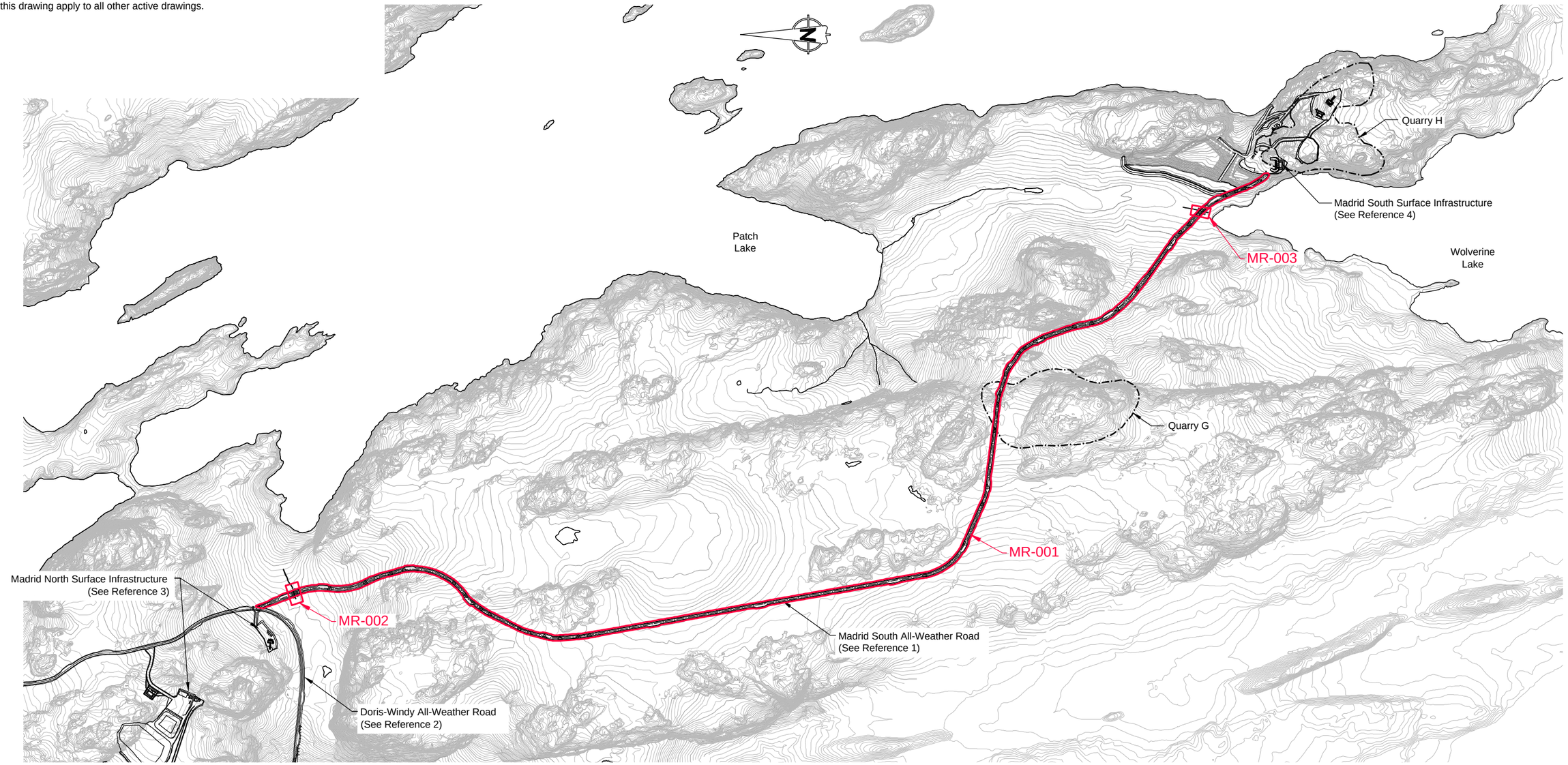
NOTES

1. Topographic contour data for the terrain model were provided by Hope Bay Mining, and is based on 2007 Aerial Photography. Contour intervals are 0.5m.
2. The co-ordinate system is UTM NAD 83, Zone 13.
3. All dimensions are in metric units, unless specifically mentioned.
4. Notes in this drawing apply to all other active drawings.



LEGEND

- Existing Approved and Permitted Quarry
- Proposed Development Quarry
- Road Alignment

REFERENCES

1. Engineering drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision D. Project No. 1CT022.001. October 31, 2014.
2. Engineering Drawings for the Doris-Windy All-Weather Road, Doris Infrastructure Project, Nunavut, Canada. Revision AB1. As-Built Drawings Prepared for Hope Bay Mining Ltd. Project Number: 1CH008.033/.058. May 11, 2012
3. Engineering drawings for the Madrid North Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision E. Project No. 1CT022.001. October 31, 2014.
4. Engineering drawings for the Madrid South Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision F. Project No. 1CT022.001. October 31, 2014.

0 100 200 300 400 500
Scale in Metres

srk consulting

SRK JOB NO.: 1CH022.001
FILE NAME: 1CT022_001_Madrid South_Overview.dwg

TMAC RESOURCES

HOPE BAY PROJECT

Madrid Closure and Reclamation Plan

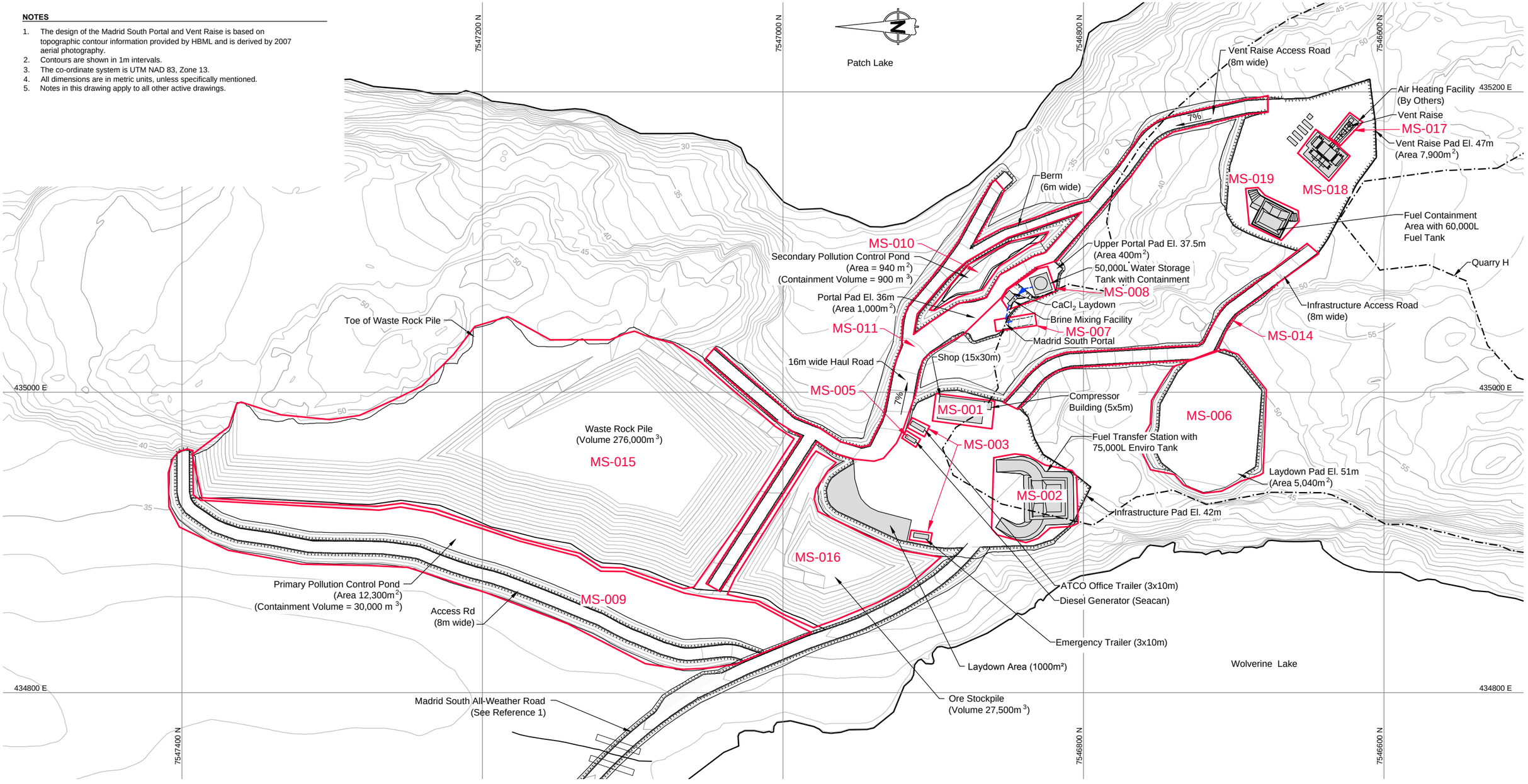
Madrid South
All-Weather Road

DATE:	APPROVED:	FIGURE:
Oct. 2014	LW	5

C:\01_SITES\Hope Bay\Madrid Closure\1CT022_001_Madrid South_Overview.dwg

NOTES

1. The design of the Madrid South Portal and Vent Raise is based on topographic contour information provided by HBML and is derived by 2007 aerial photography.
2. Contours are shown in 1m intervals.
3. The co-ordinate system is UTM NAD 83, Zone 13.
4. All dimensions are in metric units, unless specifically mentioned.
5. Notes in this drawing apply to all other active drawings.



LEGEND

- Proposed Quarry Boundary
- Water Line

REFERENCES

1. Engineering drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision D. Project No. 1CT022.001. October 31, 2014.

0 10 20 30 40 50
Scale in Metres

srk consulting

SRK JOB NO.: 1CH022.001
FILE NAME: 1CT022.001_Madrid_South_Closure.dwg

TMAC RESOURCES

HOPE BAY PROJECT

Madrid Closure and Reclamation Plan

Madrid South Site Layout

DATE:	APPROVED:	FIGURE:
Oct. 2014	LW	6

C:\01_SITES\Hope Bay\Madrid Closure\1CT022.001_Madrid_South_Closure.dwg

Attachment 1
Madrid Advanced Exploration Bulk Samples
Conceptual Closure and Reclamation Cost Estimate

