

**APPENDIX I**

**ENGINEERING COST ESTIMATES**

**MIKE HORSE TAILINGS IMPOUNDMENT REMOVAL OPTIONS  
PRELIMINARY COST ESTIMATES**

**MIKE HORSE TAILINGS IMPOUNDMENT  
OPTION 1**

ITEM/DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1 No Action			\$ 0.00	\$ 0.00
<b>TOTAL CAPITAL COSTS</b>				\$ -

<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>	\$ 0.00
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<b>POST CLOSURE MAINTENANCE COSTS</b>	
<i>Years 1 Through 100</i> Dam safety inspections and maintenance, water level monitoring, seepage monitoring, vegetation monitoring, storm water monitoring, weed control, seepage and groundwater sampling.	\$ 30,000.00
<b>Annual Subtotal Years 1 through 100</b>	\$ 30,000.00
<b>PRESENT WORTH COST FOR O&amp;M</b>	\$ 611,920.00

<b>TOTAL PRESENT WORTH COST</b>	\$ 611,920.00
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**MIKE HORSE TAILINGS IMPOUNDMENT  
OPTION 2**

	ITEM/DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	5	%	\$ 8,000.00	\$ 40,000.00
2	Surface Water and Sediment Control	1.5	%	\$ 8,000.00	\$ 12,000.00
3	Pond Dewatering (Elev.5481 To Elev.5471)	43	Days	\$ 875.00	\$ 37,625.00
5	Spillway Bedding Stone	2,800	CY	\$ 11.00	\$ 30,800.00
6	Spillway Riprap	2800	CY	\$ 24.00	\$ 67,200.00
7	Spillway Geotextile	1900	SY	\$ 3.50	\$ 6,650.00
8	Liner & Cushion Fabric On Dam Face	7200	SY	\$ 15.00	\$ 108,000.00
9	Revegetation	4.5	AC	\$ 1,500.00	\$ 6,750.00
10	Toe Drains	1	LS	\$ 25,000.00	\$ 25,000.00
11	Excavate & Haul Tailings (5 mi round trip)	13,000	CY	\$ 17.80	\$ 231,400.00
12	Cover Soil on Dam Face	5,000	CY	\$ 13.00	\$ 65,000.00
	<i>Repository-(Paymaster)</i>				
13	Clear and Grub	1	AC	\$ 3,000.00	\$ 3,000.00
14	Compact Repository	13,000	CY	\$ 1.16	\$ 15,080.00
15	Cap Liner	3250	SY	\$ 15.00	\$ 48,750.00
16	Cover Soil	1,083	CY	\$ 13.00	\$ 14,083.33
	<i>Cap In-Place Tailings</i>				
17	Cap	2,500	SY	\$ 15.00	\$ 37,500.00
18	Cover Soil	850	CY	\$ 13.00	\$ 11,050.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 759,888.33</b>
Contingency				25%	\$ 190,000.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$ 949,888.33</b>
Project Management/Administrative Costs				6%	\$ 57,000.00
Engineering and Final Design				12%	\$ 114,000.00
Construction Management				8%	\$ 76,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 247,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$1,196,888.33</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<i>Years 1 Through 100</i>					
Water level monitoring, seepage monitoring, vegetation monitoring stormwater monitoring, weed control, seepage/groundwater sampling, monitoring well.					\$ 32,500.00
<b>Annual Subtotal Years 1 through 100</b>					<b>\$ 32,500.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 662,914.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$1,859,802.00</b>

