

APPENDIX G

Detailed Cost Estimates

SOURCE AREA EXCAVATION COST SUMMARY
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

Labor		\$64,180		
Description	Unit	Quantity	Unit Cost	Cost
<i>Project Management/Oversight</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	96	\$110.00	\$10,560.00
<i>Site Preparation/Setup</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	24	\$110.00	\$2,640.00
Technician	hr	24	\$90.00	\$2,160.00
<i>Asphalt/Concrete Removal</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	24	\$110.00	\$2,640.00
Technician/Operator	hr	24	\$90.00	\$2,160.00
<i>Excavate 900 CY</i>				
Project Manager/Senior Engineer	hr	4	\$140.00	\$560.00
Project Engineer/Superintendent	hr	48	\$110.00	\$5,280.00
Technician/Operator	hr	48	\$90.00	\$4,320.00
<i>Stockpiling</i>				
Project Manager/Senior Engineer	hr	10	\$140.00	\$1,400.00
Project Engineer/Superintendent	hr	16	\$110.00	\$1,760.00
Technician/Operator	hr	24	\$90.00	\$2,160.00
<i>Transportation and Disposal</i>				
Project Manager/Senior Engineer	hr	2	\$140.00	\$280.00
Project Engineer/Superintendent	hr	32	\$110.00	\$3,520.00
Technician/Operator	hr	48	\$90.00	\$4,320.00
<i>Backfill and Compaction</i>				
Project Manager/Senior Engineer	hr	6	\$140.00	\$840.00
Project Engineer/Superintendent	hr	58	\$110.00	\$6,380.00
Technician/Operator	hr	72	\$90.00	\$6,480.00

Travel		\$3,220	
<i>Flight</i>	\$700	(1 RT flight @ \$700 ea.)	
<i>Hotel</i>	\$1,610	(1 people, 2 wks)	
<i>per diem</i>	\$910	(1 people, 2 wks)	

Services		\$134,225		
Description	Qty	Unit	Unit Price	Cost
<i>Analytical Services</i>				
VOCs (EPA Method 8260B)	30	ea	160.00	4,800.00
metals CAM 17 (EPA Method 6010)	10	ea	\$160.00	1,600.00
SVOCs (EPA Method 8270)	2	ea	\$300.00	600.00
Pesticides/PCBs (608)	2	ea	\$210.00	420.00
EDD Population (15%)				720.00
QA Samples (Additional 30%)				1,440.00
<i>Data Validation</i>				
Volatiles - Level III (90%)	43.2	each	\$15.00	\$648.00
Volatiles - Level IV (10%)	4.8	each	\$25.00	\$120.00
EDD Population (15%)				\$115.20
QA Samples (Additional 30%)				264.96
<i>Asphalt/Concrete Transportation and Disposal</i>				
T&D AC/PC	100	tn	\$68.82	6,882.00
<i>Soil Transportation and Disposal</i>				
T&D - Class I - cal-haz	675	tn	\$102.77	69,369.75
T&D - Class II	675	tn	\$42.82	28,903.50
certificate of disposal fee	2	ea	\$224.30	448.60
<i>Backfill Soil Transportation</i>				
Backfill Transport	162.5	hr	\$110.11	\$17,892.88

SOURCE AREA EXCAVATION COST SUMMARY
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

