

Marathon Oil Company / Breeze Basin Facility Reclamation Estimate
Estimate of Probable Pit Closure Cost

Date: REVISED 9/29/13

By: WPM - Western Project Management



Cost Estimate Summary

Item	Description	Quantity	Unit	Direct Unit Cost	Direct Total Cost	Contingency (10%)	Subtotal	Payment & Performance Bonds (1.5%)	Subtotal	Contractor Overhead & Profit (15%)	Total
A.	Construction Contractor Costs										
1	Mobilization / Demobilization	2	Lump Sum	\$ 9,745.79	\$ 19,491.58	\$ 1,949.16	\$ 21,440.74	\$ 321.61	\$ 21,762.35	\$ 3,264.35	\$ 25,026.70
2	Soil Sampling for Contamination	15	Locations	\$ 288.63	\$ 4,329.50	\$ 432.95	\$ 4,762.45	\$ 71.44	\$ 4,833.89	\$ 725.08	\$ 5,558.97
3	Surface Water Sampling for Contamination - 8 samples	14	Samples	\$ 280.26	\$ 3,923.60	\$ 392.36	\$ 4,315.96	\$ 64.74	\$ 4,380.70	\$ 657.10	\$ 5,037.80
4	Monitoring well Abandonment	5	Wells	\$ 392.50	\$ 1,962.50	\$ 196.25	\$ 2,158.75	\$ 32.38	\$ 2,191.13	\$ 328.67	\$ 2,519.80
5	Disposal of Pond Fluids (Assumed to be non-hazardous)	1,705,494	Gallons	\$0.197	\$ 336,333.35	\$ 33,633.34	\$ 369,966.69	\$ 5,549.50	\$ 375,516.19	\$ 56,327.43	\$ 431,843.61
6	Remove & Dispose of Operating Equipment	40	Hours	\$ 1,377.37	\$ 55,094.67	\$ 5,509.47	\$ 60,604.14	\$ 909.06	\$ 61,513.20	\$ 9,226.98	\$ 70,740.18
7	Remove & Dispose of Pond Liners	285,795.00	Square feet	\$0.123	\$ 35,011.12	\$ 3,501.11	\$ 38,512.23	\$ 577.68	\$ 39,089.92	\$ 5,863.49	\$ 44,953.40
8	Backfill, Compact, & Restore Site	64,876.00	Cubic yards	\$ 2.50	\$ 162,027.05	\$ 16,202.70	\$ 178,229.75	\$ 2,673.45	\$ 180,903.20	\$ 27,135.48	\$ 208,038.68
9	Site Management Costs	5	Weeks	\$ 13,900.14	\$ 69,500.69	\$ 6,950.07	\$ 76,450.76	\$ 1,146.76	\$ 77,597.52	\$ 11,639.63	\$ 89,237.14
	Subtotal Construction				\$ 687,674.05	\$ 68,767.41	\$ 756,441.46	\$ 11,346.62	\$ 767,788.08	\$ 115,168.21	\$ 882,956.29
B.	Administrative and Engineering Costs										
1	Construction Management Fee (5% of Construction)										\$ 44,147.81
2	Work plans, Engineering Design, and Bid Documents (15% of Construction)										\$ 132,443.44
Grand Total											\$ 1,059,547.55

Mobilization / Demobilization

Summary	Description	Quantity	Unit	Unit Price	Total
	Transportation to the jobsite - Crew	8	hrs	\$ 173.94	\$ 1,391.50
	Transportation to the jobsite - Equip.	8	hrs	\$ 828.72	\$ 6,629.79
	Jobsite Trailer set-up/removal	0	ea	\$ 750.00	\$ -
	Sanitation Facilities	3	ea	\$ 75.00	\$ 225.00
	Crew Jobsite Set-up	8	hrs	\$ 173.94	\$ 1,391.50
	Work Truck - Crew Cab	8	hrs	\$ 13.50	\$ 108.00
	Mobilization/Demobilization Unit Rate				\$ 9,745.79