**MIKE HORSE TAILINGS IMPOUNDMENT  
OPTION 3**

	ITEM/DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	5	%	\$ 18,000.00	\$ 90,000.00
2	Surface Water and Sediment Control	1.5	%	\$ 18,000.00	\$ 27,000.00
3	Pond Dewatering (Elev.5481 to Elev.5466)	52	Days	\$ 875.00	\$ 45,500.00
4	Haul Road Improvement	1	LS	\$ 15,000.00	\$ 15,000.00
5	Channel Bedding Stone	5,400	CY	\$ 11.00	\$ 59,400.00
6	Channel Riprap	5400	CY	\$ 24.00	\$ 129,600.00
7	Geotextile	7600	SY	\$ 3.50	\$ 26,600.00
8	Revegetation	4.5	AC	\$ 1,500.00	\$ 6,750.00
9	Excavate & Haul Tailings (0.5 mi round trip)	66,000	CY	\$ 15.40	\$1,016,400.00
	<i>Repository - (West Side Repository)</i>				
10	Clear and Grub	4	AC	\$ 3,000.00	\$ 12,000.00
11	Compact Repository	66,000	CY	\$ 1.16	\$ 76,560.00
12	Cap Liner	16500	SY	\$ 15.00	\$ 247,500.00
13	Cover Soil	11,000	CY	\$ 13.00	\$ 143,000.00
	<i>Cap In-Place Tailings</i>				
14	Cap	26,700	SY	\$ 15.00	\$ 400,500.00
15	Cover Soil	14,100	CY	\$ 13.00	\$ 183,300.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$2,479,110.00</b>
Contingency				25%	\$ 619,800.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$3,098,910.00</b>
Project Management/Administrative Costs				6%	\$ 186,000.00
Engineering and Final Design				12%	\$ 372,000.00
Construction Management				8%	\$ 248,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 806,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$3,904,910.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<i>Years 1 Through 5</i> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<i>Years 6 Through 100</i> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 10,000.00
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 10,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 276,553.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$4,181,463.00</b>

\*Assume 12" of cover soil on dam face, 6" of cover soil along eastern side and a liner and geonet with 24" of cover soil along western face where tailings are exposed.

**MIKE HORSE TAILINGS IMPOUNDMENT  
OPTION 4B - PAYMASTER REPOSITORY OPTION**

ITEM/DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1 Mobilization/Demobilization	5	%	\$ 86,000.00	\$ 430,000.00
2 Surface Water and Sediment Control	1.5	%	\$ 86,000.00	\$ 129,000.00
3 Pond Dewatering	52	Days	\$ 875.00	\$ 45,500.00
4 Haul Road Improvement	1	LS	\$ 15,000.00	\$ 15,000.00
5 Channel Restoration	2000	LF	\$ 30.00	\$ 60,000.00
6 Revegetation	4.5	AC	\$ 1,500.00	\$ 6,750.00
7 Excavate & Haul Tailings (5 mi round trip)	371,000	CY	\$ 17.80	\$ 6,603,800.00
8 Cover Soil	22,000	CY	\$ 13.00	\$ 286,000.00
<i>Repository - (Paymaster)</i>				
9 Clear and Grub	14	AC	\$ 3,000.00	\$ 40,500.00
10 Compact Repository	371,000	CY	\$ 1.16	\$ 430,360.00
11 Cap Liner	65,000	SY	\$ 15.00	\$ 975,000.00
12 Cover Soil	21,500	CY	\$ 3.50	\$ 75,250.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>				<b>\$ 9,097,160.00</b>
Contingency			25%	\$ 2,274,300.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>				<b>\$ 11,371,460.00</b>
Project Management/Administrative Costs			5%	\$ 569,000.00
Engineering and Final Design			8%	\$ 910,000.00
Construction Management			6%	\$ 683,000.00
<b>TOTAL CAPITAL COSTS</b>				<b>\$ 2,162,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>				<b>\$ 13,533,460.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>				
<b>Years 1 Through 5</b>				
Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.				\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>				<b>\$ 42,500.00</b>
<b>Years 6 Through 100</b>				
Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well.				\$ 5,000.00
<b>Annual Subtotal Years 6 through 100</b>				<b>\$ 5,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>				<b>\$ 204,377.00</b>
<b>TOTAL PRESENT WORTH COST</b>				<b>\$ 13,737,837.00</b>

\*Assume repository cap consists of an HDPE liner and geocomposite with 24" of cover soil

