2023 Cost Guidelines Update

July 1, 2023

The Underground Storage Tank Cleanup Fund (Cleanup Fund) has completed a 2023 update of the Cost Guidelines. This effort focused on updating labor rates and unit costs using the California Consumer Price Index (CPI), which will have an immediate impact to reimbursements. Future Cost Guideline updates will include stakeholder involvement and will focus on further updating of costs and narrative guidelines, the addition of remediation costs, and integration of guidelines into a unified document.

The Cleanup Fund Cost Guidelines now consist of three parts. Until a unified document is developed, stakeholders should use the following documents to determine whether costs generally are considered to be reasonable and necessary for reimbursement purposes:

- Cost Guidelines, Underground Storage Tank Cleanup Fund, Version 2.0, dated October 1, 2001.
- Designation of Reasonable and Necessary Reimbursable Costs and Upcoming Additional Changes, Underground Storage Tank Cleanup Fund, dated August 11, 2011.
- 2018 Cost Guidelines Update, Underground Storage Tank Cleanup Fund, dated August 2, 2018.
- 2023 Cost Guidelines Update, Underground Storage Tank Cleanup Fund, dated July 1, 2023. The “2023” column in each of the tables is the updated rate.

In general, information in the August 11, 2011, August 2, 2018, and July 1, 2023 documents updates and supersedes the information provided in the October 1, 2001 document.

Methodology Used in the Update: The California CPI Inflation calculator uses the average CPI for a given calendar year. This data represents changes in prices of all goods and services purchased for consumption by urban households. While the Cleanup Fund thinks that this approach is generally valid, we also realize that some costs are influenced by factors other than simple inflation. Claimants still may provide justification showing that costs incurred are reasonable and necessary on a site-specific basis. The California CPI Inflation Calculator is available on the California Department of Industrial Relations website at: https://www.dir.ca.gov/OPRL/capriceindex.htm.

Background on the Cost Guidelines: The Cost Guidelines were developed pursuant to subdivision (h) of section 25299.57 of the Health and Safety Code, which states, in part, that the State Water Resources Control Board “shall develop a summary of expected costs for common remedial actions. This summary of expected costs may be used by claimants as a guide in the selection and supervision of consultants and contractors.”

Purpose of the Cost Guidelines: The primary purpose of the Cost Guidelines document is to provide guidance to claimants for evaluating proposed and incurred corrective action costs at sites eligible for participation in the Cleanup Fund. Specifically, these Guidelines may help claimants identify whether goods and services are reimbursable and understand how the Cleanup Fund evaluates activities and costs. Claimants also will be able to judge whether they likely will be required to provide additional justification to support a given cost, or whether a call for assistance from the Cleanup Fund is in order.

The Cost Guidelines is a guideline only, it does not establish reimbursement limits for the listed items and activities.

Underground Storage Tank Cleanup Fund 2023 Cost Guidelines Update

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Date: July 1, 2023

Typical Personnel Labor Rates					
Professional Staff Title/Classification	**Billable Rate ($/hr) 2001**	**2006 ($/hr)**	**2014 ($/hr)**	**2018 ($/hr)**	**2023 ($/hr)**
Principal Engineer/Geologist	$125/hr	$145/hr	$165/hr	$182/hr	$222/hr
Project Manager	$105/hr	$120/hr	$139/hr	$152/hr	$185/hr
Senior Engineer/Geologist	$105/hr	$120/hr	$139/hr	$152/hr	$185/hr
Project/Associate Engineer/Geologist	$90/hr	$105/hr	$119/hr	$131/hr	$160/hr
Staff Engineer/Geologist	$75/hr	$90/hr	$99/hr	$109/hr	$133/hr
Senior Technician	$70/hr	$80/hr	$92/hr	$102/hr	$124/hr
Technician	$60/hr	$70/hr	$79/hr	$87/hr	$106/hr
Drafts Person	$55/hr	$65/hr	$73/hr	$80/hr	$97/hr
RR Analyst	-	-	-	$70/hr	$85/hr
Clerical	$45/hr	$55/hr	$59/hr	$65/hr	$79/hr

Lab Analysis (Soil & Water)					
EPA Method	**Component**	**Cost 2001**	**Cost 2014**	**Cost 2018**	**Cost 2023**
	Total Petroleum Hydrocarbons (TPH)-gasoline	$55/hr	$73/hr	$80/hr	$97/hr
8015	Total Petroleum Hydrocarbons (TPH)-diesel/motor oil	$65/hr	$86/hr	$94/hr	$114/hr
8020	BTEX/MTBE	$55/hr	$73/hr	$80/hr	$97/hr
8015/8020	TPH/BTEX/MTBE (gasoline only)	$65/hr	$86/hr	$94/hr	$114/hr
8260 (incl. Oxygenates)	Volatile Organic Compounds	$150/hr	$198/hr	$218/hr	$266/hr
8270	Semi-Volatile Organic Compounds	$275/hr	$363/hr	$399/hr	$486/hr
6010/7421	Total Lead2	$40/hr	$53/hr	$58/hr	$71/hr
	Waste Characterization (Reactivity/Corrosivity/Ignitability)	$180/hr	$238/hr	$261/hr	$318/hr
	5 LUFT Metals3	$80/hr	$106/hr	$116/hr	$141/hr
	CAM 17 Metals3	$175/hr	$231/hr	$254/hr	$309/hr

On-Site Laboratories					
Flat Fee		**2001**	**2014**	**2018**	**2023**
Daily Rental Fee	EPA Method 8015/8020	$1,500/day	$1,980/day	$2,178/day	$2,653/day
	EPA Method 8015/8260	$2,000/day	$2,640/day	$2,904/day	$3,537/day
Variable Fee		**2001**	**2014**	**2018**	**2023**
Mobilization/Daily Fee	Includes daily mobilization, chemist, and all equipment, supplies and disposal	$400/day	$528/day	$581/day	$708/day
Analysis Charges	EPA Method 8015/8020	$50/ea	$66/ea	$73/ea	$89/day
	EPA Method 8015/8260	$115/ea	$152/ea	$167/ea	$203/day

Lab Analysis (Air)				
Component	**Cost 2001**	**Cost 2014**	**Cost 2018**	**Cost 2023**
TPH	$60/hr	$79/hr	$87/hr	$106/hr
BTEX/MTBE	$115/hr	$152/hr	$167/hr	$203/hr
EPA Method 8260	$200/hr	$264/hr	$290/hr	$353/hr