Worksheet 1: Summary of Costs

Location	Facility	WBS Code	Cost (rounded to the nearest thousand)	
			By task	By work Area
Direct Cost Items				
Madrid North Surface Infrastructure				**$ 1,834,000**
Upper Portal Area				$25,000
	Shop	MN-001	$21,000	
	Diesel Generator			
	Office & Support Complex	MN-003	$4,000	
Lower Portal Area				$25,000
	Brine Mixing Facility	MN-004	$1,000	
	Portal and Underground Works	MN-005	$24,000	
Fuel Storage Facility				$7,000
	Fuel Storage Facility	MN-006	$7,000	
Pond Access Road				$1,000
	Pond Access Road	MN-007	$1,000	
Pollution Control Pond				$12,000
	Pollution Control Pond	MN-008	$12,000	
Portal Pad Road				$6,000
	Portal Pad Haul Road	MN-009	$1,000	
	Pipe Culvert	MN-010	$5,000	
	Dual Water Line - Discontinued	MN-011	$0	
Ore Stockpile Pad				$1,000
	Ore Stockpile Pad	MN-012	$1,000	
Waste Rock Pile				$1,707,000
	Waste Rock Pile	MN-013	$1,707,000	
Madrid North Vent Raise				$48,000
	Vent Raise	MN-014	$23,000	
	Ventilation and Heating Facilities	MN-015	$4,000	
	Offices & Support Complex	MN-016	$7,000	
	Diesel Generator	MN-017	$2,000	
	Fuel Containment Area	MN-018	$7,000	
	Vent Raise access road	MN-019	$1,000	
	Pipe Culvert	MN-020	$4,000	
Madrid South All-Weather Road				**$ 17,000**
Madrid South All-Weather Road				$17,000
	Madrid South All-Weather Road	MR-001	$5,000	
	Crossing #1	MR-002	$6,000	
	Crossing #2	MR-003	$6,000	
Madrid South Surface Infrastructure				**$ 1,757,000**
Infrastructure Pad Area				$36,000
	Shop	MS-001	$22,000	
	Fuel Storage Facility	MS-002	$7,000	
	Offices & Support Complex	MS-003	$5,000	
	Fresh Water Pipelines Leg 2 - Discontin	MS-004	$0	
	Diesel Generator	MS-005	$2,000	
Laydown Pad				$1,000
	Laydown Pad	MS-006	$1,000	
Portal Area				$25,000
	Portal and Underground Works	MS-007	$24,000	
	Brine Mixing Facility	MS-008	$1,000	
Primary Pollution Control Area				$11,000
	Primary Pollution Control Pond	MS-009	$11,000	
Haul Road and Water Supply Infrastructure				$5,000
	Secondary Pollution Control Pond	MS-010	$4,000	
	Haul and Access Roads	MS-011	$1,000	
	Pumphouse - Discontinued	MS-012	$0	
	Freshwater Pipeline Leg 1 - Discontinue	MS-013	$0	
Infrastructure Access Road				$1,000
	Infrastructure Access Road	MS-014	$1,000	
Waste Rock Pile				$1,648,000
	Waste Rock Pile	MS-015	$1,648,000	
Ore Stockpile Pad				$1,000
	Ore Stockpile Pad	MS-016	$1,000	
Madrid South Vent Raise Area				$26,000
	Vent Raise	MS-017	$15,000	
	Ventilation and Heating Facilities	MS-018	$4,000	
	Fuel Containment Area	MS-019	$7,000	
Additional Direct Costs				
Off-site Shipping for Disposal	Ship Off-site for Disposal by Barge	DN-001	$740,000	**$ 740,000**
Off-Site Disposal Fees	Disposal Fees in Licensed Facility	DN-002	$77,000	**$ 77,000**
Water Management	Madrid North Water Management - Disc	WM-001	$0	**$ -**
	Madrid South Water Management - Disc	WM-002	$0	**$ -**
TOTAL DIRECT COSTS				**$ 4,425,000**
Indirect Cost Items				
Contingency			$720,000	**$ 720,000**
Mobilization & Demobilization			$712,000	**$ 712,000**
General and Administration costs			$34,000	**$ 34,000**
Field support			$30,000	**$ 30,000**
Hydrocarbon decontamination			$150,000	**$ 150,000**
Post-closure Monitoring			$1,060,000	**$ 1,060,000**
Subtotal Indirect Costs				**$ 2,706,000**
CLOSURE COSTS - TOTAL				**$ 7,131,000**

Worksheet 2: Detailed Cost Estimate

Work Area Code	Item	Task	Sub-task	Activity	Task	Quantity	Unit	Cost Code	Unit Cost	Task Total	Activity Total	Subtotals	Source / Comments
DIRECT COSTS													
Madrid North Portal and Vent Raise												**$1,830,377**	
Upper Portal Area												**$25,959**	
MN-001		1	1	Shop	Decommission electrical, mechanical (including connections to generator house & transformer)	2	each	C.1.05	$603.78	$ 1,207.57	$ 20,899.37		Assume large tent structure
	1	1	2		Demolish building	2,250	m^2	C.3.05	$7.93	$ 17,835.91			
	1	1	3		Collect debris	450	m^3	C.3.10	$0.14	$ 61.29			
	1	1	4		Load waste into containers for shipping off-site	198	m^3	C.4.01	$4.97	$ 985.38			
	1	1	5		Haul debris to Roberts Bay laydown	198	m^3	C.4.14	$4.09	$ 809.22			
MN-002	1	2	1	#N/A	Decommission (electrical)	1	each	C.1.05	$603.78	$ 603.78	$ 1,366.64		Mobile Generator
	1	2	2		Disconnect generator units and prep for shipping off-site	1	each	C.1.06	$636.82	$ 636.82			
	1	2	3		Haul units to Roberts Bay laydown	1	each	C.4.16	$94.94	$ 94.94			
	1	2	4		Collect all debris	30	m^2	C.3.10	$0.14	$ 4.06			
	1	2	5		Load waste into containers for shipping off-site	3	m^3	C.4.01	$4.97	$ 14.84			
	1	2	6		Haul containers to Roberts Bay laydown	3	m^3	C.4.14	$4.09	$ 12.19			
MN-003	1	3	1	Office & Support Complex	Decommission (electrical, mechanical, plumbing)	2	each	C.1.05	$603.78	$ 1,207.57	$ 3,693.39		
	1	3	2		Disconnect trailers and prep for moving (remove boards, cladding, etc.; wrap in plastic)	2	each	C.1.08	$1,110.00	$ 2,220.01			ATCO trailers
	1	3	3		Haul trailers to Roberts Bay for shipping off-site	2	each	C.4.16	$94.94	$ 189.88			
	1	3	4		Demolish cribbing, stairs, entryways, etc.	-	m^2	C.3.05	$7.93	$ -			Demolish extras around ATCO trailers
	1	3	5		Collect all debris	60	m^2	C.3.10	$0.14	$ 8.17			
	1	3	6		Load waste into containers for shipping off-site	-	m^3	C.4.01	$4.97	$ -			
	1	3	7		Haul containers to Roberts Bay laydown	-	m^3	C.4.14	$4.09	$ -			
	1	3	8		Regrade area for positive drainage	5,800	m^2	C.5.18	$0.01	$ 67.77			
Lower Portal Area												**$24,413**	
MN-004	1	4	1	Brine Mixing Facility	Drain and decommission 50000L water storage tank	1	each	C.1.12	$241.82	$ 241.82	$ 515.80		
	1	4	2		Haul water tank to Roberts Bay Laydown	1	each	C.4.17	$113.57	$ 113.57			
	1	4	3		Load excess CaCl2 into container for shipping off site	2	m^3	C.4.01	$4.97	$ 9.95			Assume open skid on site
	1	4	4		Collect all debris	54	m^2	C.3.10	$0.14	$ 7.41			
	1	4	5		Haul water tank to Roberts Bay Laydown	1	each	C.4.17	$113.57	$ 113.57			
	1	4	6		Load waste into containers for shipping off-site	2	m^3	C.4.01	$4.97	$ 9.95			Base waste quantities
	1	4	7		Haul containers to Roberts Bay laydown	4	m^3	C.4.15	$4.89	$ 19.55			
MN-005	1	5	1	Portal and Underground Works	Remove ducts, pipes, electrical cables	100	lm	C.3.16	$105.70	$ 10,570.01	$ 23,896.73		Estimate based on Doris estimate
	1	5	2		Construct portal plug	707	m^3	C.5.03	$18.83	$ 13,309.78			
	1	5	3		Regrade area for positive drainage	1,450	m^2	C.5.18	$0.01	$ 16.94			Entire Lower Pad area
Fuel Storage Facility												**$7,379**	
MN-006	1	6	1	Fuel Storage Facility	Decommission Enviro Tank	1	each	C.2.03	$241.82	$ 241.82	$ 7,379.48		Estimate based on Doris estimate
	1	6	2		Haul Enviro Tank to Roberts Bay	1	each	C.4.16	$94.94	$ 94.94			
	1	6	3		Load contained contaminated soils into megabags for shipping off-site	80	m^3	C.4.12	$69.79	$ 5,610.96			
	1	6	4		Remove liner and cut into manageable pieces	2,302	m^2	C.3.02	$0.15	$ 347.92			Design quantities
	1	6	5		Load all debris and waste into containers	21	m^3	C.4.01	$4.97	$ 103.06			
	1	6	6		Haul containers to Roberts Bay	101	m^3	C.4.14	$4.09	$ 413.08			
	1	6	7		Backfill area to prevent permanent ponding	750	m^2	C.5.05	$0.76	$ 567.71			
Pond Access Road												**$456**	
MN-007	1	7	1	Pond Access Road	Crown road for positive drainage	0	km	C.5.17	$1,017.65	$ 455.91	$ 455.91		
Pollution Control Pond												**$12,492**	
MN-008	1	8	1	Pollution Control Pond	Disconnect piping and electrical wiring, remove sump pumps	2	each	C.1.05	$603.78	$ 1,207.57	$ 12,491.80		
	1	8	2		Remove and cut liner into manageable pieces	14,300	m^2	C.3.02	$0.15	$ 2,161.25			Liner+Geotextile
	1	8	3		Load waste into containers for shipping off-site	465	m^3	C.4.01	$4.97	$ 2,314.59			Liner+Geotextile in breach area
	1	8	4		Haul containers to Roberts Bay laydown	465	m^3	C.4.15	$4.89	$ 2,273.78			
	1	8	5		Breach Pollution Control pond	2,500	m^3	C.5.05	$0.76	$ 1,892.36			
	1	8	6		Remove and cut liner into manageable pieces (breach only)	4,400	m^2	C.3.02	$0.15	$ 663.00			Liner+Geotextile in breach area
	1	8	7		Rip-rap breach for erosion protection	105	m^3	C.5.03	$18.83	$ 1,977.26			
Portal Pad Road												**$5,080**	
MN-009	1	9	1	Portal Pad Haul Road	Crown road for positive drainage	0	km	C.5.17	$1,017.65	$ 247.29	$ 247.29		
MN-010	1	10	1	Pipe Culvert	Remove pipe culvert at Doris Windy Road entrance	51	lm	C.5.15	$92.11	$ 4,697.39	$ 4,832.42		
	1	10	2		Load all debris and waste into containers and	15	m^3	C.4.01	$4.97	$ 74.14			
	1	10	3		Haul containers to Roberts Bay	15	m^3	C.4.14	$4.09	$ 60.89			
MN-011	1	11	1	Dual Water Line - Discontinued	Cut pipelines into manageable pieces	-	lm	C.3.03	$10.38	$ -	$ -		
	1	11	2		Decommission electrical (heat tracing)	-	each	C.1.05	$603.78	$ -			
	1	11	3		Collect electrical cables and controllers and prep for shipping off-site	-	m^3	C.3.10	$0.14	$ -			1 m either side of pipeline
	1	11	4		Load debris into containers for transport (to Roberts Bay)	-	m^3	C.4.01	$4.97	$ -			
	1	11	5		Haul debris to Roberts Bay	-	m^3	C.4.14	$4.09	$ -			
Ore Storage Pad												**$93**	
MN-012	1	12	1	Ore Stockpile Pad	Regrade area for positive drainage	8,000	m^2	C.5.18	$0.01	$ 93.47	$ 93.47		Assume no ore was left on surface after end of operation
Waste Rock Pile												**$1,707,412**	
MN-013	1	13	1	Waste Rock Pile	Regrade top surface for positive drainage	12,300	m^2	C.5.05	$0.76	$ 9,310.41	$ 1,707,411.53		no waste rock left on surface
	1	13	2		Resloping from 2:1 to 3:1	20,200	m^2	C.5.06	$1.01	$ 20,387.01			
	1	13	3		Cover entire dump with HDPE liner,	35,750	m^2	M.01	$29.81	$ 1,065,705.13			
	1	13	4		Place 0.3 m thick liner protection layer of crushed rock	32,500	m^3	C.5.03	$18.83	$ 612,008.98			
Madrid North Vent Raise												**$47,093**	
MN-014	1	14	1	Vent Raise	Remove ducts, pipes, and cables	100	lm	C.3.16	$105.70	$ 10,570.01	$ 23,119.65		
	1	14	2		Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top	1	each	C.6.03	$12,549.65	$ 12,549.65			
MN-015	1	15	1	Ventilation and Heating Facilities	Decommission and dismantle all ventilation and heating facilities	2	each	C.1.05	$603.78	$ 1,207.57	$ 3,658.81		
	1	15	2		Prepare units for shipping off-site	2	each	C.1.08	$1,110.00	$ 2,220.01			
	1	15	3		Haul units to Roberts Bay	2	each	C.4.16	$94.94	$ 189.88			
	1	15	4		Regrade pads for positive drainage	3,540	m^2	C.5.18	$0.01	$ 41.36			
MN-016	1	16	1	Offices & Support Complex	Decommission (electrical, mechanical, plumbing)	4	each	C.1.05	$603.78	$ 2,415.13	$ 7,285.13		
	1	16	2		Disconnect trailers and prep for moving (remove boards, cladding, etc.; wrap in plastic)	4	each	C.1.08	$1,110.00	$ 4,440.02			Modular trailers / Seacans
	1	16	3		Haul trailers to Roberts Bay for shipping off-site	4	each	C.4.16	$94.94	$ 379.75			
	1	16	4		Demolish cribbing, stairs, entryways, etc.	2	m^2	C.3.05	$7.93	$ 15.85			
	1	16	5		Collect all debris	119	m^2	C.3.10	$0.14	$ 16.26			
	1	16	6		Load waste into containers for shipping off-site	2	m^3	C.4.01	$4.97	$ 9.95			
	1	16	7		Haul containers to Roberts Bay laydown	2	m^3	C.4.14	$4.09	$ 8.17			
	1	16	8		Regrade area for positive drainage	-	m^2	C.5.18	$0.01	$ -			Accounted for in MN-015
MN-017	1	17	1	Diesel Generator	Decommission (electrical)	1	each	C.1.06	$636.82	$ 636.82	$ 1,872.86		Mobile generator
	1	17	2		Disconnect containers and prep for shipping off-site	1	each	C.1.08	$1,110.00	$ 1,110.00			
	1	17	3		Haul containers to Roberts Bay laydown	1	each	C.4.16	$94.94	$ 94.94			
	1	17	4		Collect all debris	30	m^3	C.3.10	$0.14	$ 4.06			
	1	17	5		Load waste into containers for shipping off-site	3	m^3	C.4.01	$4.97	$ 14.84			
	1	17	6		Haul containers to Roberts Bay laydown	3	m^3	C.4.14	$4.09	$ 12.19			
MN-018	1	18	1	Fuel Containment Area	Drain and decommission Enviro Tank	1	each	C.2.03	$241.82	$ 241.82	$ 7,276.42		
	1	18	2		Haul Enviro Tank to Roberts Bay	1	each	C.4.16	$94.94	$ 94.94			
	1	18	3		Load contained contaminated soils into megabags for shipping off-site	80	m^3	C.4.12	$69.79	$ 5,610.96			
	1	18	4		Remove liner and cut into manageable pieces	2,302	m^2	C.3.02	$0.15	$ 347.92			
	1	18	5		Haul containers to Roberts Bay	101	m^3	C.4.14	$4.09	$ 413.08			
	1	18	6		Backfill area to prevent permanent ponding	750	m^2	C.5.05	$0.76	$ 567.71			
MN-019	1	19	1	Vent Raise access road	Crown road for positive drainage	0	km	C.5.17	$1,017.65	$ 71.24	$ 71.24		
MN-020	1	20	1	Pipe Culvert	Remove pipe culvert at Doris Windy Road entrance	40	lm	C.5.15	$92.11	$ 3,702.65	$ 3,809.08		Double Culvert
	1	20	2		Load all debris and waste into containers and	12	m^3	C.4.01	$4.97	$ 58.44			
	1	20	3		Haul containers to Roberts Bay	12	m^3	C.4.14	$4.09	$ 47.99			
Madrid South All-weather Road												**$17,239**	
Madrid South All-weather Road												**$17,239**	
MR-001	2	1	1	Madrid South All-Weather Road	Crown road for positive drainage	5	km	C.5.17	$1,017.65	$ 5,134.04	$ 5,134.04		
MR-002	2	2	1	Crossing #1	Remove pipe culvert at crossing #1	61	lm	C.5.15	$92.11	$ 5,618.45	$ 6,052.48		Double Culvert
	2	2	2		Load all debris and waste into containers and	48	m^3	C.4.01	$4.97	$ 238.32			
	2	2	3		Haul containers to Roberts Bay	48	m^3	C.4.14	$4.09	$ 195.72			
MR-003	2	3	1	Crossing #2	Remove pipe culvert at Crossing #2	61	lm	C.5.15	$92.11	$ 5,618.45	$ 6,052.48		Double Culvert
	2	3	2		Load all debris and waste into containers and	48	m^3	C.4.01	$4.97	$ 238.32			
	2	3	3		Haul containers to Roberts Bay	48	m^3	C.4.14	$4.09	$ 195.72			

