

Title Aggregate State - Centralized E&P Facility

Estimate of Probable Closure Cost

Date: December 13, 2018 - Revision 2

By: WPM - Western Project Management

FAC# 456644
Doc# 2528959
Date: 12/17/2018



Cost Estimate Summary

Item	Description	Quantity	Unit	Direct Unit Cost	Direct Total Cost	Contingency	Subtotal	Payment & Performance Bonds (1.5%)	Subtotal	Contractor Overhead & Profit (15%)	Total
A.	Construction Contractor Costs										
1	Mobilization / Demobilization	1	Lump Sum	\$ 5,000.00	\$ 5,000.00	\$ 500.00	\$ 5,500.00	\$ 82.50	\$ 5,582.50	\$ 837.38	\$ 6,419.88
2	Soil Sampling for Contamination	3	Locations	\$ 215.91	\$ 647.74	\$ 64.77	\$ 712.51	\$ 10.69	\$ 723.20	\$ 108.48	\$ 831.68
3	Surface and Stored Water Sampling for Contamination	6	Samples	\$ 456.23	\$ 2,737.36	\$ 273.74	\$ 3,011.10	\$ 45.17	\$ 3,056.26	\$ 458.44	\$ 3,514.70
4	Monitoring well Abandonment	3	Wells	\$ 584.12	\$ 1,752.36	\$ 175.24	\$ 1,927.60	\$ 28.91	\$ 1,956.51	\$ 293.48	\$ 2,249.99
5	Disposal of Fluids (Assumed to be non-hazardous)	500	Barrels	\$ 7.93	\$ 3,966.43	\$ 396.64	\$ 4,363.07	\$ 65.45	\$ 4,428.51	\$ 664.28	\$ 5,092.79
6	Decommission and Demolish Operating Equip	1	Lump Sum	\$ 8,168.86	\$ 8,168.86	\$ 816.89	\$ 8,985.75	\$ 134.79	\$ 9,120.54	\$ 1,368.08	\$ 10,488.62
6.5	Removal & Disposal of Operating Equip, tanks, piping, haul waste	1	Lump Sum	\$ 4,980.95	\$ 4,980.95	\$ 498.09	\$ 5,479.04	\$ 82.19	\$ 5,561.23	\$ 834.18	\$ 6,395.41
6.75	Portable Building and Shed Removal	1	Lump Sum	\$ 5,900.00	\$ 5,900.00	\$ 590.00	\$ 6,490.00	\$ 97.35	\$ 6,587.35	\$ 988.10	\$ 7,575.45
8	Backfill, Compact, & Restore Site	2,500.00	Cubic yards	\$ 11.78	\$ 29,449.09	\$ 2,944.91	\$ 32,394.00	\$ 485.91	\$ 32,879.91	\$ 4,931.99	\$ 37,811.90
9	Site Management Costs	3	Weeks	\$ 5,162.00	\$ 15,486.00	\$ 1,548.60	\$ 17,034.60	\$ 255.52	\$ 17,290.12	\$ 2,593.52	\$ 19,883.64
	Subtotal Construction				\$ 78,088.79	\$ 7,808.88	\$ 85,897.67	\$ 1,288.46	\$ 87,186.13	\$ 13,077.92	\$ 100,264.05
B.	Administrative and Engineering Costs										
1	Construction Management Fee (5% of Construction)										\$ 5,013.20
2	Work plans, Engineering Design, and Bid Documents										\$ 2,500.00
Grand Total											\$ 107,777

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Soil Sampling for Contamination -		3 Locations			
Labor		Quantity	Unit	Unit Price	Total
Soils Technician (2 each)		16	hrs	\$ 65.00	\$ 1,040.00
Equipment					
Hand Auger		1	days	\$ 85.00	\$ 85.00
Expenses					
Transportation (24 mi. from Greeley, CO to site)		48	mi	\$ 0.57	\$ 27.36
Misc. supplies (gloves, cleaners, containers etc.)		1	ls	\$ 275.00	\$ 275.00
Laboratory Cost					
Sample processing		5	ea	\$ 510.00	\$ 2,550.00
		25	ea	\$ 100.00	\$ 2,500.00
Soil Testing:				\$	6,477.36
Cost per location				\$	215.91