Crew Rate

	Quantity	Unit	Unit Price	Total
Laborer - Common	2	ea	\$ 27.79	\$ 55.57
Truck Driver	1	ea	\$ 34.43	\$ 34.43
Equipment Operator - Level 2	1	ea	\$ 33.56	\$ 33.56
Equipment Operator - Level 3	1	ea	\$ 50.37	\$ 50.37
				\$ 173.94

Equipment Rate

Work Truck - Crew Cab	2	ea	\$ 13.50	\$ 27.00
Flatbed Truck, Trailer, & Driver	4	ea	\$ 90.43	\$ 361.72
Flatbed Truck, Trailer, & Driver	4	ea	\$ 110.00	\$ 440.00
				\$ 828.72

	Distance	Unit	Speed (mph)	Time
Load up time				2.5
Denver to Exit Rifle, CO	183	mi	55	3.3
Local roads to Jobsite	6	mi	15	0.4
	<u>189</u>	<u>mi</u>		<u>6.2</u>
Round to the nearest full day				8 hrs

Soil Sampling for Contamination -		15 Locations			
Labor					
		Quantity	Unit	Unit Price	Total
	Soils Technician	40	hrs	\$ 55.00	\$ 2,200.00
					\$ 2,200.00
Equipment					
	Hand Auger - for testing at perimeter of pit	5	days	\$ 85.00	\$ 425.00
					\$ 425.00
Expenses					
	Transportation (90 mi. r/t from Grand Junction)	450	mi	\$ 0.51	\$ 229.50
	Misc. supplies (gloves, cleaners, containers etc.)	1	ls	\$ 200.00	\$ 200.00
					\$ 429.50
Laboratory Cost					
	BTEX (8015B)	15	ea	\$ 60.00	\$ 900.00
	Chlorides	15	ea	\$ 25.00	\$ 375.00
					\$ 1,275.00
Soil Testing:					\$ 4,329.50
Cost per locations					\$ 288.63

Assumptions:

- A technician is needed for 5 days at the beginning of the reclamation.

Surface and Ground Water Well Testing for Contamination - 14 samples (5 - wells, 3 domestic, 6 seeps/springs)						
Labor						
		Quantity	Unit	Unit Price		Total
	Soils Technician	40	hrs	\$ 55.00	\$	2,200.00
					\$	2,200.00
Expenses						
	Transportation (90 mi. r/t from Grand Junction)	360	mi	\$ 0.51	\$	183.60
	Misc. supplies and shipping of samples	1	ls	\$ 350.00	\$	350.00
					\$	533.60
Laboratory Cost						
	BTEX (8015B)	14	ea	\$ 60.00	\$	840.00
	Chlorides	14	ea	\$ 25.00	\$	350.00
					\$	1,190.00
	Water Testing:				\$	3,923.60
	Cost per locations				\$	280.26

Assumptions:

- A technician is needed for 5 days at the beginning of the reclamation.

Monitoring well abandonment			5 Wells		
Mobilization & Demobilization from Grand Junction (4 hrs each way)					
	Quantity	Unit	Unit Price		Total
Transportation (90 mi. r/t from Grand Junction)	180	mi	\$	0.51	\$ 91.80
Soils Technician	8	hrs	\$	55.00	\$ 440.00
Abandonment					
Abandonment of monitoring well (5 x 50' wells)	250	ft	\$	7.85	\$ 1,962.50
					\$ 1,962.50
Total cost:				\$	1,962.50
	Cost per locations				\$ 392.50

-Rates taken from the OPS EPS 2009

Remove & Dispose of Operating Equipment

Crew Rate				
	Qty.	Unit	Rate	Total
Electrician	1	ea	\$ 55.83	\$ 55.83
Ironworker	2	ea	\$ 53.08	\$ 106.16
Laborer - Common	4	ea	\$ 27.79	\$ 111.15
Equipment Operator - Level 2	2	ea	\$ 33.56	\$ 67.13
Equipment Operator - Level 3	2	ea	\$ 50.37	\$ 100.74
				<u>\$ 441.00</u>
Equipment & Fee Rates (Quantities are by the hour)				
	Qty.	Unit	Rate	Total
Work Truck - Crew Cab	1	ea	\$ 13.50	\$ 13.50
Reach Fork	1	ea	\$ 30.00	\$ 30.00
Backhoe -446B	1	ea	\$ 47.00	\$ 47.00
Excavator with breaker	1	ea	\$ 265.00	\$ 265.00
Excavator with shear	1	ea	\$ 265.00	\$ 265.00
Dump Truck & Driver	2	ea	\$ 90.43	\$ 180.86
Disposal (60 Tons estimated with an average of 4 Ton removed per hour)	1.5	ea	\$ 90.00	\$ 135.00
				<u>\$ 936.36</u>
Hourly Rate				<u>\$ 1,377.37</u>
Daily Rate				\$ 11,018.93
Weekly Rate				<u>\$ 55,094.67</u>