**MIKE HORSE TAILINGS IMPOUNDMENT  
OPTION 5 - HORSEFLY CREEK REPOSITORY**

ITEM/DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1 Mobilization/Demobilization	5	%	\$ 150,000.00	\$ 750,000.00
2 Surface Water and Sediment Control	1.5	%	\$ 150,000.00	\$ 225,000.00
3 Pond Dewatering	52	Days	\$ 875.00	\$ 45,500.00
4 Haul Road Improvement	1	LS	\$ 15,000.00	\$ 15,000.00
6 Channel Restoration	2,000	LF	\$ 30.00	\$ 60,000.00
9 Revegetation	14	AC	\$ 1,500.00	\$ 21,000.00
10 Excavate & Haul Tailings (20 mi round trip)	371,000	CY	\$ 32.00	\$ 11,872,000.00
11 Cover Soil	22,000	CY	\$ 13.00	\$ 286,000.00
<i>Repository-(Site to be Determined)</i>				
12 Land Acquisition	20	AC	\$ 800.00	\$ 16,000.00
13 Access Road	1.5	Mile	\$ 109,000.00	\$ 163,500.00
14 Temporary Bridge	1	LS	\$ 72,000.00	\$ 72,000.00
15 Highway Resurfacing	7	Mile	\$ 200,000.00	\$ 1,400,000.00
16 Clear and Grub	15	AC	\$ 3,000.00	\$ 45,000.00
17 Compact Repository	371,000	CY	\$ 1.16	\$ 430,360.00
18 Cap Liner*	33,000	SY	\$ 15.00	\$ 495,000.00
19 Cover Soil*	22,000	CY	\$ 3.50	\$ 77,000.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>				<b>\$ 15,973,360.00</b>
Contingency			25%	\$ 3,993,400.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>				<b>\$ 19,966,760.00</b>
Project Management/Administrative Costs			5%	\$ 999,000.00
Engineering and Final Design			8%	\$ 1,598,000.00
Construction Management			6%	\$ 1,199,000.00
<b>TOTAL CAPITAL COSTS</b>				<b>\$ 3,796,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>				<b>\$ 23,762,760.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>				
<b>Years 1 Through 5</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well.				\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>				<b>\$ 42,500.00</b>
<b>Years 6 Through 100</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.				\$ 5,000.00
<b>Annual Subtotal Years 6 through 100</b>				<b>\$ 5,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>				<b>\$ 204,377.00</b>
<b>TOTAL PRESENT WORTH COST</b>				<b>\$ 23,967,137.00</b>

\*Assumed repository is 535' x 535' . Cap consists of HDPE liner, geocomposite, and has 2 feet of cover soil

**SERIES PRESENT WORTH FACTOR**

$$SPWF = \frac{((1+i)^n - 1)}{i(1+i)^n}$$

where:

$i$  = discount rate = 0.0486  
 $n$  = period, yrs

$$P + A(SPWF)$$

where:

$P$  = present worth  
 $A$  = annual O&M cost

SPWF	MULTIPLIER
(1-3)	2.73
(1-5)	2.73
(1-100)	20.40
(4-100)	17.67
(6-100)	16.05

**Option 1**

O&M for Years 1-100 = \$ 30,000.00

Present Worth Cost of O&M = \$ 611,919.82 **(30,000x20.40)**

**Option 2B**

O&M for Years 1-100 = \$ 32,500.00

Present Worth Cost of O&M = \$ 662,913.13 **(20,000x20.40)**

**Option 3B**

O&M for Years 1-5 = \$ 42,500.00

O&M for Years 6-100 = \$ 10,000.00

Present Worth Cost of O&M = \$ 276,552.77 **(42,500x4.35)+(10,000x16.05)**

**Option 4B and 5B**

O&M for Years 1-3 = \$ 42,500.00

O&M for Years 4-100 = \$ 5,000.00

Present Worth Cost of O&M = \$ 204,376.93 **(42,500x2.73)+(5,000x17.67)**

**LOWER MIKE HORSE CREEK REMOVAL OPTIONS  
PRELIMINARY COST ESTIMATES**

**LOWER MIKE HORSE CREEK - OPTION 1**

ITEM/DESCRIPTION	QUANTITIY	UNIT	UNIT COST	TOTAL COST
1 No Action			\$ 0.00	\$ 0.00
<b>TOTAL CAPITAL COSTS</b>				\$ -

<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>	0.0486			\$ 0.00
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<b>POST CLOSURE MAINTENANCE COSTS</b>			
<i>Years 1 Through 100</i>			
Surface water and groundwater quality monitoring, erosion control, and weed control			\$ 30,000.00
<b>Annual Subtotal Years 1 through 100</b>			\$ 30,000.00
<b>PRESENT WORTH COST FOR O&amp;M</b>			\$ 611,920.00

<b>TOTAL PRESENT WORTH COST</b>				<b>\$ 611,920.00</b>
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**LOWER MIKE HORSE CREEK - OPTION 2**

