		m3	42.7	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
WAREHOUSE / CORE SHACK								
demolish tent structure		m3	269.5	C305L	4.0	0.5	2.0	
dismantle wood flooring, shelving, and lofts		m3	186.2	C305L	4.0	0.4	1.4	
Collect Debris		m2	720.1	C310L	4.0	0.0	0.1	
Load debris for transport to landfill		m3	350.3	C401L	2.0	0.7	1.4	
Haul debris to landfill		m3	350.3	C414L	1.0	0.3	0.3	1 person / 116m3 per hour
haul all warehouse containers to Roberts Bay		m3	796.8	C404L	1.0	1.3	1.3	
OFFICE & MINE DRY COMPLEX								
Decommission (electrical, mechanical, plumbing)		each	3	C105L	2.0	1.2	2.4	4 hrs each
disconnect trailers and prep for moving (remove boards, cladding, etc.; wrap in plastic)		each	17	C108L	4.0	6.8	27.2	4 persons / 4 hrs/unitt
haul trailers to Roberts Bay for shipping off-site		m3	564.4	C404L	1.0	0.9	0.9	
demolish arctic corridor		m3	219.5	C305L	4.0	0.4	1.6	
demolish cribbing, stairs, entryways, etc.		m3	998.2	C305L	4.0	1.9	7.6	
collect all debris		m3	998.2	C310L	4.0	0.0	0.2	
Load debris for transport to landfill		m3	2325.6	C401L	2.0	5.0	10.0	
haul debris to landfill		m3	2325.6	C414L	1.0	2.0	2.0	1 person / 116m3 per hour
regrade area for positive drainage		m2	6910	C518L	1.0	0.5	0.5	15,000m2/day
CRUSHING, MILLING & PROCESSING PLANT								
decommission crusher, milling, and process plants		each	1	PLNT1L	4.0	3.0	12.0	3 day per unit
Drain chemicals and reagents into containers for shipping off site		m3	8.3	c208al	3.0	0.1	0.3	6.6 m3/hr
disassemble equipment		each	1	PLNT2L	8.0	10.0	80.0	
prepare equipment for shipping off-site		each	1	PLNT3L	8.0	10.0	80.0	
demolish / dismantle mill building		m3	123515	C305L	4.0	247.0	988.0	53 m3/hr
Collect Debris		m2	8700	C310L	4.0	0.3	1.2	
load waste for transport to Landfill		m3	4381.8	C401L	2.0	9.0	18.0	
Haul debris to landfill		m3	4381.8	C414L	1.0	3.8	3.8	1 person / 116m3 per hour
transport drums to Roberts Bay		m3	8.3	C404L	1.0	0.0	0.0	

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
UNDERGROUND WASHBAY				0.74				
demolish tent structure		m3	776.9	C305L	4.0	1.5	6.0	
Collect Debris		m2	155.4	C310L	4.0	0.0	0.0	
Load debris for transport to landfill		m3	15.5	C401L	2.0	0.0	0.0	
Haul debris to landfill		m3	15.5	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
UNDERGROUND DRILLING SUPPORT SHOP								
demolish tent structure		m3	859.2	C305L	4.0	1.6	6.4	
Collect Debris		m2	229.1	C310L	4.0	0.0	0.0	
Load debris for transport to landfill		m3	17.7	C401L	2.0	0.0	0.0	
Haul debris to landfill		m3	17.7	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
WATER INTAKE STRUCTURE AND PUMPING FACILITY								
remove water intake line from Doris Lake		lm	25	PLRL			0.0	
decommission pumping facility (remove electrical)		each	2	C105L	2.0	0.8	1.6	4 hrs each
prep containers for shipping off-site		each	2	C108L	4.0	0.8	3.2	4 persons / 4 hrs/unitt
disconnect and remove generator fuel tank (place in Doris tank farm for cleaning)		each	1	C105L	2.0	0.5	1.0	
clean TidyTank and prep for shipping off-site		each	1	C204L	2.0	0.8	1.6	1.25tanks/day
run oil-water separator		m3	3	C208L	3.0	0.0	0.1	7m3/hr
prep generator container for shipping off-site		each	1	C108L	4.0	0.5	2.0	
haul containers to Roberts Bay laydown		m3	66.4	C404L	1.0	0.1	0.1	
Collect Debris		m2	2226.2	C310L	4.0	0.1	0.4	
Load debris for transport to landfill		m3	20	C401L	2.0	0.0	0.0	
Haul debris to landfill		m3	20	C414L	1.0	0.0	0.0	
SEDIMENTATION / POLLUTION CONTROL POND								
disconnect piping and electrical wiring, remove sump pumps		each	2	C105L	2.0	0.8	1.6	4 hrs each
remove and cut liner into manageable pieces (Sedimentation Pond only)		m2	14110	C302L	3.0	3.4	10.2	4100m2/day
load waste for transport to Landfill		m3	42.3	C401L	2.0	0.1	0.2	
Haul Debris to landfill		m3	42.3	C414L	1.0	0.0	0.0	
breach Pollution Control pond and Sedimentation Pond containment berms		m3	2608.2	SB1L	1.0	3.7	3.7	1 person, 700m3/day
rip-rap breach for erosion protection		m3	13.8	RR1L	3.0	0.2	0.6	
UNDERGROUND SUPPORT MECHANICAL SHOP								
Decommission electrical, mechanical (including connections to generator house & transform		each	3	C105L	2.0	1.2	2.4	4 hrs each
demolish building		m3	2281.6	C305L	4.0	4.3	17.2	
Collect Debris		m2	456.3	C310L	4.0	0.0	0.1	
load waste for transport to Landfill		m3	504.5	C401L	2.0	1.0	2.0	
haul debris to landfill		m3	504.5	C414L	1.0	0.4	0.4	