Worksheet 2: Detailed Cost Estimate

Work Area Code	Item	Task	Sub-task	Activity	Task	Quantity	Unit	Cost Code	Unit Cost	Task Total	Activity Total	Subtotals	Source / Comments
Madrid South Portal and Vent Raise												**$1,751,218**	
Infrastructure Pad Area												**$35,666**	
MS-001	3	1	1	Shop	Decommission electrical, mechanical (including connections to generator house & transformer)	3	each	C.1.05	$603.78	$ 1,811.35	$ 21,661.94		
	3	1	2		Demolish building	2,250	m^2	C.3.05	$7.93	$ 17,835.91			
	3	1	3		Collect Debris	450	m^2	C.3.10	$0.14	$ 61.29			
	3	1	4		Load waste into containers for shipping off-site	198	m^3	C.4.01	$4.97	$ 985.38			
	3	1	5		Haul debris to Roberts Bay laydown	198	m^3	C.4.15	$4.89	$ 968.01			
MS-002	3	2	1	Fuel Storage Facility	Drain and decommission Enviro Tank	1	each	C.2.03	$241.82	$ 241.82	$ 7,131.24		
	3	2	2		Haul Enviro Tank to Roberts Bay	1	each	C.4.17	$113.57	$ 113.57			
	3	2	3		Load contained contaminated soils into megabags for shipping off-site	80	m^3	C.4.12	$69.79	$ 5,610.96			
	3	2	4		Load all debris and waste into containers for Shipping offsite	21	m^3	C.4.01	$4.97	$ 103.06			
	3	2	5		Haul containers to Roberts Bay	101	m^3	C.4.15	$4.89	$ 494.13			
	3	2	6		Backfill area to prevent permanent ponding	750	m^2	C.5.05	$0.76	$ 567.71			
MS-003	3	3	1	Offices & Support Complex	Decommission (electrical, mechanical, plumbing)	4	each	C.1.05	$603.78	$ 2,415.13	$ 5,001.89		
	3	3	2		Disconnect trailers and prep for moving (remove boards, cladding, etc.; wrap in plastic)	2	each	C.1.08	$1,110.00	$ 2,220.01			
	3	3	3		Haul trailers to Roberts Bay for shipping off-site	2	each	C.4.17	$113.57	$ 227.13			
	3	3	4		Demolish cribbing, stairs, entryways, etc.	-	m^2	C.3.05	$7.93	$ -			Demolish Office Builidng, Minedry, and Admin Builidng
	3	3	5		Collect all debris	60	m^3	C.3.10	$0.14	$ 8.17			
	3	3	6		Load waste into containers for shipping off-site	-	m^3	C.4.01	$4.97	$ -			
	3	3	7		Haul containers to Roberts Bay laydown	-	m^3	C.4.15	$4.89	$ -			
	3	3	8		Regrade area for positive drainage	11,250	m^2	C.5.18	$0.01	$ 131.44			
MS-004	3	4	1	Fresh Water Pipelines Leg 2 - Discontinued	Cut pipelines into manageable pieces	-	lm	C.3.03	$10.38	$ -	$ -		
	3	4	2		Decommission electrical (heat tracing)	-	each	C.1.05	$603.78	$ -			
	3	4	3		Collect electrical cables and controllers and prep for shipping off-site	-	m^2	C.3.10	$0.14	$ -			
	3	4	4		Load debris into containers for transport (to Roberts Bay)	-	m^3	C.4.01	$4.97	$ -			
	3	4	5		Haul debris to Roberts Bay	-	m^3	C.4.15	$4.89	$ -			
MS-005	3	5	1	Diesel Generator	Decommission (electrical)	1	each	C.1.06	$636.82	$ 636.82	$ 1,870.66		Mobile Generator
	3	5	2		Disconnect containers and prep for shipping off-site	1	each	C.1.08	$1,110.00	$ 1,110.00			
	3	5	3		Haul containers to Roberts Bay laydown	1	each	C.4.17	$113.57	$ 113.57			
	3	5	4		Collect all debris	3	m^2	C.3.10	$0.14	$ 0.41			
	3	5	5		Load waste into containers for shipping off-site	1	m^3	C.4.01	$4.97	$ 4.97			
	3	5	6		Haul containers to Roberts Bay laydown	1	m^3	C.4.15	$4.89	$ 4.89			
Laydown Pad												**$58**	
MS-006	3	6	1	Laydown Pad	Regrade area for positive drainage	5,000	m^2	C.5.18	$0.01	$ 58.42	$ 58.42		
Portal Area												**$24,293**	
MS-007	3	7	1	Portal and Underground Works	Remove ducts, pipes, electrical cables	100	lm	C.3.16	$105.70	$ 10,570.01	$ 23,890.31		assuming 100m length
	3	7	2		Construct portal plug	707	m^3	C.5.03	$18.83	$ 13,309.78			
	3	7	3		Regrade area for positive drainage	900	m^2	C.5.18	$0.01	$ 10.52			
MS-008	3	8	1	Brine Mixing Facility	Drain and decommission 50000L water storage tank	1	each	C.1.12	$241.82	$ 241.82	$ 402.23		
	3	8	2		Haul water tank to Roberts Bay Laydown	1	each	C.4.17	$113.57	$ 113.57			
	3	8	3		Load excess CaCl2 into container for shipping off site	2	m^3	C.4.01	$4.97	$ 9.95			
	3	8	4		Collect all debris	54	m^2	C.3.10	$0.14	$ 7.41			
	3	8	5		Load waste into containers for shipping off-site	2	m^3	C.4.01	$4.97	$ 9.95			
	3	8	6		Haul containers to Roberts Bay laydown	4	m^3	C.4.15	$4.89	$ 19.55			
Primary Pollution Control Area												**$10,902**	
MS-009	3	9	1	Primary Pollution Control Pond	Disconnect piping and electrical wiring, remove sump pumps	2	each	C.1.05	$603.78	$ 1,207.57	$ 10,901.68		
	3	9	2		Breach Pollution Control pond containment berms	300	m^2	C.5.05	$0.76	$ 227.08			
	3	9	3		Remove and cut liner system into manageable pieces	27,359	m^2	C.3.02	$0.15	$ 4,134.94			Liner+Geotextile
	3	9	4		Load waste into containers for shipping off-site	340	m^3	C.4.01	$4.97	$ 1,692.34			Liner+Geotextile
	3	9	5		Haul containers to Roberts Bay laydown	340	m^3	C.4.15	$4.89	$ 1,662.50			
	3	9	6		Rip-rap breach for erosion protection	105	m^3	C.5.03	$18.83	$ 1,977.26			
Haul Road and Water Supply Infrastructure												**$5,038**	
MS-010	3	10	1	Secondary Pollution Control Pond	Disconnect piping and electrical wiring, remove sump pumps	2	each	C.1.05	$603.78	$ 1,207.57	$ 4,059.14		
	3	10	2		Breach pollution pontrol pond containment berms	300	m^2	C.5.05	$0.76	$ 227.08			
	3	10	3		Remove and cut liner into manageable pieces	2,586	m^2	C.3.02	$0.15	$ 390.84			Liner+Geotextile
	3	10	4		Load waste into containers for shipping off-site	26	m^3	C.4.01	$4.97	$ 129.34			Liner+Geotextile
	3	10	5		Haul containers to Roberts Bay laydown	26	m^3	C.4.15	$4.89	$ 127.06			
	3	10	6		Rip-rap breach for erosion protection	105	m^3	C.5.03	$18.83	$ 1,977.26			
MS-011	3	11	1	Haul and Access Roads	Crown road for positive drainage -	1	km	C.5.17	$1,017.65	$ 978.98	$ 978.98		Haul road + VR access road (Haul road width ~2x standard 2 lane
MS-012	3	12	1	Pumphouse - Discontinued	Remove water intake line from Patch Lake	-	lm	C.3.03	$10.38	$ -	$ -		
	3	12	2		Decommission pumping facility (remove electrical)	-	each	C.1.03	$1,237.87	$ -			
	3	12	3		Prep containers for shipping off-site	-	each	C.1.08	$1,110.00	$ -			
	3	12	4		Collect Debris	-	m^2	C.3.10	$0.14	$ -			
	3	12	5		Load debris into containers for transport (to Roberts Bay)	-	m^3	C.4.01	$4.97	$ -			
	3	12	6		Haul debris to Roberts Bay	-	m^3	C.4.15	$4.89	$ -			
MS-013	3	13	1	Freshwater Pipeline Leg 1 - Discontinued	Cut pipelines into manageable pieces	-	lm	C.3.03	$10.38	$ -	$ -		
	3	13	2		Decommission electrical (heat tracing)	-	each	C.1.05	$603.78	$ -			
	3	13	3		Collect electrical cables and controllers and prep for shipping off-site	-	m^2	C.3.10	$0.14	$ -			
	3	13	4		Load debris into containers for transport (to Roberts Bay)	-	m^3	C.4.01	$4.97	$ -			
	3	13	5		Haul debris to Roberts Bay	-	m^3	C.4.15	$4.89	$ -			
Infrastructure Access Road												**$247**	
MS-014	3	14	1	Infrastructure Access Road	Crown road for positive drainage	0	km	C.5.17	$1,017.65	$ 247.29	$ 247.29		
Waste Rock Pile												**$1,648,470**	
MS-015	3	15	1	Waste Rock Pile	Resloping from 2:1 to 3:1	26,470	m^2	C.5.06	$1.01	$ 26,715.06	$ 1,648,469.53		no waste rock left on surface
	1	15	2		Regrade top surface for positive drainage	18,738	m^2	C.5.05	$0.76	$ 14,183.61			
	3	15	3		Cover entire dump with HDPE liner,	46,002	m^2	M.01	$29.81	$ 1,371,316.57			
	3	15	4		Place 0.3 m thick liner protection layer of crushed rock	12,546	m^3	C.5.03	$18.83	$ 236,254.30			
Ore Storage Pad												**$143**	
MS-016	3	16	1	Ore Stockpile Pad	Regrade area for positive drainage	12,200	m^2	C.5.18	$0.01	$ 142.54	$ 142.54		Assume no ore was left on surface after end of operation
Madrid South Vent Raise Area												**$26,402**	
MS-017	3	17	1	Vent Raise	Remove ducts, pipes, and cables	25	lm	C.3.16	$105.70	$ 2,642.50	$ 15,192.15		