ITEM/DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	LS	\$ 9,000.00	\$ 9,000.00
2	Surface Water and Sediment Control	1	LS	\$ 3,000.00	\$ 3,000.00
3	Excavation & Haul Tailings (assume 0.25 mi round trip)	8,000	CY	\$ 15.25	\$ 122,000.00
4	Channel Restoration	1300	0.0486	\$ 30.00	\$ 39,000.00
5	Revegetation	4.5	AC	\$ 1,500.00	\$ 6,750.00
<i>Repository-(Above high water mark)*</i>					
6	Clear and Grub	1	AC	\$ 3,000.00	\$ 3,000.00
7	Compact Repository	8,000	CY	\$ 1.16	\$ 9,280.00
8	Cap Liner	3,000	SY	\$ 15.00	\$ 45,000.00
9	Cover Soil	1000	CY	\$ 13.00	\$ 13,000.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					\$ 250,030.00
Contingency				25%	\$ 62,600.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					\$ 312,630.00
Project Management/Administrative Costs				6%	\$ 19,000.00
Engineering and Final Design				12%	\$ 38,000.00
Construction Management				8%	\$ 26,000.00
<b>TOTAL CAPITAL COSTS</b>					\$ 83,000.00
					(30,000x20.40)
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					\$ 395,630.00
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<b>Years 1 Through 5</b> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					(42,500x4.35)+(10,000x16.05) \$ 42,500.00
<b>Years 6 Through 100</b> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 10,000.00
<b>Annual Subtotal Years 6 through 100</b>					\$ 10,000.00
<b>PRESENT WORTH COST FOR O&amp;M</b>					\$ 345,228.00
					(42,500x4.35)+(5,000x16.05)
<b>TOTAL PRESENT WORTH COST</b>					\$ 740,858.00

\*Use of a soil cover only system would reduce approximately \$45,000 to the construction costs.

**LOWER MIKE HORSE CREEK - OPTION 3**

ITEM/DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	LS	\$ 16,000.00	\$ 16,000.00
2	Surface Water and Sediment Control	1	LS	\$ 5,000.00	\$ 5,000.00
3	Excavate & Haul Tailings (assume 5 mi round trip)**	15,000	CY	\$ 17.80	\$ 267,000.00
4	Clean fill/ Soil	0	CY	\$ 13.00	\$ 0.63
5	Channel Restoration	1300	LF	\$ 30.00	\$ 39,000.00
6	Revegetation	4.5	AC	\$ 1,500.00	\$ 6,750.00
<i>Repository-(Paymaster)**</i>					
7	Clear and Grub	1	AC	\$ 3,000.00	\$ 3,000.00
8	Compact Repository	15,000	CY	\$ 1.16	\$ 17,400.00
9	Cap Liner	5,000	SY	\$ 15.00	\$ 75,000.00
10	Cover Soil	1670	CY	\$ 13.00	\$ 21,710.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 450,860.63</b>
Contingency				25%	\$ 112,800.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$ 563,660.63</b>
Project Management/Administrative Costs				6%	\$ 34,000.00
Engineering and Final Design				12%	\$ 68,000.00
Construction Management				8%	\$ 46,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 148,000.00</b>
					(30,000x20.40)
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$ 711,660.63</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<i>Years 1 Through 5</i>					
Water quality monitoring, vegetation monitoring					\$ 42,500.00
storm water monitoring, weed control, groundwater sat (42,500x4.35)+(10,000x16.05)					
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<i>Years 6 Through 100</i>					
Water quality monitoring, vegetation monitoring					\$ 5,000.00
storm water monitoring, weed control, groundwater sampling.					
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 5,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 264,973.00</b>
					(42,500x4.35)+(5,000x16.05)
<b>TOTAL PRESENT WORTH COST</b>					<b>\$ 976,633.00</b>

\*\*Note: Material may be placed in West Impoundment Repository if Tailings Impoundment Option 3 or 4 is selected for cost savings of about \$40,000. If material is hauled to an off site repository there would be an increase of \$480,000

**SERIES PRESENT WORTH FACTOR**

$$SPWF = \frac{((1+i)^n - 1)}{i(1+i)^n}$$

where:

$i$  = discount rate = 0.0486  
 $n$  = period, yrs

$$P + A(SPWF)$$

where:

$P$  = present worth  
 $A$  = annual O&M cost

SPWF	MULTIPLIER
(1-5)	4.35
(1-100)	20.40
(6-100)	16.05

**Option 1**

O&M for Years 1-100 = \$ 30,000.00  
Present Worth Cost of O&M = \$ 611,919.82 (30,000x20.40)