Field Supplies					
Supplies (Field, Wells, Miscellaneous)	**Size/Unit**	**2001**	**2014**	**2018**	**Cost 2023**
Soil Sampling Liners (Brass)	2" x 6"	$6/ea	$8/ea	$9/ea	$11/ea
Soil Sampling Liners (Stainless Steel)	2" x 6"	$10/ea	$13/ea	$15/ea	$18/ea
Bailers (disposable) polypropylene	1.5" O.D.	$8/ea	$11/ea	$12/ea	$15/ea
Tedlar Bags (1 liter)	Each	$10/ea	$13/ea	$15/ea	$18/ea
Film/Development	Roll	At Cost	At Cost	At Cost	At Cost
Well Supplies					
2" PVC, Schedule 40					
PVC Well Casing (10' lengths)	Per Foot	$4/ft	$5/ft	$5/ft	$6/ft
PVC Well Screen 0.010" & 0.020" (Up to 5' Lengths)	Per Foot	$5/ft	$6/ft	$7/ft	$9/ft
PVC Well Screen 0.010" & 0.020" (Up to 10' Lengths)	Per Foot	$4/ft	$5/ft	$5/ft	$6/ft
Threaded Cap (Top or Bottom)	Each	$8/ea	$10/ea	$11/ea	$13/ea
Slip Cap	Each	$4/ea	$5/ea	$6/ea	$7/ea
Locking Cap	Each	$20/ea	$26/ea	$29/ea	$35/ea
4" PVC, Schedule 40					
PVC Well Casing (10' lengths)	Per Foot	$6/ft	$8/ft	$9/ft	$11/ft
PVC Well Screen 0.010" & 0.020" (Up to 5' Lengths)	Per Foot	$9/ft	$12/ft	$13/ft	$16/ft
PVC Well Screen 0.010" & 0.020" (Up to 10' Lengths)	Per Foot	$8/ft	$10/ft	$11/ft	$13/ft
Threaded Cap (Top or Bottom)	Each	$14/ea	$18/ea	$20/ea	$24/ea
Slip Cap	Each	$8/ea	$11/ea	$12/ea	$15/ea
Locking Cap	Each	$22/ea	$29/ea	$32/ea	$39/ea
Concrete					
Ready Mix	90 lb. Bag	$5/Bag	$7/Bag	$7/Bag	$9/Bag
Portland Cement Concrete	90 lb. Bag	$8/Bag	$11/Bag	$12/Bag	$15/Bag
Sand Cement slurry Backfill w/ Delivery	Cubic Yard	$60/yd3	$79/yd3	$87/yd3	$106/yd3
Grout					
Bentonite Grout	50 lb. Bag	$10/Bag	$13/Bag	$15/Bag	$18/Bag
Bentonite Chips	50 lb. Bag	$10/Bag	$13/Bag	$15/Bag	$18/Bag
Bentonite Granular	50 lb. Bag	$10/Bag	$13/Bag	$15/Bag	$18/Bag
Bentonite Tablets	50 lb. Bag	$40/Bag	$53/Bag	$58/Bag	$71/Bag
Sand					
Monterey Sand	100 lb. Bag	$9/Bag	$11/Bag	$12/Bag	$15/Bag
Silica Sand	100 lb. Bag	$8/Bag	$11/Bag	$12/Bag	$15/Bag
Well Covers					
Manholes(locking/tight/TrafficRated)	8 inch	$50/ea	$66/ea	$73/ea	$89/ea
Manholes(locking/tight/TrafficRated)	12 inch	$75/ea	$99/ea	$109/ea	$133/ea
Standpipe, steel, locking	8"dia.x 3'	$100/ea	$132/ea	$145/ea	$177/ea
Christy Box	8 inch	$75/ea	$99/ea	$109/ea	$133/ea
Christy Box	12 inch	$100/ea	$132/ea	$145/ea	$177/ea
Miscellaneous					
Padlocks	Each	$10/ea	$13/ea	$15/ea	$18/ea
Asphalt Patch (Cold-Mix)	50 lb. Bag	$10/Bag	$13/Bag	$15/Bag	$18/Bag
55 gallon drum	Each	$40/ea	$53/ea	$58/ea	$71/ea
Visqueen 6 mil, 20'x100'	Roll	$75/ea	$99/ea	$109/ea	$133/ea
Tyvek Suits	Each	$6/ea	$8/ea	$9/ea	$11/ea

Small Items				
	2001	**2014**	**2018**	**2023**
For example: gloves, water, ropes, tape, soap, twine, pens, bottles, paint, warning tape, distilled water etc.	$25/day	$33/day	$36/day	$44/day

Equipment (Small)						
	2001			2014		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Air Compressor	$85/day	$315/week		$112/day	$416/week	
Concrete Coring/Cutting Equipment				**Concrete Coring/Cutting Equipment**		
Coring Machine - 8" diameter (including bit)	$75/day	$250/week		$99/day	$330/week	
Concrete Saw	$75/day	$250/week		$99/day	$330/week	
Fence				**Fence**		
Chain link $/100 ft		$100/week	$400/month		$132/week	$528/month
Field Instruments				**Field Instruments**		
Datalogger (2 channel)	$65/day	$325/week		$86/day	$429/week	
Photo-ionization Detector (PID)	$100/day	$350/week		$132/day	$462/week	
Flame Ionization Detector (FID)	$150/day	$500/week		$198/day	$660/week	
Water Level Indicator	$25/day	$85/week		$33/day	$112/week	
Oil/Water Interface Probe	$40/day	$125/week		$53/day	$165/week	
pH/Conductivity/Temperature Meter	$40/day	$125/week		$53/day	$165/week	
Dissolved Oxygen Meter	$40/day	$125/week		$53/day	$165/week	
Combustible Gas Meter (LEL/O2)	$50/day	$175/week		$66/day	$231/week	
Turbidity Meter	$20/day	$70/week		$26/day	$92/week	
Field Sampling Equipment				**Field Sampling Equipment**		
Bailer (reusable teflon)	$20/day	$70/week		$26/day	$92/week	
Hand Auger	$25/day	$85/week		$33/day	$112/week	
Core Sampler & Hammer	$5/day	$20/week		$7/day	$26/week	
Generators, gasoline/diesel powered				**Generators, gasoline/diesel powered**		
Generator, 1-3 kW	$40/day	$150/week		$53/day	$198/week	
Generator, 5-6 kW	$55/day	$200/week		$73/day	$264/week	
Steam Cleaner	$75/day	$250/week		$99/day	$330/week	
Pumps				**Pumps**		
Gasoline Powered Pump 2" dia., 150 gpm	$55/day	$200/week		$73/day	$264/week	
Pump, Submersible, 10 gpm	$45/day	$150/week		$59/day	$198/week	
D.C. Purging Pump 3 gpm	$15/day	$50/week		$20/day	$66/week	
Skimmers/Separators Hydrocarbon Recovery				**Skimmers/Separators Hydrocarbon Recovery**		
Passive Skimmer (1 liter)			$15/month			$20/month
Electric Skimmer			$125/month			$165/month
Filter Separator			$100/month			$132/month
Storage Tanks				**Storage Tanks**		
Storage Tanks, 1,000 gallon	$13/day	$85/week	$325/month	$17/day	$112/week	$429/month
Storage Tanks, 5,000 gallon	$19/day	$125/week	$500/month	$24/day	$165/week	$660/month
Storage Tanks, 21,000 gallon	$30/day	$210/week	$840/month	$40/day	$277/week	$1109/month
Rolloff Bin	$19/day	$95/week	$350/month	$25/day	$125/week	$462/month
Survey Equipment				**Survey Equipment**		
Level/transit, tripod, rod/prism, tape/chain	$35/day	$140/week		$46/day	$185/week	
Traffic Control Components				**Traffic Control Components**		
Barricades		$5/week	$20/month		$7/week	$26/month
Cones/Delineators (25 each)	$8/day	$35/week		$11/day	$46/week	