	3	17	2		Construct a concrete cap (0.5 m thick reinforced concrete) to seal the top	1	each	C.6.03	$12,549.65	$ 12,549.65			
MS-018	3	18	1	Ventilation and Heating Facilities	Decommission and dismantle all ventilation and heating facilities	4	each	C.1.05	$603.78	$ 2,415.13	$ 3,731.00		
	3	18	2		Prepare units for shipping off-site	1	each	C.1.08	$1,110.00	$ 1,110.00			
	3	18	3		Haul units to Roberts Bay	1	each	C.4.17	$113.57	$ 113.57			
	3	18	4		Regrade pads for positive drainage	7,900	m^2	C.5.18	$0.01	$ 92.30			
MS-019	3	19	1	Fuel Containment Area	Drain and decommission Enviro Tank	1	each	C.2.03	$241.82	$ 241.82	$ 7,479.16		
	3	19	2		Haul Enviro Tank to Roberts Bay	1	each	C.4.17	$113.57	$ 113.57			
	3	19	3		Load contained contaminated soils into megabags for shipping off-site	80	m^3	C.4.12	$69.79	$ 5,610.96			
	3	19	4		Remove liner and cut into manageable pieces	2,302	m^2	C.3.02	$0.15	$ 347.92			
	3	19	5		Load all debris and waste into containers and	21	m^3	C.4.01	$4.97	$ 103.06			
	3	19	6		Haul containers to Roberts Bay	101	m^3	C.4.15	$4.89	$ 494.13			
	3	19	7		Backfill area to prevent permanent ponding	750	m^2	C.5.05	$0.76	$ 567.71			
Additional Direct Costs												**$816,544**	
Off-site Shipping for Disposal												$816,544	
DN-001	4	1	1	Ship off-site for disposal by barge	Hazardous waste	37	m^3	S.02	$212.35	$ 7,772.06	$739,778		
	4	1	2		Non-Hazardous waste and demolition debris	1,450	m^3	S.03	$212.35	$ 307,910.22			
	4	1	3		Hydrocarbon contaminated soils	241	m^3	S.01	$1,050.08	$ 253,278.75			Major areas within fuel containment berms; remainder to be identified by inspector on site
	4	1	4		Shipping Mobile units from Roberts Bay	21	each	S.04	$8,134.12	$ 170,816.54			
	4	1	5		Warehouse inventory in seacan containers or loose materials	-	each	S.04	$8,134.12	$ -			
DN-002	4	2	1	Disposal fees in licensed facility	Hazardous waste	1	LS		$25,000.00	$ 25,000.00	$76,766		
	4	2	2		Non-hazardous waste and demolition debris	1,450	m^3	M.10	$5.68	$ 8,229.96			
	4	2	3		Disposal fees at Hay River	410	t	H.05	$106.18	$ 43,536.29			
Water Management												$0	
WM-001	4	1	1	Madrid North Water Management - Discontinued		0	LS	x	$	-	$ -	$0	
WM-002	4	2	1	Madrid South Water Management - Discontinued		0	LS	x	$	-	$ -	$0	90 day seasons assumed for each year of post-closure water management
TOTAL DIRECT COSTS												**$4,415,378**	
INDIRECT CLOSURE COSTS													
Contingency												**$719,767**	
-	1	1	-	Contingency	20% of direct costs	20%	%	x		$3,598,834	$719,766.84		
Mobilization & Demobilization												**$ 711,993**	
-	2	1	1	Site demolition	Mob/Demob	1.0	ls	x	$	427,514.83	$427,515		Equipment mobilised from Edmonton
	2	2	1	Dam breach	Mob/Demob	1.0	ls	x	$	284,478.30	$284,478		Equipment demobilised to Edmonton
General and Administration costs												**$ 34,313**	
-	3	1	-	Travel allowance		1	LS	x		$11,592.18	$11,592		Charter Yellowknife-Doris and return
-	3	3	-	Camp Operations		147.0	person-days	OC.02		$154.56	$22,721		For all work including Water management, assumes use of Doris camp (Calculated on the MobDemob Tab)
Field support												**$ 30,499**	
-	4	1	-	Supervision		13	days	x	$	1,244	$16,287		
-	4	2	-	Equipment maintenance support - Mechanic		13	days	x	$	1,086	$14,212		
Hydrocarbon decontamination												**$ 150,000**	
-	5	1	-	Engineering Design		1.0	LS	x	$	50,000	$50,000		
-	5	2	-	Confirmatory Sampling and Analysis		1.0	LS	x	$	100,000	$100,000		
Post-closure Monitoring												**$ 1,060,000**	
	6	1	1	Covers Monitoring	Bi-annual for 10 years	5	LS	x	$	70,000	$350,000		
	6	1	2	Geotechnical Inspection (including Permafrost Monitoring)	Annual for 3 consecutive years	3	LS	x	$	70,000	$210,000		
	6	1	3	Vegetation Survey	Years 1, 3, 7, and 10 after closure	4	LS	x	$	50,000	$200,000		
	6	1	4	Water Quality Monitoring	Yearly for 5 years	5	LS	x	$	60,000	$300,000		
Other													
-	9	1	-	Contractor profit	% of direct and other indirect costs (excluding contingency)	-	%	of	$	5,342,183	$0.00		included in equipment unit rates and POH (i.e. Production Overhead) labor cost
-	9	2	-	Contractor Bonding	% of direct cost	-	%	of	$	4,415,378	$0		
Subtotal Indirect Costs				Subtotal Indirect Costs								**$2,706,572**	
CLOSURE COSTS - TOTAL												**$7,121,950**	

Worksheet 3: Indirect Cost Calculations

Mob/Demob Costs

Crew mobilization costs included in loaded labour rates.
The barging fee for equipment is calculated on a square foot basis.

No. of units	Description	Units	Quantity	Unit cost	Task cost	Notes
Camp Demolitior	Construction equipmen	Footprint				
1	Bobcat	m^2	11.0	$ 332.96	$ 3,657.90	From Hay River to Roberts Bay
1	Loader	m^2	10.2	$ 332.96	$ 3,400.45	From Hay River to Roberts Bay
1	Dozer	m^2	20.3	$ 332.96	$ 6,750.26	From Hay River to Roberts Bay
1	Excavator	m^2	38.1	$ 332.96	$ 12,687.55	From Hay River to Roberts Bay
1	small equipment	m^2	24.1	$ 332.96	$ 8,025.01	From Hay River to Roberts Bay
1	Trucks (CAT 735)	m^2	41.6	$ 332.96	$ 13,860.35	From Hay River to Roberts Bay
1	Tractor trailer	m^2	86.8	$ 332.96	$ 28,907.95	From Hay River to Roberts Bay
1	Crewcab pickup (Ford F35	m^2	33.8	$ 332.96	$ 11,254.35	From Hay River to Roberts Bay
8	Haul equipment to Shippin	each	8	$ 15,000.00	$ 120,000.00	hauling 8 trailers from Edmonton to Hay River / source: Doris cost estimate
Subtotal Mobilization					**$ 208,544**	
Subtotal Demobilization					**$ 218,971**	Assumes same cost as mobilization, updated by 5%
Total					***$ 427,515***	

Dam Breach	Construction equipmen	Footprint				
0	Bobcat	m^2	11.0	$ 364.67	$ -	From Hay River to Roberts Bay
1	Loader	m^2	10.2	$ 364.67	$ 3,724.30	From Hay River to Roberts Bay
1	Dozer	m^2	20.3	$ 364.67	$ 7,393.14	From Hay River to Roberts Bay
1	Excavator	m^2	38.1	$ 364.67	$ 13,895.89	From Hay River to Roberts Bay
0	small equipment	m^2	24.1	$ 364.67	$ -	From Hay River to Roberts Bay
1	Trucks (CAT 735)	m^2	41.6	$ 364.67	$ 15,180.38	From Hay River to Roberts Bay
0	Tractor trailer	m^2	86.8	$ 364.67	$ -	From Hay River to Roberts Bay
1	Crewcab pickup (Ford F35	m^2	33.8	$ 364.67	$ 12,326.20	From Hay River to Roberts Bay
5	Haul equipment to Shippin	each	5	$ 17,250.00	$ 86,250.00	hauling 8 trailers from Edmonton to Hay River / source: Doris cost estimate
Subtotal Mobilization					**$ 138,770**	
Subtotal Demobilization					**$ 145,708**	Assumes same cost as mobilization, updated by 5%
Total					***$ 284,478***	

Camp Cost

Description	Units	Cost Code	Unit Cost	Quantity										Total	Task Cost	Notes
				Year 1 (Site Demolition+ Water Management)	Year 2 (Water Management)	Year 3 (Water Management+Berm Breaches)	Year 4 (Water Management)	Year 5 (Water Management)	Year 6 (Water Management)	Year 7 (Water Management)	Year 8 (Water Management)	Year 9 (Water Management)	Year 10 (Water Management)			
Camp Managemen	day	OC.01	$697.59	0	0	0	0	0	0	0	0	0	0	0	$0	
Camp Operations	per day per persor	OC.02	$154.56	131	0	16	0	0	0	0	0	0	0	147	$22,721	the cost accrued for water management is accounted for under the WM section, Dam breach crew 3 people over 5 days
Camp Renta	year	OC.03	$412,166.38	0	0	0	0	0	0	0	0	0	0	0	$0	
Travel allowance	charter flights	OC.05	$10,304.16	0	0	0								0	$0	charter flights for 15 person crews
	commercial flights	OC.04	$772.81	12	0	3								15	$11,592	3 person crew for dam breach, including engineer/surveyor
				$ 29,521.42	$ -	**$ 4,791.43**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 34,312.85**	**$34,313**	