**Option 2**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 10,000.00  
Present Worth Cost of O&M = \$ 345,227.48 (42,500x4.35)+(10,000x16.05)

**Option 3**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 5,000.00  
Present Worth Cost of O&M = \$ 264,972.26 (42,500x4.35)+(5,000x16.05)

**BEARTRAP CREEK REMOVAL OPTION  
PRELIMINARY COST ESTIMATES**

**BEARTRAP CREEK - OPTION 1**

ITEM/DESCRIPTION	QUANTITIY	UNIT	UNIT COST	TOTAL COST
1 No Action			\$ 0.00	\$ 0.00
<b>TOTAL CAPITAL COSTS</b>				\$ -

<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>	<b>\$ 0.00</b>
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<b>POST CLOSURE MAINTENANCE COSTS</b>	
<i>Years 1 Through 100</i>	
Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.	\$ 30,000.00
<b>Annual Subtotal Years 1 through 100</b>	<b>\$ 30,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>	<b>\$ 611,920.00</b>

<b>TOTAL PRESENT WORTH COST</b>	<b>\$ 611,920.00</b>
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**BEARTRAP CREEK - OPTION 2**

ITEM/DESCRIPTION		QUANTITIY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	5	%	\$ 3,000.00	\$ 15,000.00
2	Surface Water and Sediment Control	1.5	%	\$ 3,000.00	\$ 4,500.00
3	Construct Haul Road	1	LS	\$ 10,000.00	\$ 10,000.00
4	Excavate & Haul Tailings (assume 3 mi round trip)	5,000	CY	\$ 16.75	\$ 83,750.00
5	Flosse and Louise Tailings Excavation & Haul	1,200	CY	\$ 16.75	\$ 20,100.00
6	Amendment	51	Ton	\$ 80.00	\$ 4,080.00
7	Cover Soil	2500	CY	\$ 13.00	\$ 32,500.00
8	Revegetation	1	AC	\$ 1,500.00	\$ 1,500.00
<i>Repository-(Paymaster or West Side Repository)*</i>					
9	Clear and Grub	0.25	AC	\$ 3,000.00	\$ 750.00
10	Compact Repository	7,200	CY	\$ 1.16	\$ 8,352.00
11	Cap Liner	2,310	SY	\$ 15.00	\$ 34,650.00
12	Cover Soil	770	CY	\$ 13.00	\$ 10,010.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 225,192.00</b>
Contingency				25%	\$ 56,300.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$ 281,492.00</b>
Project Management/Administrative Costs				8%	\$ 23,000.00
Engineering and Final Design				15%	\$ 43,000.00
Construction Management				10%	\$ 29,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 95,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$ 376,492.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<i>Years 1 Through 100</i> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 100</b>					<b>\$ 42,500.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 611,920.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$ 988,412.00</b>

**BEARTRAP CREEK - OPTION 4**

ITEM/DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	5	%	\$ 10,000.00	\$ 50,000.00
2	Surface Water and Sediment Control	1.5	%	\$ 10,000.00	\$ 15,000.00
3	Construct Haul Road	1	LS	\$ 10,000.00	\$ 10,000.00
4	Excavate & Haul Tailings (assume 3 mi round trip)	31,000	CY	\$ 16.75	\$ 519,250.00
5	Flosse and Louise Tailings Excavation	1,200	CY	\$ 16.75	\$ 20,100.00
6	Clean fill/soil	7,500	CY	\$ 13.00	\$ 97,500.00
7	Amendment	1,050	Ton	\$ 80.00	\$ 84,000.00
8	Revegetation	11	AC	\$ 1,500.00	\$ 16,500.00
<i>Repository-(Paymaster or West Side Repository)*</i>					
9	Clear and Grub	1.50	AC	\$ 3,000.00	\$ 4,500.00
10	Compact Repository	32,200	CY	\$ 1.16	\$ 37,352.00
11	Cap Liner	6,000	SY	\$ 15.00	\$ 90,000.00
12	Cover Soil	2000	CY	\$ 13.00	\$ 26,000.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 970,202.00</b>
Contingency				25%	\$ 242,600.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$1,212,802.00</b>
Project Management/Administrative Costs				6%	\$ 73,000.00
Engineering and Final Design				12%	\$ 146,000.00
Construction Management				8%	\$ 98,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 317,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$1,529,802.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<i>Years 1 Through 5</i> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<i>Years 6 Through 100</i> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 10,000.00
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 10,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 345,228.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$1,875,030.00</b>