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Surface and Ground Water Well Testing for Contamination						
Sample types		Quantity		Unit		
	Domestic Water Well	3	ea	33 wells within 1 mile radius		
	Monitoring Well	3	ea			
	Surface water sample	0	ea			
	Stored water sample	0	ea	pits, tanks, pipelines etc		
	Subsurface sample	0	ea			
	Seeps/springs/ creeks	0	ea			
				6	Total Samples	
Labor						
		Quantity	Unit	Unit Price		Total
	Technician (2 each 8 hours) 2 days	16	hrs	\$	60.00	\$ 960.00
Expenses						
	Transportation (24 mi from Greeley, CO to site) - 2 trips	48	mi	\$	0.57	\$ 27.36
	Misc. supplies and shipping of samples	2	ls	\$	275.00	\$ 550.00
Laboratory Cost						
	BTEX (8015B)	6	ea	\$	100.00	\$ 600.00
	Chlorides	6	ea	\$	100.00	\$ 600.00
	Water Testing:				\$	2,737.36
	Cost per location				\$	456.23

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Monitoring well abandonment		3 Wells			
Mobilization & Demobilization from Grand Junction					
	Quantity	Unit	Unit Price		Total
Transportation (24 mi. from Greeley, CO to site)	48	mi	\$	0.57	\$ 27.36
Technician 2 each 1 day	16	hrs	\$	60.00	\$ 960.00
Abandonment					
Abandonment of monitoring well (3 x 30' wells)	90	ft	\$	8.50	\$ 765.00
				\$	765.00
Total cost:				\$	1,752.36
	Cost per locations				\$ 584.12

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

Assumed water elevation in the pit (ft)	
Volume of pit fluid at operating elevation (bbl)	0
Volume of on site tanks / equipment/ onsite piping (bbl)	500
total bbls	500
Volume in gallons	21,000

Used highest published pond volume (Fox Engineering)

Description	Qty.	Unit	Trips		Time	Unit	Time	Unit	Rate	Total
Pump fluid into local injection wells (97% of factored volume	20,370	gallons	0	ea	0	hrs	0	days	\$ 4,756.16	\$ 84.10
or Pump fluid to other local pits via existing infrastructure (95% of factored volume	0	gallons	0	ea	0	hrs	0	days	\$ 1,268.31	\$ -
Fuel for Pumps	1	ls					0	days	\$ 225.00	\$ 3.98
Pump, fill, and dispose of pit fluid at treatment plant (3% of factored volume	630	gallons	0	ea/ truck	0	hrs	0.00	days	\$ 10,633.74	\$ 25.56
Remove and Haul Tank Sludge / Sediment	400	cubic ft	1	loads	5	hrs	1	days	\$ 4,253.50	\$ 2,669.51
Sludge/Sediment Disposal Cost	400	cubic ft					15	CY	\$ 65.00	\$ 962.96
Total Gallons removed	21,001	gallons								
Disposal at permitted facility fee (\$035/gallon)	630	gallons							0.35	\$ 220.50
Total cost estimated to remove all fluids										\$ 3,966.62
Cost per gallon to dispose of fluids (\$/gallon)										\$ 0.1889
Cost per barrel to dispose of fluids (\$/gallon)										\$ 7.93

Crew Rate - For pit fluid returned to local wells or other pits via existing infrastructure

Laborer - Common	2	ea	\$	26.82	\$	53.64
Laborer - Foreman	1	ea	\$	30.42	\$	30.42
Truck Driver	0	ea	\$	43.10	\$	-
					\$	84.06
Equipment & Fee Rates						
Work Truck - Crew Cab	1	ea	\$	13.50	\$	13.50
Water Truck - 130 barrel vac. Truck	0	ea	\$	136.00	\$	-
					\$	13.50
Hourly Rate					\$	97.56
13 hr					Daily Rate	\$ 1,268.31
2 shifts / including premium						\$ 3,170.77