Materials/Equipment		\$50,937		
Description	Qty	Unit	Unit Price	Cost
Site Preparation				
Fencing	1	6 MO	\$2,368.08	\$2,368.08
Barricades	24	EA	\$3.85	\$92.40
Sanitation	1	MO	\$500.00	\$500.00
Fence screen 6 oz filter fabric	1	rl	\$1,281.72	\$1,281.72
zip ties	3	ls	\$32.04	\$96.12
Asphalt/Concrete Removal				
Mobe/Demobe of heavy equipment	12	ea/wy	\$140.99	\$1,691.88
Excavator JD 200	0.33	wk	\$2,178.93	\$719.05
Loader JD 644	0.33	wk	\$2,499.36	\$824.79
2000 Gal. water truck	0.33	wk	\$986.93	\$325.69
Skidsteer #1751 (Bobcat S185)	0.33	wk	\$551.14	\$181.88
Concrete breaker	2	day	\$1,586.77	\$3,173.54
F250 pick up	2	day	\$128.17	\$256.34
Chopsaw - 12 inch	2	day	\$76.90	\$153.80
Bobcat Breaker	2	day	\$224.30	\$448.60
Excavate 900 CY				
plastic - 10 mil	8	rl	\$179.44	\$1,435.52
sand bags - w/sand	80	ea	\$4.49	\$359.20
Excavator JD 200	0.66	wk	\$2,178.93	\$1,438.09
2000 Gal. water truck	0.66	wk	\$986.93	\$651.37
Skidsteer #1751 (Bobcat S185)	0.66	wk	\$551.14	\$363.75
F250 pick up	3	day	\$128.17	\$384.51
mini-ram - PDR-1000	2	wk	\$384.52	\$769.04
Stockpiling				
plastic - 6 mil	4	rl	\$128.17	\$512.68
plastic - 10 mil	2	rl	\$179.44	\$358.88
sand bags - w/sand	60	ea	\$4.49	\$269.40
Loader JD 644	0.66	wk	\$2,499.36	\$1,649.58
Transportation and Disposal				
plastic - 6 mil	1	rl	\$128.17	\$128.17
Mobe/Demobe of heavy equipment	4	ea/wy	\$140.99	\$563.96
Loader JD 644	0.5	wk	\$2,499.36	\$1,249.68
Skidsteer #1751 (Bobcat S185)	0.66	wk	\$551.14	\$363.75
F250 pick up	2	day	\$128.17	\$256.34
Bobcat Sweep	2	day	\$192.26	\$384.52
Backfill and Compaction				
structural fill <3"minus	\$11.54	ton	810	\$9,347.40
class 2 ag base	\$17.94	ton	115	\$2,063.10
Loader JD 644	\$2,499.36	wk	1	\$2,499.36
2000 Gal. water truck	\$986.93	wk	1	\$986.93
F250 pick up	\$128.17	day	3	\$384.51
Compactor - 8 ton single drum	\$1,634.20	wk	1	\$1,634.20
mini-ram - PDR-1000	\$384.52	wk	2	\$769.04
Miscellaneous Equipment	\$5,000.00			
Miscellaneous Materials	\$5,000.00			

Grand Total	\$252,562
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INSTITUTIONAL CONTROLS
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

<u>Labor</u>	\$15,488			
Description	Unit	Quantity	Unit Cost	Cost
<i>Implement Institutional Controls</i>				
Attorney, Senior Associate, Real Estate	hr	24.00	213.41	\$5,121.84
Paralegal, Real Estate	hr	40.00	121.95	\$4,878.00
<i>Enforce Institutional Controls</i>				
Attorney, Senior Associate, Real Estate	hr	12.00	213.41	\$2,560.92
Paralegal, Real Estate	hr	24.00	121.95	\$2,926.80

<u>Grand Total</u>	\$15,488
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PAVEMENT REMOVAL OUTSIDE THE SOURCE AREA REMOVAL AREA
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

Labor	\$22,240			
Description	Unit	Quantity	Unit Cost	Cost
<i>Project Management/Oversight</i>				
Project Manager/Senior Engineer	hr	4	\$140.00	\$560.00
Project Engineer	hr	40	\$110.00	\$4,400.00
<i>Site Preparation/Setup</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	24	\$110.00	\$2,640.00
Technician	hr	24	\$90.00	\$2,160.00
<i>Asphalt/Concrete Removal</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	40	\$110.00	\$4,400.00
Technician/Operator	hr	40	\$90.00	\$3,600.00