**BEARTRAP CREEK - OPTION 5**

ITEM/DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	5	%	\$ 17,000.00	\$ 85,000.00
2	Surface Water and Sediment Control	1.5	%	\$ 17,000.00	\$ 25,500.00
3	Construct Haul Road	1	LS	\$ 10,000.00	\$ 10,000.00
4	Excavate & Haul Tailings (assume 3 mi round trip)	61,500	CY	\$ 16.75	\$1,030,125.00
5	Flosse and Louise Tailings Excavation	1,200	CY	\$ 16.75	\$ 20,100.00
6	Clean fill/soil	15,000	CY	\$ 13.00	\$ 195,000.00
7	Channel Restoration	3,120	LF	\$ 30.00	\$ 93,600.00
8	Revegetation	11	AC	\$ 1,500.00	\$ 16,500.00
<i>Repository-(Paymaster or West Side Repository)*</i>					
9	Clear and Grub	2.00	AC	\$ 3,000.00	\$ 6,000.00
10	Compact Repository	62,700	CY	\$ 1.16	\$ 72,732.00
11	Cap Liner	8,500	SY	\$ 15.00	\$ 127,500.00
12	Cover Soil	2835	CY	\$ 13.00	\$ 36,855.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$1,718,912.00</b>
Contingency				25%	\$ 429,800.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$2,148,712.00</b>
Project Management/Administrative Costs				6%	\$ 129,000.00
Engineering and Final Design				12%	\$ 258,000.00
Construction Management				8%	\$ 172,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 559,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$2,707,712.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<b>Years 1 Through 5</b> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<b>Years 6 Through 100</b> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 5,000.00
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 5,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 264,973.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$2,972,685.00</b>

\* If all material is taken to off site repository the cost would increase by \$1,820,000

**SERIES PRESENT WORTH FACTOR**

$$SPWF = \frac{((1+i)^n - 1)}{i(1+i)^n}$$

where:

$i$  = discount rate = 0.0486  
 $n$  = period, yrs

$$P + A(SPWF)$$

where:

$P$  = present worth  
 $A$  = annual O&M cost

SPWF	MULTIPLIER
(1-5)	4.35
(1-100)	20.40
(6-100)	16.05

**Option 1 and 2**

O&M for Years 1-100 = \$ 30,000.00  
Present Worth Cost of O&M = \$ 611,919.82 **(30,000x20.40)**

**Option 4**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 10,000.00  
Present Worth Cost of O&M = \$ 345,227.48 **(42,500x4.35)+(10,000x16.05)**

**Option 5**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 5,000.00  
Present Worth Cost of O&M = \$ 264,972.26 **(42,500x4.35)+(5,000x16.05)**

**UPPER BLACKFOOT RIVER REMOVAL OPTIONS  
PRELIMINARY COST ESTIMATES**

**UPPER BLACKFOOT RIVER - OPTION 1**

ITEM/DESCRIPTION	QUANTITIY	UNIT	UNIT COST	TOTAL COST
1 No Action			\$ 0.00	\$ 0.00
<b>TOTAL CAPITAL COSTS</b>				\$ -

<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>	\$ 0.00
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<b>POST CLOSURE MAINTENANCE COSTS</b>	
<i>Years 1 Through 100</i> Water quality monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.	\$ 30,000.00
<b>Annual Subtotal Years 1 through 100</b>	\$ 30,000.00
<b>PRESENT WORTH COST FOR O&amp;M</b>	\$ 611,920.00

<b>TOTAL PRESENT WORTH COST</b>	\$ 611,920.00
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**UPPER BLACKFOOT RIVER - OPTION 2**