Equipment (Small)						
	2018			2023		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Air Compressor	$123/day	$457/week		$150/day	$557/week	
Concrete Coring/Cutting Equipment				**Concrete Coring/Cutting Equipment**		
Coring Machine - 8" diameter (including bit)	$109/day	$363/week		$133/day	$442/week	
Concrete Saw	$109/day	$363/week		$133/day	$442/week	
Fence				**Fence**		
Chain link $/100 ft		$145/week	$581/month		$177/week	$708/month
Field Instruments				**Field Instruments**		
Datalogger (2 channel)	$94/day	$472/week		$114/day	$575/week	
Photo-ionization Detector (PID)	$145/day	$508/week		$177/day	$619/week	
Flame Ionization Detector (FID)	$218/day	$726/week		$266/day	$884/week	
Water Level Indicator	$36/day	$123/week		$44/day	$150/week	
Oil/Water Interface Probe	$58/day	$182/week		$71/day	$222/week	
pH/Conductivity/Temperature Meter	$58/day	$182/week		$71/day	$222/week	
Dissolved Oxygen Meter	$58/day	$182/week		$71/day	$222/week	
Combustible Gas Meter (LEL/O2)	$73/day	$254/week		$89/day	$309/week	
Turbidity Meter	$29/day	$102/week		$35/day	$124/week	
Field Sampling Equipment				**Field Sampling Equipment**		
Bailer (reusable teflon)	$29/day	$102/week		$35/day	$124/week	
Hand Auger	$36/day	$123/week		$44/day	$150/week	
Core Sampler & Hammer	$7/day	$29/week		$9/day	$35/week	
Generators, gasoline/diesel powered				**Generators, gasoline/diesel powered**		
Generator, 1-3 kW	$58/day	$218/week		$71/day	$266/week	
Generator, 5-6 kW	$80/day	$290/week		$97/day	$353/week	
Steam Cleaner	$109/day	$363/week		$133/day	$442/week	
Pumps				**Pumps**		
Gasoline Powered Pump 2" dia., 150 gpm	$80/day	$290/week		$97/day	$353/week	
Pump, Submersible, 10 gpm	$65/day	$218/week		$79/day	$266/week	
D.C. Purging Pump 3 gpm	$22/day	$73/week		$27/day	$89/week	
Skimmers/Separators Hydrocarbon Recovery				**Skimmers/Separators Hydrocarbon Recovery**		
Passive Skimmer (1 liter)			$22/month			$27/month
Electric Skimmer			$182/month			$222/month
Filter Separator			$145/month			$177/month
Storage Tanks				**Storage Tanks**		
Storage Tanks, 1,000 gallon	$18/day	$123/week	$472/month	$22/day	$150/week	$575/month
Storage Tanks, 5,000 gallon	$27/day	$182/week	$726/month	$33/day	$222/week	$884/month
Storage Tanks, 21,000 gallon	$44/day	$305/week	$1220/month	$54/day	$371/week	$1,486/month
Rolloff Bin	$28/day	$138/week	$508/month	$34/day	$168/week	$619/month
Survey Equipment				**Survey Equipment**		
Level/transit, tripod, rod/prism, tape/chain	$51/day	$203/week		$62/day	$247/week	
Traffic Control Components				**Traffic Control Components**		
Barricades		$7/week	$29/month		$9/week	$35/month
Cones/Delineators (25 each)	$12/day	$51/week		$15/day	$62/week	

Equipment (Heavy)												
	2001			2014			2018			2023		
	Hourly	Daily	Weekly	Hourly	Daily	Weekly	Hourly	Daily	Weekly	Hourly	Daily	Weekly
Backhoe (operated)	$90/hr	$720/day	$3,600/week	$119/hr	$950/day	$4,752/week	$131/hr	$1045/day	$5,227/week	$160/hr	$1,273/day	$6,366/week
Compactor (compaction wheel or vibraplate)		$125/day	$650/week		$165/day	$858/week		$182/day	$910/week		$222/day	$1,108/week
Excavator (operated)	$140/hr	1,100/day	$5,500/week	$185/hr	$1,452/day	$7,260/week	$204/hr	$1,597/day	$7,986/week	$247/hr	$1,945/day	$9,727/week
Loaders (operated)				**Loaders (operated)**			**Loaders (operated)**			**Loaders (operated)**		
Bob cat	$75/hr	$600/day	$3,000/week	$99/hr	$792/day	$3,960/week	$109/hr	$871/day	$4,356/week	$133/hr	$1,061/day	$5,306/week
Loader	$120/hr	$960/day	$4,800/week	$158/hr	$1,267/day	$6,336/week	$174/hr	$1,394/day	$6,970/week	$212/hr	$1,698/day	$8,489
Trucks				**Trucks**			**Trucks**			**Trucks**		
Truck /Automobile	Lesser of $60.00/day or $0.50/mile			$0.565/mile			$0.622/mile				$0.655	
Specialized Equipment Truck (4WD)	Lesser of $75.00/day or $0.60/mile			$0.565/mile			$0.622/mile				$0.655	
Truck - 10 cubic yard (operated)	$65/hr	$520/day	$2,600/week	$86/hr	$686/day	$3,432/week	$94/hr	$755/day	$3,775/week	$114/hr	$920/day	$4,598/week
Truck - 20 cubic yard (operated)	$75/hr	$600/day	$3,000/week	$99/hr	$792/day	$3,960/week	$109/hr	$871/day	$4,356/week	$133/hr	$1,061/day	$5,306/week
Vacuum Truck (operated)	$75/hr	$600/day	$3,000/week	$99/hr	$792/day	$3,960/week	$109/hr	$871/day	$4,356/week	$133/hr	$1,061/day	$5,306/week

Equipment (Drilling)								
	2001		2014		2018		2023	
	Hourly	Daily	Hourly	Daily	Hourly	Daily	Hourly	Daily
Mobilization/Demobilization (4 hour maximum)	$100/hr		$132/hr		$145/hr		$177/hr	
Hollow Stem Auger Drill Rig	$130/hr		$172/hr		$189/hr		$230/hr	
Rotary Drill Rig	$160/hr		$211/hr		$232/hr		$283/hr	
Direct Push Technology Rig	$130/hr		$172/hr		$189/hr		$230/hr	
Steam Cleaner		$75/day		$99/day		$109/day		$133/day
Cement Pump		$60/day		$79/day		$87/day		$106/day
Support Truck/Van		$85/day		$112/day		$123/day		$150/day
Compressor with Paving Breaker		$85/day		$112/day		$123/day		$150/day
Concrete Coring Machine		$75/day		$99/day		$109/day		$133/day
Generator (3500 watt)		$55/day		$73/day		$80/day		$97/day

Drilling (Soil Borings, Monitoring Wells)					
Description	**Depth**	**2001 $/ft**	**2014 $/ft**	**2018 $/ft**	**2023 $/ft**
Borings: backfill with cement/bentonite slurry mixture	0 to 50 feet	$18/ft	$24/ft	$26/ft	$32/ft
Borings: backfill with cement/bentonite slurry mixture	50 to100 feet	$18/ft	$24/ft	$26/ft	$32/ft
Borings: backfill with cement/bentonite slurry mixture	>100 feet	$18/ft	$24/ft	$26/ft	$32/ft
Wells: includes borehole drilling, PVC screen and blank schedule 40, end plug, locking cap, sand, bucket of bentonite pellets for seal, concrete grout, and well box; also includes 15 minutes surging time to set sand pack. This rate would be less if no sampling is needed during drilling.					
2" PVC	0 to 50 feet	$34/ft	$45/ft	$49/ft	$60/ft
2" PVC	50 to100 feet	$33/ft	$44/ft	$48/ft	$58/ft
2" PVC	>100 feet	$32/ft	$42/ft	$46/ft	$56/ft
4" PVC	0 to 50 feet	$40/ft	$53/ft	$58/ft	$71/ft
4" PVC	50 to100 feet	$39/ft	$51/ft	$57/ft	$69/ft
4" PVC	>100 feet	$38/ft	$50/ft	$55/ft	$67/ft
Well Demolition: drilling rig costs, includes backfill					
2" PVC		$16/ft	$21/ft	$23/ft	$28/ft
4" PVC		$20/ft	$26/ft	$29/ft	$35/ft

Miscellaneous Drilling Costs					
		2001	2014	2018	2023
Description	**Unit**	**$/Unit**	**$/Unit**	**$/Unit**	**$/Unit**
Additional Well Development	Hourly	$110/hr	$145/hr	$160/hr	$195/hr
Continuous Core Sampling	Additional $/ft	$5/ft	$7/ft	$8/ft	$10/ft
Angle Drilling	Additional $/ft	$5/ft	$7/ft	$8/ft	$10/ft

Cone Penetrometer/Geoprobe/Hydropunch				
Description	**2001**	**2014**	**2018**	**2023**
Includes: CPT Equipment, vehicle, labor, professional oversight, all necessary supplies, replacement tips, grout, sample rings and all other necessities to perform field work.	$25/ft	$33/ft	$36/ft	$44/ft