Travel	\$3,220	
<i>Flight</i>	\$700	(1 RT flight @ \$700 ea.)
<i>Hotel</i>	\$1,610	(1 person, 1 wk)
<i>per diem</i>	\$910	(1 person, 2 wk)

Services	\$14,940			
Description	Qty	Unit	Unit Price	Cost
<i>Analytical Services</i>				
VOCs (EPA Method 8260B)	3	ea	160.00	480.00
metals CAM 17 (EPA Method 6010)	3	ea	\$160.00	480.00
EDD Population (15%)				72.00
QA Samples (Additional 30%)				144.00
<i>Asphalt/Concrete Transportation and Disposal</i>				
T&D AC/PC	200	tn	\$68.82	13,764.00

Materials/Equipment	\$22,114			
Description	Qty	Unit	Unit Price	Cost
<i>Site Preparation</i>				
Fencing	1	6 MO	\$2,368.08	\$2,368.08
Barricades	24	EA	\$3.85	\$92.40
Sanitation	1	MO	\$500.00	\$500.00
Fence screen 6 oz filter fabric	1	rl	\$1,281.72	\$1,281.72
zip ties	3	ls	\$32.04	\$96.12
<i>Asphalt/Concrete Removal</i>				
Mobe/Demobe of heavy equipment	12	ea/wy	\$140.99	\$1,691.88
Excavator JD 200	0.33	wk	\$2,178.93	\$719.05
Loader JD 644	0.33	wk	\$2,499.36	\$824.79
2000 Gal. water truck	0.33	wk	\$986.93	\$325.69
Skidsteer #1751 (Bobcat S185)	0.33	wk	\$551.14	\$181.88
Concrete breaker	2	day	\$1,586.77	\$3,173.54
F250 pick up	2	day	\$128.17	\$256.34
Chopsaw - 12 inch	2	day	\$76.90	\$153.80
Bobcat Breaker	2	day	\$224.30	\$448.60
Miscellaneous Equipment	\$5,000.00			
Miscellaneous Materials	\$5,000.00			

Grand Total	\$62,514
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SOIL VAPOR EXTRACTION COST SUMMARY
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

Labor	\$37,940			
<i>System Design and Planning</i>				
Description	Unit	Quantity	Unit Cost	Cost
Project Manager/Senior Engineer	hr	20	\$140.00	\$2,800.00
Project Engineer	hr	60	\$110.00	\$6,600.00
Technician	hr	30	\$90.00	\$2,700.00
			TOTAL	\$12,100.00
<i>System Construction and Shakedown</i> (estimated cost for 1 engineer and 1 technicians for 2 wks of labor)				
Description	Unit	Quantity	Unit Cost	Cost
Project Engineer	hr	80	\$110.00	\$8,800.00
Technician	hr	80	\$80.00	\$6,400.00
			TOTAL	\$15,200.00
<i>System Operation and Maintenance</i>				
Description	Unit	Quantity	Unit Cost	Cost
Project Engineer	hr	24	\$110.00	\$2,640.00
Technician	hr	100	\$80.00	\$8,000.00
			TOTAL	\$10,640.00

Travel	\$6,440		
<i>SVE Implementation</i>			
Flight	\$1,400	(2 RT flights @ \$700 ea.)	
Hotel	\$3,220	(2 people, 2 wks)	
per diem	\$1,820	(2 people, 2 wks)	

Services	\$21,400			
<i>Site Security (fencing, etc.)</i>	\$1,500			
<i>Boring and Trenching</i>	\$3,000	(PM Estimate)		
<i>Miscellaneous Acoustical Controls</i>	\$5,000	(PM Estimate)		
<i>Drilling Costs</i>				
Description	Units	Quantity	Unit Cost	Cost
SVE Well Drilling	day	2	\$3,000	\$6,000
SVE Well Materials (2 in.)	lf	60	\$15	\$900
Disposal of Soil Cuttings	LS	1	\$5,000	\$5,000
			TOTAL	\$11,900