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
Load hazardous waste into container for transport off site		m3	33.2	C401L	2.0	0.0	0.0	
Haul Waste container to Roberts Bay		m3	33.2	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
FRESH WATER PIPELINES								
Cut pipelines into manageable pieces		lm	830	PLDL	2.0	0.8	1.7	2 persons@1,000 lm/day
decommission electrical (heat tracing)		each	4	C105L	2.0	1.6	3.2	4 hrs each
collect electrical cables and controllers and prep for shipping off-site		m2	1600	C310L	4.0	0.1	0.2	
Load debris for transport to landfill		m3	28.2	C404L	1.0	0.1	0.1	
haul debris to landfill		m3	28.2	C414L	1.0	0.0	0.0	1 person / 116m3 per hour
HELECOPTER SUPPORT FACILITIES								
dismantle helicopter pads and walkway		m3	15	C305L	4.0	0.0	0.1	
demolish Heli shack		m3	27.9	C305L	4.0	0.1	0.2	
demolish washcar and other facilities		m3	81.8	C305L	4.0	0.2	0.6	
Collect Debris		m2	154.2	C310L	4.0	0.0	0.0	
Load debris for transport to landfill		m3	234.4	C401L	2.0	0.5	1.0	
Haul debris to landfill		m3	234.4	C414L	1.0	0.2	0.2	
Regrade surface for positive drainage		m2	1582.4	C518L	1.0	0.1	0.1	15,000m2/day
WASTE ROCK PAD								
no decomm required		m2	11500	#N/A			0.0	
RUN-OFF DIVERSION BERM								
Breach the berm to original ground in several locations (4 locations) to restore natural flow p		m3	378	SB1L	1.0	0.5	0.5	
Remove cut liners and load for transport to landfill		m3	0.3	C302L	2.0	0.0	0.0	480m3/day
Haul debris to landfill		m3	0.3	C414L	1.0	0.0	0.0	1 person / 116m3 per hour

Appendix D
Doris North Project
Estimation of Person Hours for Direct Closure Activities

Building / Equip Name: **Doris Camp**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	# persons	days	Man-Days	
SEWAGE DISCHARGE LINE								
Flush pipeline prior to decommissioning		each	1	SEWL	2.0	0.5	1.0	
Cut pipelines into manageable pieces and place in containers for shipping off-site		lm	1190	PLDL	1.0	1.2	1.2	1,00 lm/day
Remove electrical cables and controllers		each	1	C105L	2.0	0.4	0.8	4 hrs each
Load debris into containers for shipping off-site		m3	90.8	C412L	3.0	2.3	6.8	40m3/day
Haul debris to landfill		m3	90.8	C414L	1.0	0.1	0.1	1 person / 116m3 per hour
SEDIMENTATION BERM								
Breach the berm to restore a free drainage path		m2	24	SB1L	1.0	0.0	0.0	100m3/hr
rip-rap breach for erosion protection		m3	3.6	RR1L	3.0	0.1	0.3	
SUMPS								
decommission sumps		each	2	C102L	3.0	1.0	3.0	0.5 days each
remove pumps, pipes, cables, culverts		ls	2	RPPCL	2.0	0.5	1.0	
backfill sump excavation		m3	28.3	SBSL	2.0	0.1	0.1	45m3/hr
EXPANDED WASTE ROCK STORAGE (PAD T)								
Regrade Stockpile		m2	50400	SBSL	1.0	2.5	2.5	20,000m2/day
Load waste for transport to landfill		m3	10	C401L	2.0	0.0	0.0	
Haul debris to landfill		m3	10	C404L	1.0	0.0	0.0	
EXPANDED LAYDOWN AREA (PAD U)								
remove pumps, pipes, cables, culverts		ls	1		2.0	1.0	2.0	
breach Sedimentation Pond containment berms		m3	120	SB1L	1.0	0.1	0.1	100m3/hr
collect all debris		m2	35200	c310L	4.0	14.0	56.0	
LHD remaining ore to TIA		m3	1760	SBSH	5.0	1.3	6.4	5 persons at 1365m3/day
load waste into containers for shipping off-site		m3	10	C412L	3.0	0.0	0.1	40m3/day
haul containers to landfill		m3	10	C414L	1.0	0.0	0.0	1 person / 116m3 per hour

1,815.2 ManDays