Preliminary Site Assessment Phase Workplan											
		2001			2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	$125/hr	$125	$165/hr	$165	$182/hr	$182	$222/hr	$222
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	8	$90/hr	$720	$119/hr	$950	$131/hr	$1,048	$160/hr	$1,280
Staff Engineer/Geologist	Initial Site Concept. Model/plan prep.	8	$75/hr	$600	$99/hr	$792	$109/hr	$872	$133/hr	$1064
Drafts Person	Prepare site & sampling location maps	3	$55/hr	$165	$73/hr	$218	$80/hr	$240	$97/hr	$291
Clerical	Typing/reproduction/ mailing	3	$45/hr	$135	$59/hr	$178	$65/hr	$195	$79/hr	$237
			Total Cost	**$1,745**	**Total Cost**	**$2,303**	**Total Cost**	**$2,537**	**Total Cost**	**$3,094**

Soil and Water Investigation Phase Workplan											
			2001		2014		2018		2023		
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	$125/hr	$125	$165/hr	$165	$182/hr	$182	$222/hr	$222
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	10	$90/hr	$900	$119/hr	$1,188	$131/hr	$1,310	$160/hr	$1,600
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
Drafts Person	Prepare site & sampling location maps	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97/hr	$388
Clerical	Typing/reproduction/mailing	4	$45/hr	$180	$59/hr	$238	$65/hr	$260	$79/hr	$316
Total Cost				**$2,325**	**Total Costs**	**$3,069**	**Total Costs**	**$3,380**	**Total Costs**	**$4,122**

Interim Remedial Action Workplan										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	$125/hr	$125	$165/hr	$165	$182/hr	$182	$222/hr	$222
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	6	$90/hr	$540	$119/hr	$713	$131/hr	$786	$160/hr	$960
Staff Engineer/Geologist	Workplan preparation	4	$75/hr	$300	$99/hr	$396	$109/hr	$436	$133/hr	$532
Drafts Person	Prepare site & sampling location maps	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97/hr	$388
Clerical	Typing/reproduction/mailing	3	$45/hr	$135	$59/hr	$178	$65/hr	$195	$79/hr	$237
			Total Cost	**$1,320**	**Total**	**$1,742**	**Total**	**$1,919**	**Total**	**$2,339**

Community Health and Safety Plan											
			2001		2014		2018		2023		
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	
Principal Engineer/Geologist	Review and signature	0.5	$125/hr	$63	$165/hr	$83	$182/hr	$91	$222/hr	$111	
Project/Associate Engineer/Geologist	Regulatory liaison and plan preparation	6	$90/hr	$540	$119/hr	$713	$131/hr	$786	$160/hr	$960	
Drafts Person	Site, vicinity, hospital location maps	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97/hr	$388	
Clerical	Typing/reproduction/ mailing	3	$45/hr	$135	$59/hr	$178	$65/hr	$195	$79/hr	$237	
			Total Cost	**$958**	**Total Cost**	**$1,264**	**Total Cost**	**$1,392**	**Total Cost**	**$1,696**	

Cone Penetrometer Test: Installation of eight (8) CPT probes to thirty (30) feet												
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**
Project Manager	Scheduling and Coordination	6	$105/hr	$630	$139/hr	$832	$152/hr	$912	$185/hr	$1110
Staff Engineer/Geologist	Field Prep./Permit/ Fieldwork	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
			Total Labor	**$1,530**	**Total Labor**	**$2,020**	**Total Labor**	**$2,220**	**Total Labor**	**$2,706**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$185**	**Total Equipment**	**$165**	**Total Equipment**	**$181**	**Total Equipment**	**$221**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller	feet	240	$25/ft	$6,000	$33/ft	$7,920	$36/ft	$8,640	$44/ft	$10,560
Analytical (EPA 8015)	each	8	$65/ea	$520	$86/ea	$686	$94/ea	$752	$114/ea	$912
Analytical (EPA 8260 w/oxygenates)	each	8	$150/ea	$1,200	$198/ea	$1,584	$218/ea	$1,744	$266/ea	$2,128
Markup			15%	$1,158	10%	$1,019	10%	$1,114	10%	$1,360
		Total Subcontractor		**$8,878**	**Total Subcontractor**	**$11,209**	**Total Subcontractor**	**$12,250**	**Total Subcontractor**	**$14,960**
		Total Cost		**$10,593**	**Total Cost**	**$13,394**	**Total Cost**	**$14,651**	**Total Cost**	**$17,887**

Hand Augering: Installation of five (5) hand augers borings to ten (10) feet												
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**
Project Manager	Scheduling/ Coordination	2	$105/hr	$210	$139/hr	$277	$152/hr	$304	$185/hr	$370
Staff Engineer/Geologist	Field work/QA	10	$75/hr	$750	$99/hr	$990	$109/hr	$1090	$133/hr	$1330
Technician	Field work	10	$60/hr	$600	$79/hr	$792	$87/hr	$870	$106/hr	$1060
			Total Labor	**$1,560**	**Total Labor**	**$2,059**	**Total Labor**	**$2,264**	**Total Labor**	**$2,760**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Hand Auger	each	1	$30/ea	$30	$40/ea	$40	$44/ea	$44	$54/ea	$54
Coring Machine	day	1	$75/day	$75	$99/day	$99	$109/day	$109	$133/day	$133
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$290**	**Total Equipment**	**$304**	**Total Equipment**	**$334**	**Total Equipment**	**$408**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Analytical (EPA 8015)	each	6	$65/ea	$390	$86/ea	$515	$94/ea	$564	$114/ea	$864
Analytical (EPA 8260 w/oxygenates)	each	6	$150/ea	$900	$198/ea	$1,188	$218/ea	$1,308	$266/ea	$1,596
Markup			15%	$194	10%	$170	10%	$187	10%	$246
		Total Subcontractor		**$1,484**	**Total Subcontractor**	**$1,873**	**Total Subcontractor**	**$2,059**	**Total Subcontractor**	**$2,706**
		Total Cost		**$3,334**	**Total Cost**	**$4,236**	**Total Cost**	**$4,657**	**Total Cost**	**$5,874**

Soil Boring Installation: Installation of three (3) borings to thirty (30) feet										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**
Project Manager	Scheduling/ Coordination	6	$105/hr	$630	$139/hr	$832	$152/hr	$912	$185/hr	$1,110
Staff Engineer/Geologist	Field prep./Permit/ Fieldwork	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
			Total Labor	**$1,530**	**Total Labor**	**$2,020**	**Total Labor**	**$2,220**	**Total Labor**	**$2,706**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/hr	$100	$132/hr	$132	$145/hr	$145	$177/hr	$177
Truck	day	1	$60/hr	$60	$0	$0	$0	$0	$0	$0
Drums	each	6	$40/hr	$240	$53/hr	$317	$58/hr	$348	$71/hr	$426
Soil Sampling Liners	each	15	$6/hr	$90	$8/hr	$119	$9/hr	$135	$11/hr	$165
Misc. Field Items	day	1	$25/hr	$25	$33/hr	$33	$36/hr	$36	$44/hr	$44
			Total Equipment	**$515**	**Total Equipment**	**$601**	**Total Equipment**	**$664**	**Total Equipment**	**$812**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller Mobilization	hour	4	$100/hr	$400	$132/hr	$528	$145/hr	$580	$177/hr	$708
Driller	feet	90	$18/hr	$1,620	$24/hr	$2,138	$26/hr	$2,340	$32/hr	$2,880
Analytical (EPA 8015)	each	15	$65/hr	$975	$86/hr	$1,287	$94/hr	$1,410	$114/hr	$1,710
Analytical (EPA 8260 w/oxygenates)	each	15	$150/hr	$2,250	$198/hr	$2,970	$218/hr	$3,270	$266/hr	$3,990
Markup			15%	$787	10%	$692	10%	$760	10%	$928
			Total Subcontractor	**$6,032**	**Total Subcontractor**	**$7,615**	**Total Subcontractor**	**$8,360**	**Total Subcontractor**	**$10,216**
			Total Cost	**$8,077**	**Total Cost**	**$10,236**	**Total Cost**	**$11,244**	**Total Cost**	**$13,734**