ITEM/DESCRIPTION		QUANTITIY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	LS	\$ 31,000.00	\$ 31,000.00
2	Surface Water and Sediment Control	1	LS	\$ 10,000.00	\$ 10,000.00
3	Construct Haul Road	1	LS	\$ 10,000.00	\$ 10,000.00
4	Excavate & Haul Tailings (assume 3 mi round trip)	35,000	CY	\$ 16.75	\$ 586,250.00
5	Revegetation	10	AC	\$ 1,500.00	\$ 15,000.00
<i>Repository-(Paymaster or West Side Repository)*</i>					
6	Clear and Grub	2.00	AC	\$ 3,000.00	\$ 6,000.00
7	Compact Repository	35,000	CY	\$ 1.16	\$ 40,600.00
8	Cap Liner	6,000	SY	\$ 15.00	\$ 90,000.00
9	Cover Soil	2000	CY	\$ 13.00	\$ 26,000.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 814,850.00</b>
Contingency				25%	\$ 203,800.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$1,018,650.00</b>
Project Management/Administrative Costs				6%	\$ 62,000.00
Engineering and Final Design				12%	\$ 123,000.00
Construction Management				8%	\$ 82,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 267,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$1,285,650.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<b>Years 1 Through 5</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<b>Years 6 Through 100</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 10,000.00
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 10,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 345,228.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$1,630,878.00</b>

**UPPER BLACKFOOT RIVER - OPTION 4**

ITEM/DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	LS	\$ 56,000.00	\$ 56,000.00
2	Surface Water and Sediment Control	1	LS	\$ 17,000.00	\$ 17,000.00
3	Construct Haul Road	1	LS	\$ 10,000.00	\$ 10,000.00
4	Excavate & Haul Tailings (assume 3 mi round trip)	45,000	CY	\$ 16.75	\$ 753,750.00
5	Clean Fill	10,000	CY	\$ 11.00	\$ 110,000.00
6	Restore Stream Channel	7,500	LF	\$ 30.00	\$ 225,000.00
7	Revegetation	12	AC	\$ 1,500.00	\$ 18,000.00
8	Relocate Mike Horse Road	2650	LF	\$ 45.00	\$ 119,250.00
<i>Repository-(Paymaster or West Side Repository)*</i>					
9	Clear and Grub	2.00	AC	\$ 3,000.00	\$ 6,000.00
10	Compact Repository	45,000	CY	\$ 1.16	\$ 52,200.00
11	Cap Liner	7,000	SY	\$ 15.00	\$ 105,000.00
12	Cover Soil	2335	CY	\$ 13.00	\$ 30,355.00
<b>SUBTOTAL CONSTRUCTION COSTS</b>					<b>\$ 1,502,555.00</b>
Contingency				25%	\$ 375,700.00
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>					<b>\$ 1,878,255.00</b>
Project Management/Administrative Costs				6%	\$ 113,000.00
Engineering and Final Design				12%	\$ 226,000.00
Construction Management				8%	\$ 151,000.00
<b>TOTAL CAPITAL COSTS</b>					<b>\$ 490,000.00</b>
<b>TOTAL CONSTRUCTION AND CAPITAL COSTS</b>					<b>\$ 2,368,255.00</b>
<b>POST CLOSURE MAINTENANCE COSTS</b>					
<b>Years 1 Through 5</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling, monitoring well installation.					\$ 42,500.00
<b>Annual Subtotal Years 1 through 5</b>					<b>\$ 42,500.00</b>
<b>Years 6 Through 100</b> Water level monitoring, vegetation monitoring storm water monitoring, weed control, groundwater sampling.					\$ 5,000.00
<b>Annual Subtotal Years 6 through 100</b>					<b>\$ 5,000.00</b>
<b>PRESENT WORTH COST FOR O&amp;M</b>					<b>\$ 264,973.00</b>
<b>TOTAL PRESENT WORTH COST</b>					<b>\$ 2,633,228.00</b>

\* If all material is taken to off site repository the cost would increase by \$1,302,000

**SERIES PRESENT WORTH FACTOR**

$$SPWF = \frac{((1+i)^n - 1)}{i(1+i)^n}$$

where:

$i$  = discount rate = 0.0486  
 $n$  = period, yrs

$$P + A(SPWF)$$

where:

$P$  = present worth  
 $A$  = annual O&M cost

SPWF	MULTIPLIER
(1-5)	4.35
(1-100)	20.40
(6-100)	16.05

**Option 1**

O&M for Years 1-100 = \$ 30,000.00  
Present Worth Cost of O&M = \$ 611,919.82 **(30,000x20.40)**

**Option 2**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 10,000.00  
Present Worth Cost of O&M = \$ 345,227.48 **(42,500x4.35)+(10,000x16.05)**

**Option 4**

O&M for Years 1-5 = \$ 42,500.00  
O&M for Years 6-100 = \$ 5,000.00  
Present Worth Cost of O&M = \$ 264,972.26 **(42,500x4.35)+(5,000x16.05)**