Worksheet 4: Unit Rates

Cost Code	Item	2014 Unit rate	Unit	Comment	Source
Equipment					
E.01	Dozer (CAT D7)		hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.02	Dozer (CAT D4)	$ 91.95	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.03	Dozer (CAT D4) w/ Tiller	$ 105.74	hr	15% added for tiller attachment	Nuna 2012 Equipment Rates; Adjusted to 2014
E.04	Truck (CAT 730)	$ 147.27	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.05	Excavator (CAT 330 CL)	$ 196.43	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.06	Loader (CAT IT38/930)	$ 87.38	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.07	Skidder (CAT Bobcat)	$ 85.05	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.08	Helicopter	$ 2,229.69	hr	fuel surcharge applies	IMiskolczi (from Angela Holtzapfel@HBML ESR); Adjusted to 2014
E.09	Welding Equipment	$ 61.08	day	300 Amps, gas/diesel driven	2009 BC Blue Book + 10% Northern Allowance, 10% fuel factor; Adjusted to 2014
E.10	Power washer	$ 72.00	day	Hot water pressure washer - 3000 PSI	www.abtoolrentals.com/equipment.asp?action=category&category=190&key=190%2D0079
E.11	Drum crusher	$ 37.80	hr	30 tones, mobile	2012 cost; Adjusted to 2014
E.12	Oil-water separator	$ 29.20	hr	10 GPM, underground	2012 cost; Adjusted to 2014
E.13	Air Track Drill	$ 302.50	hr	200 cfm compressor, 196 HP diesel engine	2013-2014 BC Blue Book + 10% Northern Allowance+10% fuel factor
E.14	Tractor Trailer (6 axle lowbed+booster)	$ 81.73	hr	hourly equipment rate (less operator)	2013-2014 BC Blue Book + 10% Northern Allowance
E.15	Flatbed truck (6x4, 5 tonne)	$ 23.05	hr	hourly equipment rate (less operator)	2013-2014 BC Blue Book + 10% Northern Allowance
E.13	Clemro Crusher	$ 836.03	hr	200 tons/hr (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
E.14	Motor Grader CAT 16M	$ 169.67	hr	hourly equipment rate (less operator)	Nuna 2012 Equipment Rates; Adjusted to 2014
Materials					
M.01	Liner - HDPE	$ 29.81	m^2	supply and install	from JDS (Surface Water Management Options Analysis); Adjusted to 2014
M.02	Liner - geotextile	$ 27.44	m^2	supply and install	from JDS (Surface Water Management Options Analysis); Adjusted to 2014
M.03	Fuel (Diesel)	$ 1.40	L	2014 Landed fuel cost at Hope Bay	Lowell (from site @ TMAC, April 2014)
M.04	Explosives	$ 64.38	lbs	15% freight cost added	Costmine 2012; Adjusted to 2014
M.05	Silt Fencing	$ 1.44	m	15% freight cost added	Cost Mine 2011; original price quoted in linear ft; Adjusted to 2014
M.06	Coco-matting	$ 1.96	m^2	15% freight cost added	Cost Mine 2011; original price quoted in sq. yards; Adjusted to 2014
M.07	Seed/Fertilizer	$ 17.12	kg	15% freight cost added	Arctic Alpine seed mix+ fertilizer (2009 increase by 6% to 2013 based on inflation); Adjusted to 2014
M.08	Winter road	$ 17,697.65	km	open and maintain for 2 months	NUNA Logistics (from Court Smith) + 18% cost increase to 2013; Adjusted to 2014
M.09	Hazardous Waste Disposal fee	$ 10,304.16	m^3	Disposal + handling and cleaning fee	SRK estimate; Adjusted to 2014
M.10	Demolition Debris Disposal Fee (@Hay River)	$ 5.68	m^3	Disposal + handling fee	Personal communication with Rob Jamieson@Hay River Disposals Ltd.; Adjusted to 2014
M.12	Bentonite chips	$ 588.33	m^3	In 50 pound bags, 15% freight cost added	Holly North Production Supplies Limited; Adjusted to 2014
M.13	Plastic wrapping	$ 1.06	m^2	in 14 ft wide rolls	web search; shrinkit-inc.com accessed June15, 2012; Adjusted to 2014
Labour					
L.01	Labour general	$ 60.45	hr		Nuna Blended 2012 rate, POH included; Adjusted to 2014
L.02	Labour - Trades	$ 90.49	hr	Electrician, Welder, plumber etc.	Nuna Blended 2012 rate, POH included; Adjusted to 2014
L.05	Supervision	$ 103.70	hr		Nuna Blended 2012 rate, POH included; Adjusted to 2014
L.06	Truck Drivers	$ 69.85	hr	Heavy Equipment	Nuna Blended 2012 rate, POH included; Adjusted to 2014
L.07	Heavy Equipment Operator	$ 75.69	hr	Light equipment	Nuna Blended 2012 rate, POH included; Adjusted to 2014
L.08	Technician (Consultant)	$ 135.00	hr	Staff Consultant	SRK-Estimate (all inclusive)
L.09	Note: Loading Rate includes allowances for (EI, CPP, MSP/Benefits/Travel/OT)				
Shipping					
S.01	Outbound Shipping - Soils	$ 1,050.08	m^3	1.7 t/m^3 bulk density	(7.75 m^3/seacan based on 29,000 lbs limit per seacan, seacan is 38.5 m^3) - from NTCL 17APR 12; Adjusted to 2014
S.02	Outbound Shipping - Haz Waste	$ 212.35	m^3	1.0 t/m^3 bulk density	(7.75 m^3/seacan based on 29,000 lbs limit per seacan, seacan is 38.5 m^3) - from NTCL 17APR 12; Adjusted to 2014
S.03	Outbound Shipping - Demolition	$ 212.35	m^3	0.733 t/m^3 bulk density	$7661/seacan (seacan is 38.5 m^3) - from NTCL 17APR 12; Adjusted to 2014
S.04	Shipping cost per seacan	$ 8,134.12	each		NTCL 17Apr 2012; Adjusted to 2014
Hydrocarbon Soils and Haz Waste					
H.01	Excavate impacted soil	$ 19.76	m^3		WESA estimate say reference; Adjusted to 2014
H.02	Low temperature thermal desorption	$ 103.04	m^3		WESA estimate say reference; Adjusted to 2014
H.03	Rehydrate and backfill	$ 11.02	m^3		WESA estimate say reference; Adjusted to 2014
H.04	Regrade and reshape	$ 2.45	m^2		WESA estimate say reference; Adjusted to 2014
H.05	Tipping Fee for HC Soils at Hay River	$ 106.18	tonne		Communication with Hay River Landfill Tsharp 18APR12; Adjusted to 2014
Owner's cost					
OC.01	Camp management	$ 697.59	day		Newmont; Adjusted to 2014
OC.02	Camp operations	$ 154.56	day	includes food and camp maintenance	Newmont; Adjusted to 2014
OC.03	Camp rental	$ 412,166.38	year	25 man mobile camp	Newmont; Adjusted to 2014
OC.04	Commercial flight	$ 772.81	person	flight from Yellowknife to Cambridge Bay and re	Adjusted to 2014
OC.05	Charter flight	$ 10,304.16	flight	Return from Yellowknife	