Assumptions:

- All metal items such as fencing & tanks will be recycled.
- Disposal of 400 tons includes (Buildings, Tanks, Pads, pipes, culverts, bird netting, concrete post cases, equipment, etc.).

Disposal of Pond Fluids (Assumed to be non-hazardous)

Assumed water elevation in the pit (ft)	N/A
Volume of pit fluid at elevation (bbl)	40,607
Volume in gallons (factored)	1,705,494

Description	Qty.	Unit	Trips		Time	Unit	Time	Unit	Rate	Total
Pump, fill, and dispose of pit fluid at treatment plant (100% of factored volume)	1,705,494	gallons	312	ea	312	hrs	39	days	\$ 4,464.35	\$ 174,311.42
Total Gallons removed	1,705,494	gallons	171	ea						
Disposal at municipal facility fee (\$5/1000 gallons)	1,705,494	gallons							0.095	\$ 162,021.93
Total cost estimated to remove all fluids										\$ 336,333.35
Cost per gallon to dispose of fluids (\$/gallon)										\$ 0.1972

Crew Rate (4 trucks) - Disposal at a municipal facility

	Qty.	Unit	Rate	Total
Laborer - Common	1	ea	\$ 26.82	\$ 26.82
Truck Driver	4	ea	\$ 34.43	\$ 137.72
			Subtotal	\$ 164.54
Equipment & Fee Rates				
Water Truck - 130 barrel vac. Truck	4	ea	\$ 95.00	\$ 380.00
Work Truck - Crew Cab	1	ea	\$ 13.50	\$ 13.50
			Subtotal	\$ 393.50
			Total Hourly Rate	\$ 558.04
			Daily Rate	\$ 4,464.35

Estimate Cycle Time

Fill Water Truck	20 minutes
Travel time to disposal facility	90 minutes
Empty Water Truck at Well or facility	20 minutes
Return to Pit	90 minutes
Avg. down time for items such as fuel	20 minutes
Total Cycle time per truck	240 minutes

Remove & Dispose of Pond Liners

Description	Qty.	Unit	Production	Unit	Days	Unit Cost	Total
Cut and remove liner	285,795.00	sf	38,404	sf/day	7.4	\$ 2,825.97	\$ 21,030.19
(2) Flatbed Truck, Trailer, & Driver	42	hrs	2	trips/day	3.5	\$ 180.86	\$ 5,064.13
Disposal*	99.1	tons				\$ 90.00	\$ 8,916.80
Subtotal							\$ 35,011.12
Unit Price (Remove & Dispose per sf)							\$ 0.1225

Liner Demolition & Loading

* Assumes 0.3 lbs/sf for the membranes, 1.0 lbs/sf for the Geonet and a 30% increase amount in contaminant (such as sludge or clay) waste.

Crew Rate (4 cut & roll crews)

	Qty.	Unit	Rate	Total
Laborer - Common	9	ea	\$ 27.79	\$ 250.09
Laborer - Foreman	1	ea	\$ 30.60	\$ 30.60
Equipment Operator - Level 2	1	ea	\$ 33.56	\$ 33.56

Reserve Pit

219

435

95265

Equipment & Fee Rates

Reach Fork	1	ea	\$ 30.00	\$ 30.00
Compressor, hose, & tools	3	ea	\$ 3.00	\$ 9.00
Subtotal				\$ 353.25
Daily Rate (8hrs)				\$ 2,825.97