Soil Boring Installation: Installation of six (6) borings to fifty (50) feet										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**	**Labor Rate**	**Cost**
Project Manager	Scheduling/ Coordination	10	$105/hr	$1,050	$139/hr	$1,386	$152/hr	$1,520	$185/hr	$1,850
Staff Engineer/Geologist	Field prep./Permit/ Fieldwork	30	$75/hr	$2,250	$99/hr	$2,970	$109/hr	$3,270	$133/hr	$3,990
			Total Labor	**$3,300**	**Total Labor**	**$4,356**	**Total Labor**	**$4,790**	**Total Labor**	**$ 5,840**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	3	$100/day	$300	$132/day	$396	$145/day	$435	$177/day	$531
Truck	day	3	$60/day	$180	$0	$0	$0	$0	$0	$0
Visqueen	roll	1	$75/Per Roll	$75	$99/Per Roll	$99	$109/Per Roll	$109	$133/Per Roll	$133
Soil Sampling Liners	each	48	$6/ea	$288	$8/ea	$380	$9/ea	$432	$11/ea	$528
Misc. Field Items	day	3	$25/day	$75	$33/day	$99	$36/day	$108	$44/day	$132
			Total Equipment	**$918**	**Total Equipment**	**$974**	**Total Equipment**	**$1084**	**Total Equipment**	**$ 1,324**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller Mobilization	hour	4	$100/hr	$400	$132/hr	$528	$145/hr	$580	$177/hr	$708
Driller	feet	300	$18/hr	$5,400	$24/hr	$7,128	$26/hr	$7,800	$32/hr	$9600
Analytical (EPA 8015)	each	48	$65/ea	$3,120	$86/ea	$4,118	$94/ea	$4,512	$114/ea	$5472
Analytical (EPA 8260 w/oxygenates)	each	48	$150/ea	$7,200	$198/ea	$9,504	$218/ea	$10,464	$266/ea	$12,768
Markup			15%	$2,418	10%	$2,128	10%	$2,336	10%	$2,854
			Total Subcontractor	**$18,538**	**Total Subcontractor**	**$23,406**	**Total Subcontractor**	**$25,692**	**Total Subcontractor**	**$31,402**
			Total Cost	**$22,756**	**Total Cost**	**$28,736**	**Total Cost**	**$31,566**	**Total Cost**	**$38,566**

Trench/Test Pit Excavation: Excavation of thirty (30) feet of trench to 15 feet										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	6	$105/hr	$630	$139/hr	$832	$152/hr	$912	$185/hr	$1110
Staff Engineer/Geologist	Field preparation/ Fieldwork	10	$75/hr	$750	$99/hr	$990	$109/hr	$1,090	$133/hr	$1,330
			Total Labor	**$1,380**	**Total Labor**	**$1,822**	**Total Labor**	**$2,002**	**Total Labor**	**$2,440**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Visqueen	roll	1	$75/Per Roll	$75	$99/Per Roll	$99	$109/Per Roll	$109	$133/Per Roll	$133
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$260**	**Total Equipment**	**$264**	**Total Equipment**	**$290**	**Total Equipment**	**$354**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Backhoe (w/operator)	hour	8	$90/hr	$720	$119/hr	$950	$131/hr	$1,048	$160/hr	$1,280
Backfill	cubic yards	35	$15/cubic yd	$525	$20/cubic yd	$693	$22/cubic yd	$770	$27/cubic yd	$945
Analytical (EPA 8015)	each	6	$65/ea	$390	$86/ea	$515	$94/ea	$564	$114/ea	$684
Analytical (EPA 8260 w/oxygenates)	each	6	$150/ea	$900	$198/ea	$1,188	$218/ea	$1,308	$266/ea	$1,596
Markup			15%	$380	10%	$335	10%	$369	10%	$450
			Total Subcontractor	**$2,915**	**Total Subcontractor**	**$3,681**	**Total Subcontractor**	**$4,059**	**Total Subcontractor**	**$4,955**
			Total Cost	**$4,555**	**Total Cost**	**$5,767**	**Total Cost**	**$6,351**	**Total Cost**	**$7,749**

Hydropunch®1:Installation of six (6) sample probes to thirty (30) feet to sample groundwater										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	6	$105/hr	$630	$139/hr	$832	$152/hr	$912	$185/hr	$1110
Staff Engineer/Geologist	Field preparation/ Fieldwork	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
		Total Labor		**$1,530**	**Total Labor**	**$2,020**	**Total Labor**	**$2,220**	**Total Labor**	**$2,706**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
		Total Equipment		**$185**	**Total Equipment**	**$165**	**Total Equipment**	**$181**	**Total Equipment**	**$221**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller Mobilization	hour	4	$100/hr	$400	$132/hr	$528	$145/hr	$580	$177/hr	$708
Driller	feet	180	$25/ft	$4,500	$33/ft	$5,940	$36/ft	$6,480	$44/ft	$7,920
Analytical (EPA 8015)	each	9	$65/ea	$585	$86/ea	$772	$94/ea	$846	$114/ea	$1026
Analytical (EPA 8260 w/oxygenates	each	9	$150/ea	$1,350	$198/ea	$1,782	$218/ea	$1,962	$266/ea	$2,394
Markup			15%	$1,025	10%	$902	10%	$987	10%	$1205
		Total Subcontractor		**$7,860**	**Total Subcontractor**	**$9,924**	**Total Subcontractor**	**$10,855**	**Total Subcontractor**	**$13,253**
		Total Cost		**$9,575**	**Total Cost**	**$12,109**	**Total Cost**	**$13,256**	**Total Cost**	**$16,180**

1Any mention of brand names or specific technologies is not an endorsement of that brand or technology by the State, the Fund, or any of the staff. The mention of brands and names are purely for illustrative purposes.

Groundwater Well Installation: Installation of three (3) borings to thirty (30) feet, converted to two-inch monitoring wells										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	6	$105/hr	$630	$139/hr	$832	$152/hr	$912	$185/hr	$1110
Staff Engineer/ Geologist	Field prep./Permit/ Fieldwork	16	$75/hr	$1,200	$99/hr	$1,584	$109/hr	$1,744	$133/hr	$2,128
			Total Labor	**$1,830**	**Total Labor**	**$2,416**	**Total Labor**	**$2,656**	**Total Labor**	**$3,238**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Drums	each	6	$40/ea	$240	$53/ea	$317	$58/ea	$348	$71/ea	$426
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$425**	**Total Equipment**	**$482**	**Total Equipment**	**$529**	**Total Equipment**	**$647**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller Mobilization	hour	4	$100/hr	$400	$132/hr	$528	$145/hr	$580	$177/hr	$708
Driller	feet	90	$34/ft	$3,060	$45/ft	$4,039	$49/ft	$4,410	$60/ft	$5,400
Analytical (EPA 8015)	each	15	$65/ea	$975	$86/ea	$1,287	$94/ea	$1,410	$114/ea	$1,710
Analytical (EPA 8260 w/oxygenates)	each	15	$150/ea	$2,250	$198/ea	$2,970	$218/ea	$3,270	$266/ea	$3,990
Markup			15%	$1,003	10%	$882	10%	$967	10%	$1181
			Total Subcontractor	**$7,688**	**Total Subcontractor**	**$9,706**	**Total Subcontractor**	**$10,637**	**Total Subcontractor**	**$12,989**
			Total Cost	**$9,943**	**Total Cost**	**$12,604**	**Total Cost**	**$13,822**	**Total Cost**	**$16,874**