Worksheet 5: Task Unit Rate Calculations

Cost Code	Item	Unit	Productivity (Unit/hr)	Unit Rates: Total Unit Cost	Unit Rates: Material Unit Rate	Unit Rates: Labour Unit Rate	Unit Rates: Equipment Unit Rate	Labour: General Labour $ 60.45	Labour: Trades - Electrical $ 90.49	Labour: Trades - Mechanic $ 90.49	Labour: Trades - Plumbing $ 90.49	Labour: Engineer / Technician $ 135.00	Labour: Light Equipment Operator $ 69.85	Equipment: Heavy Equipment Operator $ 75.69	Equipment: Dozer - CAT D7 $ -	Equipment: Excavator - Cat 330 $ 196.43	Equipment: Loader - CAT 966 $ 87.38	Equipment: Motor grader CAT 14M $ 169.67	Equipment: Skidder CAT 242 $ 85.05	Equipment: Truck - CAT 730 $ 147.27	Equipment: Tractor Trailer $ 81.73	Equipment: Flatbed truck (5 tonne) $ 23.05	Equipment: Helicopter $ 2,229.69	Equipment: Drill $ 302.50	Drum crusher 37.799	Power washer 7.2	Welding Equipment 61.07781	Crusher 836.0275	Note / Source
Decomissioning																													
C.1.01	Decomission and remove all heating fuel tanks and place into lined facility	each	4.00	$ 71.00	$ -	$ 49.15	$ 21.85	2						1			1												Disconnect and remove all fuel drums and disconnect all Tidy Tanks from all structures
C.1.02	Decomission above ground storage tanks	each	0.5	$ 422.80	$ -	$ 422.80	$ -	2	1																				
C.1.03	Decomission potable water supply	each	0.25	$ 1,237.87	$ -	$ 1,041.44	$ 196.43	1	1		1			0.25		0.25													Disconnect all electrical and plumbing (intake and distribution)
C.1.04	Decomission waste incinerator	each	0.17	$ 1,150.29	$ -	$ 1,019.22	$ 131.07	1		1				0.25			0.25												Disconnect and remove fuel storage
C.1.05	Decommission Main Camp Facility electricity	each	0.25	$ 603.78	$ -	$ 603.78	$ -	1	1																				De-energise main electrical board, disconnect auxiliary power (if exists)
C.1.06	Decommission electrical generators	each	0.46	$ 636.82	$ -	$ 541.84	$ 94.98	2	1					0.5			0.5												De-energise main breaker board, disconnect external fuel tanks (if needed) / loader used for lifting; source - RSMeans (260505252100)
C.1.07	Dismantle Satelite/Comunication Equipment	each	0.5	$ 332.31	$ -	$ 332.31	$ -	2	0.5																				source - SRK estimate
C.1.08	Prep portable trailers for moving (remove cladding, apply shrinkwrap etc.)	each	0.25	$ 1,110.00	$ 58.40	$ 876.84	$ 174.77	3						0.5			0.5												
C.1.09	Decommision Airstip - Place large X's at each end of strip	each	0.5	$ 291.82	$ 50.00	$ 241.82	$ -	2																					Assumed material cost for a high density plastic, nails and sandbags.
C.1.10	Dismantle airstip approach lights	each	4	$ 37.74		$ 37.74	$ -	1	1																				
C.1.11	Dismantle Hoper, Crusher	each	0.05	$ 3,018.91		$ 3,018.91	$ -	1	1																				
C.1.12	Drain above ground water storage tank	each	0.5	$ 241.82	$ -	$ 241.82	$ -	2																					Drain 50000L water tank - SRK estimate
Decontamination																													
C.2.01	Collect hazardous chemical waste and place in suitable containers	m3	0.17	$ 2,066.64	$ -	$ 1,542.35	$ 524.30	3						1			1												Includes all chemicals on site / jm_Estimate
C.2.02	Drain and power-wash heating fuel tanks (Tidy Tanks)	each	6.00	$ 21.35	$ -	$ 20.15	$ 1.20	2																		1			Drain fuel from tanks and wash exterior with hot water (collect water for treatment)
C.2.03	Drain above ground fuel storage tank	each	0.5	$ 241.82	$ -	$ 241.82	$ -	2																					Drain fuel /source - SRK estimate
C.2.04	Pressure wash above ground fuel tank	each	0.16	$ 800.68	$ -	$ 755.68	$ 45.00	2																		1			
C.2.05	Drain and power-wash empty fuel drums	each	12	$ 16.98	$ -	$ 16.38	$ 0.60	2						1												1			Drain fuel and tripple-rinse drum (collect water for treatment)
C.2.06	Flush sewage treatment unit and collect sewage sludge	each	0.4	$ 524.12	$ -	$ 396.89	$ 127.23	2						0.5			0.5									1			Flush treatment unit with water (collect water for treatment)/source - SRK estimate
C.2.07	Empty incinerator and collect ashes	m3	0.25	$ 567.97	$ -	$ 393.21	$ 174.77	1						0.5			0.5												Place ashes and unburned contents into containers / see C.6.04
C.2.08	Operate oil/water separator	m3	6.60	$ 28.57	$ -	$ 27.48	$ 1.09	3																		1			Collect skimmed oil from seperator and place in suitable container - 15 minutes per 55 gal. drum
C.2.09	Empty soil from 45 gallon drums	each	4	$ 98.26	$ -	$ 49.15	$ 49.11	2						1		1													
C.2.10	Liner pressure wash cleaning	m2	360	$ 0.36	$ -	$ 0.34	$ 0.02	2																		1			
Demolition																													
C.3.01	Crush empty fuel drums	each	20.00	$ 16.09	$ -	$ 9.83	$ 6.26	2						1			1								1				
C.3.02	Cut Tank Farm geomembrane to manageable size	sq. m	1200.00	$ 0.15	$ -	$ 0.15	$ -	3																					source - SRK estimate
C.3.03	Remove intake hoses and cut to manegeable size	Lm	100	$ 10.38	$ -	$ 1.59	$ 8.80	2						0.5			0.5											1	source - SRK estimate
C.3.04	Dismantle pollution control berm	each	0.50	$ 241.82	$ -	$ 241.82	$ -	2																					
C.3.05	Demolish office buildings/ shop structures/ living quarters	m3	53.00	$ 7.93	$ -	$ 6.28	$ 1.65	3						2	1		1												Demolish empty wood structures (offices, shacks, etc.)/ source - ECHOS
C.3.06	Demolish helipads/ float plane dock	m3	75	$ 2.98	$ -	$ 1.82	$ 1.17	1						1			1												Demolish wood structure / source - SRK estimate
C.3.07	Demolish Above ground storage tanks	m3	5	$ 257.90	$ -	$ 51.41	$ 206.49	3						1		1												1	
C.3.08	Dismantle Old Equipment (torch)	each	0.5	$ 484.88	$ -	$ 362.73	$ 122.16	3																			1		
C.3.08	Cut off top of drill casings	each	2.00	$ 60.77	$ -	$ 30.23	$ 30.54	1																			1		
C.3.10	Clean up debris from site	m2	2529	$ 0.14	$ -	$ 0.10	$ 0.03	3						1			1												source - SRK estimate
C.3.11	Dismantle radio tower	each	0.04	$ 14,844.47	$ -	$ 10,130.27	$ 4,714.20	2	1			1		1		1													source - SRK estimate
C.3.12	Prep stacks for shipping	m	0.50	$ 447.06	$ -	$ 272.30	$ 174.77	1						1			1												Estimate
C.3.13	Dismantle Power Generator Stacks	m	0.50	$ 120.91	$ -	$ 120.91	$ -	1																					
C.3.14	Removing Cables and Posts	each	1.00	$ 393.03	$ -	$ 196.60	$ 196.43	2						1		1													
C.3.15	Remove Tank Insullation	each	0.30	$ 686.52	$ -	$ 403.03	$ 283.49	2											1										
C.3.16	Remove pipes, ducts, and electrical cables	m	2.00	$ 105.70	$ -	$ 105.70	$ -	2	1																				
C.3.17	Remove waste from Doris Mountain (helicopter support)	m3	1.00	$ 2,485.60		$ 255.91	$ 2,229.69	2				1												1					
Material Relocations																													
C.4.01	Load demolition debris/solid waste in containers	m3	48.00	$ 4.97	$ -	$ 3.15	$ 1.82							2	1		1												source - SRK calculated from first principles
C.4.02	Empty Seacan of debris at the landfill	each	5.7	$ 60.92	$ -	$ 26.52	$ 34.41							2	1	1													
C.4.04	Haul waste to Roberts Bay jetty in 20 ft container (33.2 m3/container)	m^2	59.67	$ 2.54	$ -	$ 1.17	$ 1.37								1							1						Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.06	Haul Containers on skids from beach laydown to Roberts Bay Jetty	each	1.20	$ 63.08	$ -	$ 63.08	$ -							1	1														
C.4.07	Haul Material From Doris Windy Road to Roberts Bay	m^2	36.31	$ 4.17	$ -	$ 1.92	$ 2.25								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.08	Haul Material From North Dam To Roberts Bay	m^2	51.64	$ 2.94	$ -	$ 1.35	$ 1.58								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.09	Haul Material From Reagent Pad To Roberts Bay	m^2	66.90	$ 2.27	$ -	$ 1.04	$ 1.22								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.10	Haul Mateiral From Airstrip to Roberts Bay	m^2	75.48	$ 2.01	$ -	$ 0.93	$ 1.08								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.11	Haul Mateiral to Jetty (Roberts Bay)	m^2	85.74	$ 1.77	$ -	$ 0.81	$ 0.95								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.12	Load soils into megabags	m^2	4.00	$ 69.79	$ -	$ 47.69	$ 22.10	2							1	0.45													
C.4.13	Haul Material From South Dam to Roberts Bay	m^2	41.85	$ 3.62		$ 1.67	$ 1.95								1							1							
C.4.14	Hauling bulk materials from Madrid North (Vent Raise) to Roberts Bay	m^2	37.11	$ 4.09	$ -	$ 1.88	$ 2.20								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.15	Hauling bulk materials from Madrid South to Roberts Bay	m^2	31.02	$ 4.89	$ -	$ 2.25	$ 2.63								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.16	Hauling containers from Madrid North (Vent Raise) to Roberts Bay	each	1.60	$ 94.94	$ -	$ 43.75	$ 51.19								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.17	Hauling containers from Madrid South to Roberts Bay	each	1.33	$ 113.57	$ -	$ 52.33	$ 61.23								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.18	Hauling discharge water from Madrid North (Vent Raise) to Tail Lake	m^3	13.25	$ 11.44	$ -	$ 5.27	$ 6.17								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
C.4.19	Hauling discharge water from Madrid South to Tail Lake	m^3	11.74	$ 12.91	$ -	$ 5.95	$ 6.96								1							1							Productivity calculation shown on 'Relocation Unit Cost' Worksheet
Earth works																													
C.5.01	Install HDPE Liner	m^2	175	$ 32.75	$ 29.81	$ 1.81	$ 1.12	4						1		1													
C.5.02	Load, haul, dump, place: 1 truck with <0.5 km haul distance	m^2	40	$ 14.12	$ -	$ 5.53	$ 8.59							2	1	1				1									
C.5.03	Load, haul, dump, place: 1 truck with <1.0 km haul distance	m^2	30	$ 18.83	$ -	$ 7.37	$ 11.46							2	1	1				1									
C.5.04	Excavate: Spoil locally, no trucks	m^2	100	$ 2.72	$ -	$ 0.76	$ 1.96							1		1													
C.5.05	Regrade surface - rough grading, D7	m^2	100	$ 0.76	$ -	$ 0.76	$ -							1	1														
C.5.06	Reslope Stockpiles - D7	m^2	75	$ 1.01	$ -	$ 1.01	$ -							1	1														
C.5.07	Relocate core box pallet (<0.5 km)	ea	6	$ 37.26	$ -	$ 22.69	$ 14.56	1						1			1												
C.5.08	Install soil stabilization measures (straw/coconut matting)	m^2	269	$ 4.36	$ 1.96	$ 1.35	$ 1.06	3.5						2		1	1												
C.5.09	Drill, blast Quarry	m^2	65	$ 43.72	$ 34.77	$ 4.30	$ 4.65	1				0.5		2										1					
C.5.10	Trackpack using loaded rock truck	m^2	100	$ 2.17		$ 0.70	$ 1.47								1							1							
C.5.11	Scaling (loose rock)	hr	1	$ 272.12	$ -	$ 75.69	$ 196.43							1		1													
C.5.12	Load, haul, dump place: 2 trucks with <1.0km haul distance	m^2	75	$ 10.43	$ -	$ 3.88	$ 6.55								2	2	1	1				2							
C.5.13	Seeding/Fertilizing: By hand, high application rate	m^2	320	$ 0.82	$ 0.26	$ 0.57	$ -	3							0														
C.5.14	Summer identification of low-lying areas	day	0.08	$ 6,994.02	$ 100.00	$ 2,345.45	$ 4,548.57	1				1												0.17					
C.5.15	Remove culvert and create swale	lm	5	$ 92.11	$ -	$ 52.82	$ 39.29	2				0.5		1		1													
C.5.16	Load, haul, dump, 2 trucks<0.5 km haul distance	m^2	80	$ 8.83	$ -	$ 2.69	$ 6.14							1	2	1		1				2							
C.5.17	Crown road	km	0.25	$ 1,017.65	$ -	$ 338.97	$ 678.68			0.1				1				1											
C.5.18	Road grading (use grader)	m2	21000	$ 0.012	$ -	$ 0.00	$ 0.01							1				1											
C.5.19	Ripping and scarifying roads and pads	m2	5000	$ 0.049	$ -	$ 0.02	$ 0.03							1				1											
C.5.20	Load, haul, dump, place: 1 truck with 9 km haul distance	m^2	16.6	$ 22.90	$ -	$ 8.77	$ 14.14								1	1		1				1							SRK Estimate : LHD tool
C.5.21	Load, haul, dump, place: 1 truck with 13.7 km haul distance	m^2	14	$ 27.16	$ -	$ 10.40	$ 16.76								1	1		1				1							SRK Estimate : LHD tool
Other																													
C.6.01	Sample HC contaminated soils / confirmatory samples	each	2	$ 97.73	$ -	$ 97.73	$ -	1				1																	
C.6.02	Band together core pallets	each	12	$ 10.08	$ -	$ 10.08	$ -	2			0		0		0														
C.6.03	Construction of Vent Raise Seal	each	0.042	$ 12,549.65	$ 3,000.00	$ 8,501.06	$ 1,048.59	3				1		0.5			0.5												

Worksheet 6: Relocation Unit Cost Calculations

Hauling Distance to Roberts Bay			
Doris Camp	5.3	km	One Way
Windy Camp	14.82		One Way
North Dam	7.6	km	One Way
Reagent Pads	3.7	km	One-Way
Airstrip	2.2	km	One-Way
Madrid North Portal	13.9	km	One-Way
Madrid North Vent Raise	14.3	km	One-Way
Madrid South AWR	18.97	km	One-Way
Water discharge to Tail Lake			
Doris Camp	2.15	km	One-Way
Madrid North	11.45	km	One-Way
Madrid South	15.82	km	One-Way