630 gallons total to haul
1.00 hours per trip per (130 bbls = 5460 gallons)
0 trips total (130 bbl trucks)
2 number of trucks
0 hours
0.00 days 24 hour trucking

Crew Rate (2 trucks) - Disposal at permitted facility

	Qty.	Unit		Rate	Total
Laborer - Common	2	ea	\$	26.82	\$ 53.64
Truck Driver	2	ea	\$	43.10	\$ 86.21
				Subtotal	\$ 139.85
Equipment & Fee Rates					
Water Truck - 130 barrel vac. Truck	2	ea	\$	136.00	\$ 272.00
Work Truck - Crew Cab	1	ea	\$	13.50	\$ 13.50
				Subtotal	\$ 285.50
				Total Hourly Rate	\$ 425.35
10 hr				Daily Rate	\$ 4,253.50
2 shifts / including premium					\$ 10,633.74

Estimate Cycle Time - Permitted Facility

Fill Water Truck	25 minutes
Travel time to disposal facility	30 minutes
Empty Water Truck at Well or facility	30 minutes
Return to Pit	30 minutes
Avg. down time for items such as fuel	30 minutes
Total Cycle time per truck	145 minutes

2.42 hours per trip
9.93 trips per 24 hour period

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Decommissioning, Demolishing / Remove & Dispose of Operating Equipment

Crew Rate				
	Qty.	Unit	Rate	Total
Electrician	1	ea	\$ 74.36	\$ 74.36
Pipefitter	1	ea	\$ 72.24	\$ 72.24
Labor - Foreman	1	ea	\$ 30.42	\$ 30.42
Laborer - Common	2	ea	\$ 27.76	\$ 55.52
Equipment Operator - Level 2	1	ea	\$ 57.35	\$ 57.35
				<u>\$ 289.89</u>
Equipment & Fee Rates (Quantities are by the hour)				
	Qty.	Unit	Rate	Total
Work Truck - Crew Cab	2	ea	\$ 13.50	\$ 27.00
Reach Fork	1	ea	\$ 150.00	\$ 150.00
Backhoe -446B	0	ea	\$ 140.00	\$ -
Crane	0	ea	\$ 400.00	\$ -
Dump/Flatbed Truck & Driver	1	ea	\$ 150.00	\$ 150.00
Trackhoe - PC220	1	ea	\$ 200.00	\$ 200.00
				<u>\$ 527.00</u>
Hourly Rate				<u>\$ 816.89</u>
Daily Rate				\$ 6,535.09
Weekly Rate				<u>\$ 32,675.45</u>
Waste/ Recycle load and trucking only				
	Qty.	Unit	Rate	Total
Lowboy Truck and Driver	1	ea	\$ 225.00	\$ 225.00
Dump Truck and Driver	1	ea	\$ 150.00	\$ 150.00
Reach Fork	1	ea	\$ 150.00	\$ 150.00
Equip Operator	1	ea	\$ 34.50	\$ 34.50
Hourly Crew Rate				\$ 559.50
Load and haul time	26	hours		\$ 5,018.02
Capacity - Tons per hour	24	tons		\$ -
Mileage	24 miles to Greeley			\$ 25.00
Total waste/recycle tonnage to haul	25			
Total				\$ 5,043.02

- All metal items such as fencing & tanks will be recycled if available.
- Disposal includes (pipes, culverts, bird netting, concrete post cases, equipment, etc.).
- Disposal cost reduced due to recycling of steel
- 21 tons per truck load of waste
- Equipment will be loaded and hauled to Grand Junction for recycle or repurposing/sale.