Groundwater Well Installation: Installation of six (6) borings to fifty (50) feet, converted to two-inch monitoring wells										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	12	$105/hr	$1,260	$139/hr	$1,663	$152/hr	$1,824	$185/hr	$2,220
Staff Engineer/ Geologist	Field prep./Permit/ Fieldwork	40	$75/hr	$3,000	$99/hr	$3,960	$109/hr	$4,360	$133/hr	$5,320
			Total Labor	**$4,260**	**Total Labor**	**$5,623**	**Total Labor**	**$6,184**	**Total Labor**	**$7,540**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	4	$100/day	$400	$132/day	$528	$145/day	$580	$177/day	$708
Truck	day	4	$60/day	$240	$0	$0	$0	$0	$0	$0
Visqueen	roll	1	$75/Per Roll	$75	$99/Per Roll	$99	$109/Per Roll	$109	$133/Per Roll	$133
Misc. Field Items	day	4	$25/day	$100	$33/day	$132	$36/day	$144	$44/day	$176
			Total Equipment	**$815**	**Total Equipment**	**$759**	**Total Equipment**	**$833**	**Total Equipment**	**$1017**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller Mobilization	hour	4	$100/hr	$400	$132/hr	$528	$145/hr	$580	$177/hr	$708
Driller	feet	300	$34/ft	$10,200	$45/ft	$13,464	$49/ft	$14,700	$60/hr	$18,000
Analytical (EPA 8015)	each	36	$65/ea	$2,340	$86/ea	$3,089	$94/ea	$3,384	$114/ea	$4,104
Analytical (EPA 8260 w/oxygenates)	each	36	$150/ea	$5,400	$198/ea	$7,128	$218/ea	$7,848	$266/ea	$9,576
Markup			15%	$2,751	10%	$2,421	10%	$2,651	10%	$3,239
			Total Subcontractor	**$21,091**	**Total Subcontractor**	**$26,630**	**Total Subcontractor**	**$29,163**	**Total Subcontractor**	**$35,627**
			Total Cost	**$26,166**	**Total Cost**	**$33,012**	**Total Cost**	**$36,180**	**Total Cost**	**$44,184**

Well Development *Only providing data for 3 wells										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	1	$105/hr	$105	$139/hr	$139	$152/hr	$152	$185/hr	$185
Technician	Develop 3 wells at 30 feet	3	$60/hr	$180	$79/hr	$238	$87/hr	$261	$106/hr	$318
Technician	Develop 6 wells at 50 feet	6	$60/hr	$360						
			Total Labor	**$285/$465**	**Total Labor**	**$377**	**Total Labor**	**$413**	**Total Labor**	**$503**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Water Level Indicator	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
drums	each	3	$40/ea	$120	$53/ea	$158	$58/ea	$174	$71/ea	$213
drums	each	6	$40/ea	$240						
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$230/$350**	**Total Equipment**	**$224**	**Total Equipment**	**$246**	**Total Equipment**	**$301**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Driller	hour	3	$110/hr	$330	$145/hr	$436	$160/hr	$480	$195/hr	$585
Driller	hour	6	$110/hr	$660						
Markup			15%	$50/$99	10%	$44	10%	$48	10%	$59
	Total Subcontractor			**$380/$759**	**Total Subcontractor**	**$480**	**Total Subcontractor**	**$528**	**Total Subcontractor**	**$644**
	Total Cost/3 wells at 30ft			**$895**	**Total Cost**	**$1,081**	**Total Cost**	**$1,187**	**Total Cost**	**$1,448**
	Total Cost/6 wells at 50ft			**$1,574**						

Vapor Test (8 hour)												
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	2	$105/hr	$210	$139/hr	$277	$152/hr	$304	$185/hr	$370
Staff Engineer/Geologist	Perform test/data analysis	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
Technician	Set-up & operation/vapor sampling	16	$60/hr	$960	$79/hr	$1,267	$87/hr	$1,392	$106	$1,696
			Total Labor	**$2,070**	**Total Labor**	**$2,732**	**Total Labor**	**$3,004**	**Total Labor**	**$3,662**
Equipment Rental/Supplies	**Units**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	day	1	$100/day	$100	$132/day	$132	$145/day	$145	$177/day	$177
Truck	day	2	$60/day	$120	$79/day	$0	$87/day	$174	$106/day	$212
VES Trailer (fully equipped)	each	1	$500/ea	$500	$660/ea	$660	$726/ea	$726	884/ea	$884
Misc. Field Items	day	2	$25/day	$50	$33/day	$66	$36/day	$72	$44/day	$88
			Total Equipment	**$770**	**Total Equipment**	**$858**	**Total Equipment**	**$1,117**	**Total Equipment**	**$1,361**
Subcontractor	**Units**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Analytical (BTEX/MTBE)	each	4	$115/ea	$460	$152/ea	$607	$167/ea	$668	$203/ea	$812
Markup			15%	$69	10%	$61	10%	$67	10%	$81
		Total Subcontractor		**$529**	**Total Subcontractor**	**$668**	**Total Subcontractor**	**$735**	**Total Subcontractor**	**$893**
		Total Cost		**$3,369**	**Total Cost**	**$4,258**	**Total Cost**	**$4,856**	**Total Cost**	**$5,916**

Pump Test (48 hour)											
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	8	$105/hr	$840	$139/hr	$1,109	$152/hr	$1,216	$185/hr	$1,480
Project/Associate Engineer/ Geologist	Test coordination/Data Analysis	24	$90/hr	$2,160	$119/hr	$2,851	$131/hr	$3,144	$160/hr	$3,840
Technician	Set-up and run test/wastewater mgmt.	60	$60/hr	$3,600	$79/hr	$4,752	$87/hr	$5,220	$106/hr	$6,360
			Total Labor	**$6,600**	**Total Labor**	**$8,712**	**Total Labor**	**$9,580**	**Total Labor**	**$11,680**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Pump (submersible)	week	1	$175/week	$175	$231/week	$231	$254/week	$254	$309/week	$309
Generator	week	1	$150/week	$150	$198/week	$198	$218/week	$218	$266/week	$266
Truck	day	4	$60/day	$240	$0	$0	$0	$0	$0	$0
Storage Tank (21,000 gal)	month	1	$840/month	$840	$1109/month	$1,109	$1220/month	$1,220	$1486/month	$1,486
Datalogger/ transducers (8)	each	1	$1975/ea	$1,975	$2607/ea	$2,607	$2868/ea	$2,868	$3493/ea	$3,493
Misc. Field Items	day	4	$25/day	$100	$33/day	$132	$36/day	$144	$44/day	$176
			Total Equipment	**$3,480**	**Total Equipment**	**$4,277**	**Total Equipment**	**$4,704**	**Total Equipment**	**$5,730**
			Total Cost	**$10,080**	**Total Cost**	**$12,989**	**Total Cost**	**$14,284**	**Total Cost**	**$17,410**

Free Product Removal: up to six (6) wells										
			2001		2014		2018		2023	
Activity	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Empty and record level in skimmer	Technician (hour)	4	$60/hr	$240	$79/hr	$317	$87/hr	$348	$106/hr	$424
	Oil/Water Interface Probe (day)	1	$40/day	$40	$53/day	$53	$58/day	$58	$71/day	$71
	Truck (day)	1	$60/day	$60	$0	$0	$0	$0	$0	$0
	Misc. Field Supplies	1	$25/ea	$25	$33/ea	$33	$36/ea	$36	$44/ea	$44
	Total (event)			**$365**	**Total (event)**	**$403**	**Total (event)**	**$442**	**Total (event)**	**$539**
Manual removal of free product	Technician (hour)	6	$60/hr	$360	$79/hr	$475	$87/hr	$522	$106/hr	$636
	Oil/Water Interface Probe (day)	1	$40/day	$40	$53/day	$53	$58/day	$58	$71/day	$71
	Bailer	1	$20/ea	$20	$26/ea	$26	$29/ea	$29	$35/ea	$35
	Misc. Field Supplies	1	$25/ea	$25	$33/ea	$33	$36/ea	$36	$44/ea	$44
	Truck (day)	1	$60/day	$60	$0	$0	$0	$0	$0	$0
	Total (event)			**$505**	**Total (event)**	**$587**	**Total (event)**	**$645**	**Total (event)**	**$786**