95265

Liner Cutting

3 Laborers to cut, 6 to roll, 1 to assist with load & 1 Equip. Operator to operate the Backhoe or Reach Fork

Liner (per layer with 3 layers)	95265	sf		
Length of Liner (square root of area)	309	lf		
LF of cutting per liner	4465.05	lf		
Cutting rate per hour (4 crews)	225	lf/hr	3 crews	
Cutting time per liner	19.84	hrs		
Removal rate per hour (sf/hr)	4801	(Assumes 205' of a 20' wide roll per hour)		
Number of liners per pond	3			
Total hours for all liners	59.53			
Total weeks for the removal	1.5			

Disposal Sites

Garfield County Landfill	28	mi
Mesa County Landfill	66	mi
Delta County Landfill	110	mi
Worst Case (Delta Cty)	110	mi

	Distance	Unit	Speed (mph)	Time
Secondary rds	9	mi	15	0.6
CR 215	10.5	mi	30	0.4
I-70	39.5	mi	30	1.3
Secondary rds: 141/50/92/65	51	mi	50	1.0
	<u>110</u>	<u>mi</u>		<u>3.3</u>
Round to the nearest full hour to include unload time				3 hrs
Round Trip				6 hrs
Total Trips to dispose of liner waste	99.1	tons		6.61 trips
Round up to the next whole total trip value				7 trips

Backfill, Compact Site, & Restore Site								
	Description	Qty.	Unit	Production	Unit	Days	Unit Cost	Cost
	Rip Clay Layer	8	hrs	211,420	sf	1	\$ 512.13	\$ 4,097.03
	Push Soil (Dozer Crew 150ft max)*	12871.20	cy	3,197	cy/day	4.0	\$ 4,319.33	\$ 17,392.42
	Haul, and Place Stockpiled Soil	51484.80	cy	6,696	cy/day	7.7	\$ 6,788.83	\$ 52,198.52
	Spread Soils and Compact**	64876.00	cy	6,000	cy/day	10.8	\$ 6,009.01	\$ 64,973.37
	Finish work (6 Acres)	5.00	Acres				\$ 1,500.00	\$ 7,500.00
	Disc, Seed & Mulch	5.00	Acres			2.0	\$ 1,000.00	\$ 5,000.00
	Post Closure Weed Control (2 days of spraying)	1.00	ls				\$ 6,000.00	\$ 6,000.00
	Compaction Tests (6 per day)	65	tests				\$ 75.00	\$ 4,865.70
	Subtotal - Backfill & Compaction						\$	\$ 162,027.05
	Unit Price (Backfill & Compact per cubic yard)						\$	\$ 2.50

Bulldozer Crew - (2 Dozers)				
Crew Rate	Qty.	Unit	Rate	Total
Laborer - Common	1	ea	\$ 27.79	\$ 27.79
Equipment Operator - Level 2	2	ea	\$ 33.56	\$ 67.13
Equipment & Fee Rates				
Bulldozer (D8T)	2	ea	\$ 222.50	\$ 445.00
Subtotal				\$ 539.92
Daily Rate (8hrs)				\$ 4,319.33

Original Site Volumes	
Fill Volume	0 cy
Cut Volume	64,356.00 cy
Class 6 road base***	500.00 cy
Type L Riprap (Drain Rock) -	20.00 cy
(Clear water ditch w/rock check dams)	
	64,876.00 cy

Scraper Crew - (3 scrapers)				
Crew Rate	Qty.	Unit	Rate	Total
Laborer - Common	1	ea	\$ 27.79	\$ 27.79
Equipment Operator - Level 3	3	ea	\$ 50.37	\$ 151.10
Equipment & Fee Rates				
Scraper (627G)	3	ea	\$ 232.50	\$ 697.50
Subtotal				\$ 848.60
Daily Rate (8hrs)				\$ 6,788.83

Crew Rate (Spread & Compact)				
	Qty.	Unit	Rate	Total
Truck Driver	1	ea	\$ 25.37	\$ 25.37
Equipment Operator - Level 2	4	ea	\$ 33.56	\$ 134.26
Equipment & Fee Rates				
Water Truck - 2500 gallon (1,250 gals/hr usage)	1	ea	\$ 67.50	\$ 67.50
Bulldozer (D8T)	2	ea	\$ 162.00	\$ 324.00
Compactor, Vibratory (815F)	2	ea	\$ 100.00	\$ 200.00
Subtotal				\$ 751.13
Daily Rate (8hrs)				\$ 6,009.01

* It is assumed that approx. 20% of all soil volumes can be moved with the dozer.