Total 6 Decommissioning and Demolish	\$ 8,168.86
Total 6.5 Removal and Disposal	<u>\$ 4,980.95</u> (discounted for recycle and scrap value)
Subtotal D and D	\$ 13,149.81

Portable building removal - decommissioning included above		
Load and haul to re-use yard or equipment sale yard		
Filter sheds	2 each	\$ 2,500.00
Storage Shed		\$ 1,100.00
Portable Office		\$ 1,100.00
Pumps		\$ -
Permits		
Permits, escort or and traffic control if required		\$ 1,200.00
Total 6.75 Potrable Building Removal		\$ 5,900.00
Grand Total D and D		\$ 19,049.81

Operating Equipment Decommissioning				
Valve, pipe, elect decommissioning			10 crew hrs	
Crew time/equip	hourly	\$ 816.89	per hour	
Time for crew	1 crew days	\$ 8,168.86		
			total	<u>\$ 8,168.86</u>

Demolition Items

Equipment & Tanks (including labor)

Tanks	Misc tanks	1 tons		
Equipment		2 tons		
Fencing / netti	incl below	tons		
Const debris		1 tons		
Concrete		0 tons		
		4 total tons		
				Labor crew
				\$ 293.28
				Pipe Crew / ho
				\$ 215.52
				Pipe equip / hr
				<u>\$ 327.00</u>
total crew and equip per hour				<u>\$ 542.52</u>

Demo - other total labor and equip summary

Pipe	Size	Matl	wt ea or lf	quan	tot wt	prod/day	Cost
Perf pipe	4"	S40 PVC		0	0	500	0
Riser pipe	8"	S40 PVC		0	0	300	\$ -
HDPE	6"	HDPE		0	0	300	\$ -
HDPE	10"	HDPE		0	0	300	\$ -
Monitor	2"	Steel		0	0	225	\$ -
12" culvert	12"	Galv.		115	60	450	\$ 578.69
18" culvert	18"	Galv.		0	0	450	\$ -
Fence							
Chain link	6'0	galv mesh		0	0	200	\$ -
Poultry fabric	1"	galv mesh		0	0	1000	\$ -
Wood posts		Wood		0	0	0	0.00
Steel posts	6"	Steel		0	0	35	\$ -
3/8" cable	3/8"	Steel		0	0	2500	0.00
1/4" cable	1/4"	Steel		0	0	2000	\$ -
Netting	2"	poly prop	lump sum	0	0	20000	\$ -
Tanks / Misc							
90 BBL		Steel		2000	0	1	\$ -
200 BBL		Steel		0	0	0	\$ -
300 BBL		Steel		8960	0	1	\$ -
500 BBL		Steel		12500	0	1	\$ -
750 BBL		Steel		16800	0	0	
1000 BBL		Steel		18800	0	0	
1500 BBL		Steel		0	0		\$ -
2000 BBL		Steel		0	0		\$ -
3000 BBL		Steel		37200	0	0	
Flexpipe	4"	Steel		3.3	250	825	250 \$ 4,340.19
Steel Cont	3'0	Galv Steel		30	0	400 sf	\$ -
Jersey Barriers		Conc		4500	0	60 per day	\$ -
				total		<u>\$ 4,918.88</u>	

deduct tank and barrier wt: 7725 total lbs waste / recycle
4 total tons waste

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Backfill, Compact Site, & Restore Site								
Description	Qty.	Unit	Production	Unit	Days	Unit Cost	Cost	
Rip Sub liner and surrounding material	15000	sf	30,000	sf	0.5	\$ 85.10	\$	340.42
Push Soil (Dozer Crew 150ft max)	0	cy	2,500	cy/day	1	\$ 3,861.71	\$	-
Place Soils and Compact**	2500	cy	6,000	cy/day	0.4	\$ 680.83	\$	283.68
Finish work	3.00	Acres			2.0	\$ 1,750.00	\$	5,250.00
Disc, Seed & Mulch	5.43	Acres			1.0	\$ 2,500.00	\$	13,575.00
Post Closure Weed Control (1 days of spraying)	1.00	ls				\$ 5,000.00	\$	5,000.00
Compaction Tests (6 per day)	5	tests				\$ 500.00		2500
Subtotal - Backfill & Compaction							\$	26,949.09
Unit Price (Backfill & Compact per cubic yard)							\$	11.78