C.4.14 - Productivity of hauling bulk materials from Madrid North (Vent Raise) to Roberts Bay			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	38	km/hr	Sleds assumed as being available on site
Hauling capacity	2	Containers	One container per skid
Cargo capacity	33.2	m^3	Standard 20 ft container
Space utilization ratio	0.7		
Load	46.48	m^3	CargoCapacity x #ofContainers x SpaceUtilizationRatio
Distance:	14.3	km	
Time Required 1 round trip:	**1.25**	**hrs**	**Includes 0.5hr unloading time**
Productivity:	**37.11**	**m^3/hr**	
C.4.15 - Productivity of hauling bulk materials from Madrid South to Roberts Bay			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	38	km/hr	Sleds assumed as being available on site
Hauling capacity	2	Containers	One container per skid
Cargo capacity	33.2	m^3	Standard 20 ft container
Space utilization ratio	0.7		
Load	46.48	m^3	CargoCapacity x #ofContainers x SpaceUtilizationRatio
Distance:	18.97	km	
Time Required 1 round trip:	**1.50**	**hrs**	**Includes 0.5hr unloading time**
Productivity:	**31.02**	**m^3/hr**	
C.4.16 - Productivity of hauling containers units from Madrid North (Vent Raise) to Roberts Bay			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	38	km/hr	Sleds assumed as being available on site
Hauling capacity	2	Containers	One container per skid
Distance:	14.3	km	
Time Required 1 round trip:	**1.25**	**hrs**	**Includes 0.5hr unloading time**
Productivity:	**1.60**	**Containers/hr**	
C.4.17 - Productivity of hauling container units from Madrid South to Roberts Bay			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	38	km/hr	Sleds assumed as being available on site
Hauling capacity	2	Containers	One container per skid
Distance:	18.97	km	
Time Required 1 round trip:	**1.50**	**hrs**	**Includes 0.5hr unloading time**
Productivity:	**1.33**	**Containers/hr**	
C.4.18 - Productivity of trucking water from Madrid North (Vent Raise) to Tail Lake discharge			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	45	km/hr	Sleds assumed as being available on site
Hauling capacity	1	Containers	One container per skid
Cargo capacity	20	m^3	Standard 20 ft container
Space utilization ratio	1		
Load	20	m^3	CargoCapacity x #ofContainers x SpaceUtilizationRatio
Distance:	11.45	km	
Time Required 1 round trip:	**1.51**	**hrs**	**Includes 0.5hr fill/drain time**
Productivity:	**13.25**	**m^3/hr**	
C.4.19 - Productivity of trucking water from Madrid South to Tail Lake discharge			
Equipment Cost	$ 81.73	per hr	Includes fuel
Labour Cost	$ 90.49	per hr	
Average speed	45	km/hr	Sleds assumed as being available on site
Hauling capacity	1	Containers	One container per skid
Cargo capacity	20	m^3	Standard 20 ft container
Space utilization ratio	1		
Load	20	m^3	CargoCapacity x #ofContainers x SpaceUtilizationRatio
Distance:	15.82	km	
Time Required 1 round trip:	**1.70**	**hrs**	**Includes 0.5hr fill/drain time**
Productivity:	**11.74**	**m^3/hr**	

Worksheet 7: Structure Quantities

Demolition Bulking Factors	
Tents - Empty	1.3
Wood Structures - Empty	
Wood Structures - w/ Interior Wall Allowance	2
Steel Structures - Empty	1.5
Steel Structures - w/ Interior Wall Allowance	2
Mechanical Equipment	1.1
Liners	3
Pipelines	3

Structure Volumes

Area	Structure	Quantity	Length (m)	Width/Dia. (m)	Footprint Area (m^2)	Avg Height (m)	Wall thickness (m)	Floor Thickness (m)	Roof Length (m)	Roof Thickness (m)	Wall Volume (m^3)	Floor Volume (m^3)	Roof Volume (m^3)	Total Collapse Volume (m3)	Loose Volume (m^3)	Standing Volume (m^3)	Surface area (m^2)	Source
Madrid North Portal																		
Portal Upper Pad	Portable Trailers (ATCO)	2	10	3	30.0	5	0.15	0.3	14.72	0.16	19.5	9.0	7.1	71		**150.0**		SRK Estimate
	Cribbing, stairs, entry way	2	10	3	30.0	1	0.15	0.3			3.9	9.0		26	**0.00**			SRK Estimate - debris
	Compressor Building	1																
	Shop (tent)	1	30	15	450.0	5	0.01	0.3	17.17	0.05	4.5	135.0	12.9	152	**198.09**	**2250.0**		SRK Estimate - debris
	Water Tratment Plant	1																
	50000L Water tank (Part of WTP)	1	7.25	2.5	18.1	2.75										**49.8**		SRK Estimate
	Diesel Generator	1	12.23	2.44	29.8	0.1									**2.98**			SRK Estimate - debris
Portal Lower Pad	50,000L Water Tank ith Containment	1																
	CaCl2 Laydown	1													**2.00**			Remaining CaCl2
	Brine Mixing Facility	1													**2.00**			SRK Estimate - debris
Portal & UG Works	Extent	1			1446.0											**0.0**		SRK Estimate
	Plug	1	15	7.6	114.0	6.2								707		**706.8**		Estimated
Fuel Transfer Station	75,000L Envirotank	1																SRK Estimate
	Liner				797.0			0.003						2	**7.17**			ACAD Estimate
	Geotextile				1505.0			0.003						5	**13.55**			ACAD Estimate
	HDPE sump																	
	HDPE Liner																	
	Nonwoven Geotextile																	
Pollution Control Pond	HDPE Liner	1			14300.0			0.003						43	**128.70**			ACAD Estimate
	Nonwoven Geotextile																	ACAD Estimate
Pollution Control Pond Breach	Non-woven Geotextile	4	220	10	8800.0			0.003						106	**316.80**			ACAD Estimate
	Breach Area Liner	1	220	10	2200.0			0.003						7	**19.80**			ACAD Estimate
	Breach (Berm)	1			300.0	3.5								600				ACAD Estimate
Dual Water Line	Piping	1	760	0.18	0.03									19	**58.02**			ACAD Estimate
Waterline to Patch lake discharge	Piping	1	1100	0.18	0.03									28	**83.97**			ACAD Estimate
Culvert - Madrid North Portal Entrance	24" Corrugated Steel Culvert	2	25.5	0.61	0.29		0.003							5	15			ACAD Estimate
Madrid North Vent Raise																		
	Vent Raise	1																
	Air Heating Facility	1																
	Support Facilities (Sea-can 40')	4	12.23	2.44	119.4	2.5	0.02	0.02	2.44	0.02	1.5	0.6	0.6	11		**298.4**		As built Acad, height/thickness est. from photo
	Support Facilities Debris	4													**2.00**			SRK Estimate - debris
	Diesel Generator	1	12.23	2.44	29.8	0.1									**2.98**			SRK Estimate - debris
Fuel Transfer Station	75,000L Envirotank	1																
	HDPE Sump																	
	HDPE Liner				797.0			0.003						2	**7.17**	**0.0**		SRK Estimate - debris
	Non-woven Geotextile				1505.0			0.003						5	**13.55**	**0.0**		SRK Estimate - debris
	Fuel Tank Containment	1																
	Liner																	
Culvert - Madrid North Portal Entrance	24" Corrugated Steel Culvert	2	20.1	0.61	0.29		0.003							4	**12**			SRK Estimate - debris
Madrid South AWR	Quarry G																	
	Quarry H																	
Crossing #1	24" Corrugated Steel Culvert	2	30.5	1	0.79		0.003							10	**48**			SRK Estimate - debris
Crossing #2	24" Corrugated Steel Culvert	2	30.5	1	0.79		0.003							10	**48**			SRK Estimate - debris
Madrid South Portal and Vent Raise																		
Infrastructure Pad	Portable Trailers (ATCO)	2	10	3	30.0	5	0.15	0.3	14.72	0.16	19.5	9.0	7.1	71		**150.0**		SRK Estimate - debris
	Cribbing, stairs, entry way	2	10	3	30.0	1	0.15	0.3			3.9	9.0		26	**0.00**			SRK Estimate - debris
	Compressor Building	1																
	Shop	1	30	15	450.0	5	0.01	0.3	17.17	0.05	4.5	135.0	12.9	152	**198.09**	**2250.0**		ACAD Estimate
	Water Treatment Plant	1																
	Diesel Generator	1	12.23	2.44	29.8	0.1									**2.98**			SRK Estimate - debris
Upper Portal Pad	50,000L Water Tank with Containment																	
	CaCl2 Laydown																	
	Brine Mixing Facility																	
Portal & UG Works	Extent	1			1446.0											**0.0**		SRK Estimate
	Plug	1	15	7.6	114.0	6.2								707		**706.8**		Estimated
	50000L Water Tank	1	7.25	2.5	18.1	2.75										**49.8**		SRK Estimate
	CaCl2 Laydown																	
	Brine Mixing Facility																	
Pumphouse	Pumphouse	1													**2.00**			SRK Estimate - General debris
Waterlines	Intake	1	25	0.18	0.03									1	**1.91**	**0.0**		ACAD Estimate
	Leg 1	1	225	0.18	0.03									6	**17.18**	**0.0**		ACAD Estimate
	Leg 2	1	188	0.18	0.03									5	**14.35**	**0.0**		ACAD Estimate
Fuel Transfer Station	75,000L Envirotank	1																SRK Estimate
	HDPE Sump																	
	HDPE Liner				797.0			0.003						2	**7.17**	**0.0**		ACAD Estimate
	Non-woven Geotextile				1505.0			0.003						5	**13.55**	**0.0**		ACAD Estimate
Pollution Control Pond	Non-woven Geotextile	2			10442.0			0.003						63	**187.96**			ACAD Estimate
	Pond liner	1			16917.0			0.003						51	**152.25**			ACAD Estimate
	Breach (Berm)	1			300.0	3.5								600				ACAD Estimate
Secondary Pollution Control Pond	Non-woven Geotextile	2			798.0			0.003						5	**14.36**			ACAD Estimate
	Pond Liner	1			1293.0			0.003						4	**11.64**			ACAD Estimate
	Breach (Berm)	1			300.0	3.5								600				ACAD Estimate
Madrid South Vent Raise	Diesel Generator	1	12.23	2.44	29.8	0.25												SRK Estimate - debris
	Air Heating Facility	1																
	Vent Raise Ducting	1	25															
	60000L Envirotank	1	7.25	2.6		3.25												SRK Estimate
	HDPE Sump	1																
	HDPE Liner	1			797.0			0.003						2	**7.17**	**0.0**		ACAD Estimate
	Non-woven Geotextile	1			1505.0			0.003						5	**13.55**	**0.0**		ACAD Estimate

Demolition Preparation

			Decommision										
Area	Structure	# of Units	Electrical	Heating System	Plumbing System	Total	Heating Tanks	Hazardous Material Vol Estimate (L)	Total Hazardous Volume (L)	Special Item	Special Item Description		Source
Madrid North Portal and Vent Raise													
Portal Upper Pad	Portable Trailers (ATCO)	2	**1**	**1**	**1**				**0**				
	Cribbing, stairs, entry way	2							**0**				
	Compressor Building	1	**1**		**1**				**0**				
	Shop (tent)	1	**1**	**1**	**1**			**1000**	**1000**				
	Water Tratment Plant	1	**1**		**1**			**500**	**500**				
	50000L Water tank (Part of WTP)	1			**1**			**5000**	**5000**				
	Diesel Generator	1	**1**		**1**			**100**	**100**				
Portal Lower Pad	50,000L Water Tank ith Containment	1			**1**				**0**				
	CaCl2 Laydown	1							**0**				
	Brine Mixing Facility	1							**0**				
Portal & UG Works	Extent	1							**0**				
	Plug	1							**0**				
Fuel Transfer Station	75,000L Envirotank	1			**1**			**7500**	**7500**				
	Liner								**0**				
	Geotextile								**0**				
	HDPE sump								**0**				
	HDPE Liner								**0**				
	Nonwoven Geotextile								**0**				
Pollution Control Pond	HDPE Liner	1							**0**				
	Nonwoven Geotextile								**0**				
Pollution Control Pond Breach	Non-woven Geotextile	4							**0**				
	Breach Area Liner	1							**0**				
	Breach (Berm)	1							**0**				
									0				
Fresh Water Pipelines	Piping	2							**0**				
Waterlines									**0**				
Culvert - Madrid North Portal Entrance	24" Corrugated Steel Culvert	2							**0**				
Madrid North Vent Raise									**0**				
	Vent Raise	1							**0**				
	Air Heating Facility	1							**0**				
	Support Facilities (Sea-can 40')	4							**0**				
	Support Facilities Debris	4							**0**				
	Diesel Generator	1							**0**				
Fuel Transfer Station	75,000L Envirotank	1						**7500**	**7500**				
	HDPE Sump								**0**				
	HDPE Liner								**0**				
	Non-woven Geotextile								**0**				
	Fuel Tank Containment	1							**0**				
	Liner								**0**				
Culvert - Madrid North Portal Entrance	24" Corrugated Steel Culvert	2							**0**				
									0				
Infrastructure Pad	Portable Trailers (ATCO)	2							**0**				
	Cribbing, stairs, entry way	2							**0**				
	Compressor Building	1							**0**				
	Shop	1						1000	**1000**				
	Water Treatment Plant	1						500	**500**				
	Diesel Generator	1							**0**				
Upper Portal Pad	50,000L Water Tank with Containment							5000	**0**				
	CaCl2 Laydown								**0**				
	Brine Mixing Facility								**0**				
Portal & UG Works	Extent	1							**0**				
	Plug	1							**0**				
	50000L Water Tank	1							**0**				
	CaCl2 Laydown								**0**				
	Brine Mixing Facility								**0**				
Pumphouse	Pumphouse	1							**0**				
Waterlines	Intake	1							**0**				
	Leg 1	1							**0**				
	Leg 2	1							**0**				
									0				
Fuel Transfer Station	75,000L Envirotank	1						7500	**7500**				
	HDPE Sump								**0**				
	HDPE Liner								**0**				
	Non-woven Geotextile								**0**				
									0				
Pollution Control Pond Breach	Non-woven Geotextile	4							**0**				
	Breach Area Liner	1							**0**				
	Breach (Berm)	1							**0**				
									0				
Secondary Pollution Control Pond Breach	Non-woven Geotextile	4							**0**				
	Breach Area Liner	1							**0**				
	Breach (Berm)	1							**0**				
									0				
Madrid South Vent Raise	Diesel Generator	1							**0**				
	Vent Raise Ducting	1							**0**				
	60000L Envirotank	1						6000	**6000**				
	HDPE Sump	1							**0**				
	HDPE Liner	1							**0**				
	Non-woven Geotextile	1							**0**				
									0				