Groundwater Monitoring Event: three (3) wells at thirty (30) feet												
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	1	$105/hr	$105	$139/hr	$139	$152/hr	$152	$185/hr	$185
Technician	Field prep./ Fieldwork	8	$60/hr	$480	$79/hr	$634	$87/hr	$696	$106/hr	$848
			Total Labor	**$585**	**Total Labor**	**$773**	**Total Labor**	**$848**	**Total Labor**	**$1,033**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Pump	day	1	$15/day	$15	$20/day	$20	$22/hr	$22	$27/hr	$27
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Drums	each	3	$40/ea	$120	$53/ea	$158	$58/ea	$174	$71/ea	$213
PH/Conductivity/ Temperature Meter	day	1	$40/day	$40	$53/day	$53	$58/day	$58	$71/day	$71
Water Level Indicator	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
Bailers	each	3	$8/ea	$24	$11/ea	$32	$12/ea	$36	$15/ea	$45
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$309**	**Total Equipment**	**$329**	**Total Equipment**	**$362**	**Total Equipment**	**$444**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Analytical (EPA 8015)	each	4	$65/ea	$260	$86/ea	$343	$94/ea	$376	$114/ea	$456
Analytical (EPA 8260 w/oxygenates)	each	4	$150/ea	$600	$198/ea	$792	$218/ea	$872	$266/ea	$1064
Markup			15%	$129	10%	$114	10%	$125	10%	$152
			Total Subcontractor	**$989**	**Total Subcontractor**	**$1,249**	**Total Subcontractor**	**$1,373**	**Total Subcontractor**	**$1,672**
			Total Cost	**$1,883**	**Total Cost**	**$2,351**	**Total Cost**	**$2,583**	**Total Cost**	**$3,149**

Groundwater Monitoring Event: six (6) wells at fifty (50) feet										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/ Coordination	2	$105/hr	$210	$139/hr	$277	$152/hr	$304	$185/hr	$370
Staff Engineer/ Geologist	Field prep./ Fieldwork	10	$75/hr	$750	$99/hr	$990	$109/hr	$1090	$133/hr	$1330
Technician	Field prep./ Fieldwork	10	$60/hr	$600	$79/hr	$792	$87/hr	$870	$106/hr	$1060
			Total Labor	**$1,560**	**Total Labor**	**$2,059**	**Total Labor**	**$2,264**	**Total Labor**	**$2,760**
Equipment Rental/Supplies	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Pump	day	1	$15/day	$15	$20/day	$20	$22/day	$22	$27/hr	$27
Truck	day	1	$60/day	$60	$0	$0	$0	$0	$0	$0
Drums	each	6	$40/ea	$240	$53/ea	$317	$58/ea	$348	$71/ea	$426
PH/Conductivity/ Temperature Meter	day	1	$40/day	$40	$53/day	$53	$58/day	$58	$71/day	$71
Water Level Indicator	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
Bailers	each	6	$8/ea	$48	$11/ea	$63	$12/ea	$72	$15/ea	$90
Misc. Field Items	day	1	$25/day	$25	$33/day	$33	$36/day	$36	$44/day	$44
			Total Equipment	**$453**	**Total Equipment**	**$519**	**Total Equipment**	**$572**	**Total Equipment**	**$702**
Subcontractor	**Units**	**Count**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Analytical *(EPA* 8015)	each	7	$65/ea	$455	$86/ea	$601	$94/ea	$658	$114/ea	$798
Analytical *(EPA* 8260 w/oxygenates)	each	7	$150/ea	$1,050	$198/ea	$1,386	$218/ea	$1,526	$266/ea	$1,862
Markup			15%	$226	10%	$199	10%	$218	10%	$266
			Total Subcontractor	**$1,731**	**Total Subcontractor**	**$2,186**	**Total Subcontractor**	**$2,402**	**Total Subcontractor**	**$2,926**
			Total Cost	**$3,744**	**Total Cost**	**$4,764**	**Total Cost**	**$5,238**	**Total Cost**	**$6,388**

Periodic Groundwater Monitoring Report: Three (3) wells, no other activity conducted										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	2	$125/hr	$250	$165/hr	$330	$182/hr	$364	$222/hr	$444
Project/Associate Engineer/Geologist	Project management, report preparation and review	6	$90/hr	$540	$119/hr	$713	$131/hr	$786	$160/hr	$960
Staff Engineer/Geologist	Report preparation	8	$75/hr	$600	$99/hr	$792	$109/hr	$872	$133/hr	$1064
Drafts Person	Prepare report figures	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97	$388
Clerical	Typing/reproduction/mailing	4	$45/hr	$180	$59/hr	$238	$65/hr	$260	$79	$316
			Total Cost	**$1,790**	**Total Cost**	**$2,363**	**Total Cost**	**$2,602**	**Total Cost**	**$3,172**
Once an initial report is prepared for a site, the subsequent reports should take less effort to prepare.										

Periodic Groundwater Monitoring Report: Six (6) wells, no other activity conducted										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	2	$125/hr	$250	$165/hr	$330	$182/hr	$364	$222/hr	$444
Project/Associate Engineer/Geologist	Project management, report preparation and review	8	$90/hr	$720	$119/hr	$950	$131/hr	$1048	$160/hr	$1280
Staff Engineer/Geologist	Report preparation	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
Drafts Person	Prepare report figures	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97	$388
Clerical	Typing/reproduction/ mailing	4	$45/hr	$180	$59/hr	$238	$65/hr	$260	$79	$316
			Total Cost	**$2,270**	**Total Cost**	**$2,996**	**Total Cost**	**$3,300**	**Total Cost**	**$4,024**
Once an initial report is prepared for a site, the subsequent reports should take less effort to prepare.										

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Periodic Update Report: Significant activities conducted										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	$125/hr	$125	$165/hr	$165	$182/hr	$182	$222/hr	$222
Project/Associate Engineer/Geologist	Project management, report preparation and review	4	$90/hr	$360	$119/hr	$475	$131/hr	$524	$160/hr	$640
Drafts Person	Prepare report figures	1	$55/hr	$55	$73/hr	$73	$80/hr	$80	$97/hr	$97
Clerical	Typing/reproduction/mailing	1	$45/hr	$45	$59/hr	$59	$65/hr	$65	$79/hr	$79
			Total Cost	**$585**	**Total Cost**	**$772**	**Total Cost**	**$851**	**Total Cost**	**$1038**

B

Periodic Update Report: No activities conducted during reporting period										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Project/Associate Engineer/Geologist	Project management, report preparation and review	1	$90/hr	$90	$119/hr	$119	$131/hr	$131	$160/hr	$160
Clerical	Typing/reproduction/mailing	1	$45/hr	$45	$59/hr	$59	$65/hr	$65	$79/hr	$79
			Total Cost	**$135**	**Total Cost**	**$178**	**Total Cost**	**$196**	**Total Cost**	**$239**

Site Assessment Report: six (6) borings to thirty (30) feet, three (3) converted to monitoring wells										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	$125/hr	$500	$165/hr	$660	$182/hr	$728	$222/hr	$888
Senior Engineer/Geologist	Data evaluation/conclusions & recommendations/review	8	$105/hr	$840	$139/hr	$1,109	$152/hr	$1,216	$185/hr	$1,480
Project/Associate Engineer/Geologist	Regulatory liaison and report preparation	16	$90/hr	$1,440	$119/hr	$1,901	$131/hr	$2,096	$160/hr	$2,560
Staff Engineer/Geologist	Revise Site Conceptual Model/report preparation	16	$75/hr	$1,200	$99/hr	$1,584	$109/hr	$1,744	$133	$2,128
Drafts Person	Prepare site & sampling location maps	8	$55/hr	$440	$73/hr	$581	$80/hr	$640	$97	$776
Clerical	Typing/reproduction/mailing	8	$45/hr	$360	$59/hr	$475	$65/hr	$520	$79/hr	$632
			Total Cost	**$4,780**	**Total Cost**	**$6,310**	**Total Cost**	**$6,944**	**Total Cost**	**$8,464**