**6 in lift with (3 passes per lift), @ 1,000 cy/hr w/6 hrs per day = 3000 cy/day (for 1 crew)

*** Road base and Type L Riprap to be mixed in with soils and compacted.

Site Management Costs							
Staff	Time	Unit	Duration	Unit	Rate	Total	
Site Superintendant	5	wks	200	hrs	\$ 65.00	\$	13,000.00
Project Manager	3	wks	120	hrs	\$ 75.00	\$	9,000.00
Equipment Operator - Level 3	1	wks	40	hrs	\$ 50.37	\$	2,014.71
Laborer - Common	4	wks	160	hrs	\$ 27.79	\$	4,445.98
Equipment							
Office Trailer	0	mos			\$ 300.00	\$	-
Portable Toilets	1.5	mos			\$ 200.00	\$	300.00
Water Truck (40 x 2,500 tanks)	2	wks			\$ 3,400.00	\$	6,800.00
Grader or Bulldozer with road blade	1	wks			\$ 3,140.00	\$	3,140.00
Work Truck - Crew Cab	5	wks			\$ 540.00	\$	2,700.00
Field Expenses							
Office Supplies	1	mos			200	\$	200.00
Utilities (Water, Electric, Phones)	1.5	mos			600	\$	900.00
Erosion Control materials	1	ls			8000	\$	8,000.00
Subcontractor Costs							
Civil Engineer (site visits)	10	ea			\$ 1,000.00	\$	10,000.00
Surveyor	1	ls			\$ 5,000.00	\$	5,000.00
Geotechnical Fees	1	ls			\$ 4,000.00	\$	4,000.00
						\$	69,500.69
Weekly Rate						\$	13,900.14

Labor Rates										
Labor Group		Rate	Fringe	Subtotal	Basic Payroll Tax (10.73%)	Worker's Comp. Ins. (13%)	Subtotal	Liability Ins. (1.5%)	Per diem	Total
Electrician		\$ 28.00	\$ 9.24	\$ 37.24	\$ 4.00	\$ 4.84	\$ 46.08	\$ 0.69	\$ 9.06	\$ 55.83
Ironworker		\$ 24.58	\$ 10.47	\$ 35.05	\$ 3.76	\$ 4.56	\$ 43.37	\$ 0.65	\$ 9.06	\$ 53.08
Laborer - Common		\$ 11.11	\$ 3.80	\$ 14.91	\$ 1.60	\$ 1.94	\$ 18.45	\$ 0.28	\$ 9.06	\$ 27.79
Laborer - Foreman	Foreman (Add 15% to Common)	\$ 12.78	\$ 4.37	\$ 17.15	\$ 1.84	\$ 2.23	\$ 21.22	\$ 0.32	\$ 9.06	\$ 30.60
Truck Driver	Semi & Water	\$ 14.93	\$ 5.27	\$ 20.20	\$ 2.17	\$ 2.63	\$ 24.99	\$ 0.37	\$ 9.06	\$ 34.43
Equipment Operator - Level 2	Bulldozer, Backhoe & Reach Fork	\$ 15.93	\$ 3.58	\$ 19.51	\$ 2.09	\$ 2.54	\$ 24.14	\$ 0.36	\$ 9.06	\$ 33.56
Equipment Operator - Level 3	Excavator & Scraper	\$ 23.67	\$ 9.22	\$ 32.89	\$ 3.53	\$ 4.28	\$ 40.69	\$ 0.61	\$ 9.06	\$ 50.37

Rates taken from the Davis Bacon Wage Decision Number:

CO130013 05/3/2013 for GARFIELD County, Colorado.

Per diem			
\$ 75.00	hotel	\$ 35.00	man/day

Marathon Oil Company / Breeze Basin Facility Reclamation Estimate

Estimate of Probable Pit Closure Cost

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