Bulldozer & Scraper Crew					# of Dozers	1
Crew Rate	Qty.	Unit	Rate	Total		
Laborer - Common		1 ea	\$ 27.76	\$ 27.76		
Equipment Operator - Level 2		1 ea	\$ 57.35	\$ 57.35		
Equipment & Fee Rates						
Scraper (627G)		0 ea	\$ 240.00	\$ -		
Bulldozer (D8T)		0 ea	\$ 250.00	\$ -		
Subtotal				\$ 85.10		
Daily Rate (8hrs)				\$ 680.83		

Crew Rate (Spread & Compact)					# of S&C teams	1
	Qty.	Unit	Rate	Total		
Truck Driver		1 ea	\$ 25.37	\$ 25.37		
Equipment Operator - Level 2		1 ea	\$ 57.35	\$ 57.35		
Equipment & Fee Rates						
Blade -		1 ea	\$ 175.00	\$ 175.00		
Water Truck - 2500 gallon (1,250 gals/hr usage)		1 ea	\$ 75.00	\$ 75.00		
Compactor, Vibratory (815F)		1 ea	\$ 150.00	\$ 150.00		
Subtotal				\$ 482.71		
Daily Rate (8hrs)				\$ 3,861.71		

**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.

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Site Management Costs (during construction)							
	Time	Unit	Duration	Unit	Rate	Total	
Staff							
Site Superintendant	3	wks	120	hrs	\$ 55.00	\$ 6,600.00	
Project Manager	1	wks	8	hrs	\$ 67.00	\$ 536.00	
Equipment							
Portable Toilets	1	mos			\$ 180.00	\$ 180.00	
Work Truck - Crew Cab	3	wks			\$ 540.00	\$ 1,620.00	
Field Expenses							
Erosion Control materials	1	ls			\$2,500.00	\$ 2,500.00	
SWPP and Erosion Control Mgt	3	wks			\$ 850.00	\$ 2,550.00	
Site reseeding	incl in "Dirt" tab						
Subcontractor Costs							
Survey - staking and as-builts	1	ls			\$ 1,500.00	\$ 1,500.00	
						\$ 15,486.00	
Weekly Rate						\$ 5,162.00	

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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		\$ 35.80	\$ 15.45	\$ 51.25	\$ 5.50	\$ 6.66	\$ 63.41	\$ 0.95	\$ 10.00	\$ 74.36
Ironworker		\$ 27.45	\$ 22.11	\$ 49.56	\$ 5.32	\$ 6.44	\$ 61.32	\$ 0.92	\$ 10.00	\$ 72.24
Laborer - Common		\$ 11.22	\$ 2.92	\$ 14.14	\$ 1.52	\$ 1.84	\$ 17.50	\$ 0.26	\$ 10.00	\$ 27.76
Laborer - Foreman	Foreman (Add 15% to Common)	\$ 12.90	\$ 3.36	\$ 16.26	\$ 1.74	\$ 2.11	\$ 20.12	\$ 0.30	\$ 10.00	\$ 30.42
Truck Driver	Semi & Water	\$ 22.04	\$ 4.32	\$ 26.36	\$ 2.83	\$ 3.43	\$ 32.62	\$ 0.49	\$ 10.00	\$ 43.10
Equipment Operator - Level 2	Bulldozer, Backhoe & Reach Fork	\$ 27.60	\$ 10.10	\$ 37.70	\$ 4.05	\$ 4.90	\$ 46.65	\$ 0.70	\$ 10.00	\$ 57.35
Equipment Operator - Level 3	Excavator & Scraper	\$ 27.92	\$ 10.10	\$ 38.02	\$ 4.08	\$ 4.94	\$ 47.04	\$ 0.71	\$ 10.00	\$ 57.75

Rates taken from the Davis Bacon Wage Decision Numbers:

10/12/2018- CO-12 Determination CO180012 - Weld and surrounding Counties Heavy
 Any rates not shown were derived by decisions issued for adjacent counties.

Per diem per man per day			
hotel per man			
\$ 45.00	with 2 men/rm	\$ 35.00	Food & Incidentals