Materials/Equipment	\$110,113			
Item	Unit	Quantity	Unit Cost	Cost
<i>SVE Equipment</i>				
Water Knockout Tank	ea.	1	\$8,093.00	\$8,093.00
Air Intake	ea.	1	\$621.78	\$621.78
Air Filter	ea.	4	\$100.00	\$400.00
Vacuum Pump	ea.	1	\$9,325.00	\$9,325.00
GAC Vessels (Including Delivery)	ea.	2	\$7,085.50	\$14,171.00
<i>Misc. Materials</i>				
2" - Sch. 80 PVC	10 ft	100	\$16.39	\$1,639.00
2" Ball Valves	ea.	18	\$53.66	\$965.88
Relief Valve	ea.	4	\$445.22	\$1,780.88
2" Tees	ea.	24	\$1.97	\$47.28
2" Couplings	ea.	24	\$0.95	\$22.80
Shed/System Housing	ea.	1	\$5,000.00	\$5,000.00
Exhaust Fan	ea.	1	\$386.55	\$386.55
Pressure Release Valve	ea.	8	\$74.73	\$597.84
Pressure Gauge	ea.	8	\$8.52	\$68.16
Flow Meter	ea.	8	\$167.81	\$1,342.48
Regulator	ea.	8	\$35.20	\$281.60
Control Valve	ea.	2	\$53.66	\$107.32
Misc Hardware	ea.	1	\$6,000.00	\$6,000.00
Misc. Plumbing	ea.	1	\$2,000.00	\$2,000.00
Misc. Electrical	ea.	1	\$15,000.00	\$15,000.00
Timer	ea.	2	\$131.35	\$262.70
Electricity	month	12	\$3,500.00	\$42,000.00
			TOTAL	\$110,113.27

Grand Total	\$175,893		
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PERFORMANCE MONITORING
Engineering Evaluation and Cost Analysis, Parcel 1A, DODHF Novato, California

Labor	\$21,440			
Description	Unit	Quantity	Unit Cost	Cost
<i>Performance Monitoring</i>				
Project Manager/Senior Engineer	hr	16	\$140.00	\$2,240.00
Project Engineer	hr	96	\$110.00	\$10,560.00
Technician	hr	96	\$90.00	\$8,640.00

Travel	\$9,920	
<i>Flight</i>	\$5,600	(8 RT flight @ \$700 ea.)
<i>Hotel</i>	\$2,760	(2 people, 4 total trips, 3 days each)
<i>per diem</i>	\$1,560	(2 people, 4 total trips, 3 days each)

Services	\$8,784			
Description	Qty	Unit	Unit Price	Cost
<i>Analytical Services</i>				
Modified EPA TO-15 - Volatile Organic Compou	48	ea.	\$190	\$4,560
1 Liter Summa Canisters	56	ea.	\$25	\$700
Flow Controllers	56	ea.	\$25	\$700
Fuel Surcharge	56	ea.	\$3	\$84
Duplicate Sampling T	8	ea.	\$8	\$32
Fittings/Ferrules	56	ea.	\$2	\$56
Teflon Tubing	600	ft	\$2	\$600
EDD Population (15%)				684.00
QA Samples (Additional 30%)				1,368.00

Materials/Equipment	\$2,000
<i>Miscellaneous Equipment</i>	\$1,000.00
<i>Miscellaneous Materials</i>	\$1,000.00

Grand Total	\$42,144
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REMOVAL ACTION ALTERNATIVE COST SUMMARY

Removal Action Alternative	Cost
Alternative 1 – No further action	\$0.00
Alternative 2 – Institutional Controls	\$15,487.56
Alternative 3 – Source Area Removal Excavation with Contingency Institutional Controls*	\$310,193.31
Alternative 4 – Source Area Removal Excavation with Pavement Removal and Contingency Institutional Controls*	\$372,707.19
Alternative 5 – Source Area Removal Excavation with Contingency Institutional Controls and Soil Vapor Extraction*	\$486,086.58

* Indicates that performance monitoring is included in the total for the alternative