Worksheet 8: Earthwork Quantities

Earthwork Volumes/Quantities

Bulking Factors	
Soil/Rock Pad	1.2
Cover shrinkage factor	1.1

Reclamation Areas

Work Area	Location	Total Area (m^2)	Area Scarified (m^2)	Area Regraded (m^2)	Area Requiring Fill (m^2)	Coconut-matting Area (m^2)	Seeding Area (m^2)	Source/Comment

Earthwork Areas

Work Area	Item	Qnty	Length (m)	Width (m)	Height (m)	Side Slope (percent)	Area (m^2)	In-situ Volume (m^3)	Loose Volume (m^3)	Source / Comments
Madrid North Portal and Vent Raise										
Madrid North Vent Raise	Regrade area						3,540			ACAD Design estimate
Portal Upper Pad	Regrade area						5,800			ACAD Design estimate
Portal Lower Pad	Regrade area						1,450			ACAD Design estimate
Ore storage pad	Regrade area						8,000			ACAD Design estimate
Waste rock pile	Footprint						31,000			ACAD Design estimate
Waste rock pile	Sloped Footprint					0.4	12,400			ACAD Design estimate
Waste rock pile	Top Footprint					0.6	18,600			ACAD Design estimate
Waste rock pile	Place Crushed rock cover layer				0.3		31,000			ACAD Design estimate
3:1 Resloped WRP	Top Area						12,300			ACAD Design estimate
	3:1 Slope surface area						20,200			ACAD Design estimate
	WRP total Surface area (3:1)	1.1					32,500			ACAD Design estimate
Fuel Transfer Station	Liner/Geotextile Area	3					750			ACAD Design estimate
	Contaminated Gravel	1						67	80.4	Estimate from Drawing MNP-07
Fuel Tank Containment	Liner/Geotextile Area	3					750			ACAD Design estimate
	Contaminated Gravel	1						67	80.4	Estimate from Drawing MNP-07
Pond Access Road	Crown Road		448							ACAD Design estimate
Portal Pad Road	Crown Road		243							ACAD Design estimate
	Clean up spilled Ore		243	9.5	0.15			346	415.53	Assume 250m or total length, whichever is smaller
Vent Raise Access Road			70							ACAD Design estimate; Not including pad
Breach Riprap		1			0.3		350	105		Rough 2D area estimate (Single breach)
Pond discharge		1								See Water Management Tab
	Reject water; 30% of pond volume	0.3								
		0.7								
Madrid South AWR										
Madrid South AWR	Clean up spilled Ore		250	9.5	0.15			356	427.5	Assume 250m over total length
	Crown Road	1	5.045							Road length (9.5m wide) + area of pull outs
Madrid South Portal and Vent Raise										
Waste Rock Pile	Footprint						31,230			ACAD Design estimate
Ore storage pad	Footprint						12,200			ACAD Design estimate
16m Access Road	Crown Road		130							ACAD Design estimate
9.5m Haul road	Crown Road		238							ACAD Design estimate
9.5m Vent Raise Access Road	Crown Road		254							ACAD Design estimate
6m Berm / pumphouse access	Crown Road		210							ACAD Design estimate
Infrastructure Access Road	Crown Road		243							ACAD Design estimate
	Clean up spilled Ore		250	9.5	0.15			356	427.5	Assume 250m or total length, whichever is smaller
Pumphous Facilities	Debris removal		5	6			30			
Fuel Transfer Station	Liner/Geotextile Area	3					750			ACAD Design estimate
	Contaminated Gravel	1						67	80.4	Estimate from Drawing MNP-07
Infrastructure Pad	Regrade area						12,000			ACAD Design estimate
Upper Portal Pad	Regrade area						400			ACAD Design estimate
South Portal Pad	Regrade area						500			ACAD Design estimate
Laydown Pad	Regrade area						5,000			ACAD Design estimate
Vent Raise	Regrade area						7,900			ACAD Design estimate
Fuel Tank Containment	Liner/Geotextile Area	3					750			ACAD Design estimate
	Contaminated Gravel	1						67	80.4	Estimate from Drawing MNP-07
Ore storage pad	Regrade area						7,900			ACAD Design estimate
Waste Rock Pile	Footprint						31,230			ACAD Design estimate
	Top Area	0.6					18,738			ACAD Design estimate
	Sloped area	0.4					12,492			ACAD Design estimate
	Liner Cover				0.3		31,230	9369		ACAD Design estimate
3:1 Resloped WRP	Top Area						15,350			ACAD Design estimate
	3:1 Slope surface area						26,470			ACAD Design estimate
	WRP total Surface area (3:1)				0.3		41,820	12546.00		ACAD Design estimate
Breach Riprap (Primary Pond)		1			0.3		350	105		ACAD Design estimate
Breach Riprap (Secondary Pond)		1			0.3		350	105		ACAD Design estimate
Primary Pollution Control Pond										
Secondary Pollution Control Pond										See Water Management Tab
Total volume	Reject water; 30% of pond volume; discharged to Tail Lake	0.3								
	Permeate; 70% of total pond volume; discharged to Patch	0.7								

Worksheet 9a: Water Management

Activity	Task	Unit	Cost Code	Unit Cost	Quantity											Activity Total
					Year 1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Year9	Year10	Total	
Madrid North Water Management - Discontinued (WM-001)	Treatment water management	Yearly	--	$ -	0	0	0	0	0	0	0	0	0	0	0	$ -
Madrid South Water Management - Discontinued (WM-002)	Treatment water management	Yearly	--	$ -	0	0	0	0	0	0	0	0	0	0	0	$ -
	Site Services Support &Maintenance	LS	--	$ 50,000	0	0	0	0	0	0	0	0	0	0	0	$ -
	Spare Parts & Consumables	LS	--	$ 20,000	0	0	0	0	0	0	0	0	0	0	0	$ -
TOTAL																$ -

Worksheet 9b: Direct Water Mangement Costs

Activity	WBS Code	Item	Task	Sub-task	Activity	Task	Quantity	Unit	Cost Code	Unit Cost	Task Total	Activity Total	Source / Comments
Madrid North Water Management	WM-001	1	2	1	Madrid North Wa	decommission RO plant	-	each	C.1.05	$603.78	$ -	$ -	Esimate tasks based on Doris estimate
		1	1	2		disconnect RO plant containers and prep for shipping off-site	-	each	C.1.08	$1,110.00	$ -		Toggle between options below
		1	1	3		haul RO plant containers to Roberts Bay laydown	-	each	C.4.17	$113.57	$ -		
		1	1	4		Drain and decommission 50000L water tank	0	each	C.1.12	$241.82	$ -		
		1	1	5		Transport discharge water to Tail Lake	-	m^3	C.4.18	$11.44	$ -		
		1	1	5		Haul water tank to Roberts Bay Laydown	-	each	C.4.17	$113.57	$ -		
Madrid South Water Management	WM-002	3	6	1	Madrid South Wa	decommission RO plant	-	each	C.1.05	$603.78	$ -	$ -	Esimate tasks based on Doris estimate
		3	1	2		disconnect RO plant containers and prep for shipping off-site	-	each	C.1.08	$1,110.00	$ -		Toggle between options below
		3	1	3		haul RO plant containers to Roberts Bay laydown	-	each	C.4.17	$113.57	$ -		
		3	1	4		Drain and decommission 50000L water tank	0	each	C.1.12	$241.82	$ -		
		3	1	5		Transport discharge water to Tail Lake	-	m^3	C.4.19	$12.91	$ -		
		3	1	6		Haul water tank to Roberts Bay Laydown	-	each	C.4.17	$113.57	$ -		

Worksheet 10: Work Breakdown Structure

Location	Facility	WBS Code
Madrid North Surface Infrastructure		
Upper Portal Area		
	Shop	MN-001
	Diesel Generator	
	Office & Support Complex	MN-003
Lower Portal Area		
	Brine Mixing Facility	MN-004
	Portal and Underground Works	MN-005
Fuel Storage Facility		
	Fuel Storage Facility	MN-006
Pond Access Road		
	Pond Access Road	MN-007
Pollution Control Pond		
	Pollution Control Pond	MN-008
Portal Pad Road		
	Portal Pad Haul Road	MN-009
	Pipe Culvert	MN-010
	Dual Water Line - Discontinued	MN-011
Ore Stockpile Pad		
	Ore Stockpile Pad	MN-012
Waste Rock Pile		
	Waste Rock Pile	MN-013
Madrid North Vent Raise		
	Vent Raise	MN-014
	Ventilation and Heating Facilities	MN-015
	Offices & Support Complex	MN-016
	Diesel Generator	MN-017
	Fuel Containment Area	MN-018
	Vent Raise access road	MN-019
	Pipe Culvert	MN-020
Madrid South All-Weather Road		
Madrid South All-Weather Road		
	Madrid South All-Weather Road	MR-001
	Crossing #1	MR-002
	Crossing #2	MR-003
Madrid South Surface Infrastructure		
Infrastructure Pad Area		
	Shop	MS-001
	Fuel Storage Facility	MS-002
	Offices & Support Complex	MS-003
	Fresh Water Pipelines Leg 2 - Discontinued	MS-004
	Diesel Generator	MS-005
Laydown Pad		
	Laydown Pad	MS-006
Portal Area		
	Portal and Underground Works	MS-007
	Brine Mixing Facility	MS-008
Primary Pollution Control Area		
	Primary Pollution Control Pond	MS-009
Haul Road and Water Supply Infrastructure		
	Secondary Pollution Control Pond	MS-010
	Haul and Access Roads	MS-011
	Pumphouse - Discontinued	MS-012
	Freshwater Pipeline Leg 1 - Discontinued	MS-013
Infrastructure Access Road		
	Infrastructure Access Road	MS-014
Waste Rock Pile		
	Waste Rock Pile	MS-015
Ore Stockpile Pad		
	Ore Stockpile Pad	MS-016
Madrid South Vent Raise Area		
	Vent Raise	MS-017
	Ventilation and Heating Facilities	MS-018
	Fuel Containment Area	MS-019
Additional Direct Costs		
Off-site Shipping for Disposal	Ship Off-site for Disposal by Barge	DN-001
Off-Site Disposal Fees	Disposal Fees in Licensed Facility	DN-002
Water Management	Madrid North Water Management - Discontinued	WM-001
	Madrid South Water Management - Discontinued	WM-002