A

Corrective Action Plan Preparation: Basic site with moderate groundwater and soil contamination										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	$125/hr	$500	$165/hr	$660	$182/hr	$728	$222/hr	$888
Senior Engineer/Geologist	Review and signature	12	$105/hr	$1,260	$139/hr	$1,663	$152/hr	$1,824	$185/hr	$2,220
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	20	$90/hr	$1,800	$119/hr	$2,376	$131/hr	$2,620	$160/hr	$3,200
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	20	$75/hr	$1,500	$99/hr	$1,980	$109/hr	$2,180	$133/hr	$2,660
Drafts Person	Prepare site & sampling location maps	12	$55/hr	$660	$73/hr	$871	$80/hr	$960	$97/hr	$1164
Clerical	Typing/reproduction/ mailing	8	$45/hr	$360	$59/hr	$475	$65/hr	$520	$79/hr	$632
			Total Cost	**$6,080**	**Total Cost**	**$8,025**	**Total Cost**	**$8,832**	**Total Cost**	**$10,764**

B

Corrective Action Plan Preparation: Complicated site with extensive groundwater and soil contamination, difficult hydrogeology and multiple contaminants										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	6	$125/hr	$750	$165/hr	$990	$182/hr	$1092	$222/hr	$1332
Senior Engineer/Geologist	Review and signature	12	$105/hr	$1,260	$139/hr	$1,663	$152/hr	$1,824	$185/hr	$2,220
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	32	$90/hr	$2,880	$119/hr	$3,802	$131/hr	$4,192	$160/hr	$5,120
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	32	$75/hr	$2,400	$99/hr	$3,168	$109/hr	$3,488	$133/hr	$4,256
Drafts Person	Prepare site & sampling location maps	16	$55/hr	$880	$73/hr	$1162	$80/hr	$1280	$97/hr	$1552
Clerical	Typing/reproduction/ mailing	12	$45/hr	$540	$59/hr	$713	$65/hr	$780	$79/hr	$948
			Total Cost	**$8,710**	**Total Cost**	**$11,498**	**Total Cost**	**$12,656**	**Total Cost**	**$15,428**

A

Remedial Action Plan Preparation: Basic site with moderate groundwater and soil contamination										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	$125/hr	$500	$165/hr	$660	$182/hr	$728	$222/hr	$888
Senior Engineer/Geologist	Remedial design, review and signature	8	$105/hr	$840	$139/hr	$1,109	$152/hr	$1,216	$185/hr	$1,480
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	12	$90/hr	$1,080	$119/hr	$1,426	$131/hr	$1,572	$160/hr	$1,920
Staff Engineer/Geologist	Plan preparation	12	$75/hr	$900	$99/hr	$1,188	$109/hr	$1,308	$133/hr	$1,596
Drafts Person	Prepare figures and design drawings	8	$55/hr	$440	$73/hr	$581	$80/hr	$640	$97/hr	$776
Clerical	Typing/reproduction/ mailing	8	$45/hr	$360	$59/hr	$475	$65/hr	$520	$79/hr	$632
			Total Cost	**$4,120**	**Total Cost**	**$5,439**	**Total Cost**	**$5,984**	**Total Cost**	**$7,292**

B

Remedial Action Plan Preparation: Complicated site with extensive groundwater and soil contamination, difficult hydrogeology and multiple contaminants										
			2001		2014		2018		2023	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	$125/hr	$500	$165/hr	$660	$182/hr	$728	$222/hr	$888
Senior Engineer/Geologist	Remedial design, review and signature	16	$105/hr	$1680	$139/hr	$2,218	$152/hr	$2,432	$185/hr	$2,960
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	24	$90/hr	$2,160	$119/hr	$2,851	$131/hr	$3,144	$160/hr	$3,840
Staff Engineer/Geologist	Plan preparation	16	$75/hr	$1200	$99/hr	$1,584	$109/hr	$1,744	$133/hr	$2,128
Drafts Person	Prepare figures and design drawings	12	$55/hr	$660	$73/hr	$871	$80/hr	$960	$97/hr	$1164
Clerical	Typing/reproduction/ mailing	8	$45/hr	$360	$59/hr	$475	$65/hr	$520	$79/hr	$632
			Total Cost	**$6,560**	**Total Cost**	**$8,659**	**Total Cost**	**$9,528**	**Total Cost**	**$11,612**

A

Excavate and Segregate Overburdened and Contaminated Soil				
	2001	2014	2018	2023
Activity	**Cost/unit**	**Cost/Unit**	**Cost/Unit**	**Cost/Unit**
Excavate	8.00/ton (12.00 yd3)	$11/Per Cubic Yard	$12/Per Cubic Yard	$15/Per Cubic Yard
Replacement Material (including compaction)	12.00/ton (18.00 yd3)	$16/Per Cubic Yard	$18/Per Cubic Yard	$22/Per Cubic Yard

B

Consulting Excavation Cost									
		2001		2014		2018		2023	
Personnel	**Hours**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Staff Engineer/Geologist	20	$75/hr	$1,500	$99/hr	$1,980	$109/hr	$2,180	$133/hr	$2,660
		Total Labor	**$1,500**	**Total Labor**	**$1,926**	**Total Labor**	**$2,180**	**Total Labor**	**$2,660**
Equipment Rental/Supplies	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Gas Monitor (PID)	2	$100/ea	$200	$132/ea	$264	$145/ea	$290	$177/ea	$354
Truck	120	0.5/ea	$60	$0	$0	$0	$0	$0	$0
Misc. Field Items	2	$25/ea	$50	$33/ea	$66	$36/ea	$72	$44/ea	$88
		Total Equipment	**$310**	**Total Equipment**	**$330**	**Total Equipment**	**$362**	**Total Equipment**	**$442**
Analytical	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
EPA 8015/8020	20	$65/hr	$1,300	$86/hr	$1,716	$94/hr	$1,880	$114/hr	$2,280
Markup		15%	$195	10%	$172	10%	$188	10%	$228
		Total Analytical	**$1,495**	**Total Analytical**	**$1,888**	**Total Analytical**	**$2,068**	**Total Analytical**	**$2,508**
		Total Consultant	**$3,305**	**Total Consultant**	**$4,144**	**Total Consultant**	**$4,610**	**Total Consultant**	**$5,610**

C

Excavation Contractor Cost									
		2001		2014		2018		2023	
Activity	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Excavation	500	$12/hr	$6,000	$16/hr	$7,920	$17/hr	$8,500	$21/hr	$10,500
Backfill and Compaction	500	$18/hr	$9,000	$24/hr	$11,880	$26/hr	$13,000	$32/hr	$16,000
		Total Contractor	**$15,000**	**Total Contractor**	**$19,800**	**Total Contractor**	**$21,500**	**Total Contractor**	**$26,500**

A

System Operation and Maintenance										
Consulting Costs			**2001**		**2014**		**2018**		**2023**	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Technician (1/04/01)	Regular field maintenance/log	4	$60/hr	$240	$79/hr	$317	$87/hr	$348	$106/hr	$424
Technician (1/11/01)	Regular field maintenance/log	4	$60/hr	$240	$79/hr	$317	$87/hr	$348	$106/hr	$424
Technician (1/18/01)	Regular field maintenance/log	4	$60/hr	$240	$79/hr	$317	$87/hr	$348	$106/hr	$424
Technician 1/25/01)	Replace vacuum gauge/oil change/ Regular field maintenance/log	4	$60/hr	$240	$79/hr	$317	$87/hr	$348	$106/hr	$424
Truck (1/04/01)	Office to site/back	0.5	$60/hr	$30	$0	$0	$0	$0	$0	$0
Truck (1/11/01)	Office to site/back	0.5	$60/hr	$30	$0	$0	$0	$0	$0	$0
Truck (1/18/01)	Office to site/back	0.5	$60/hr	$30	$0	$0	$0	$0	$0	$0
Truck 1/25/01)	Office to site/back	0.5	$60/hr	$30	$0	$0	$0	$0	$0	$0
		Total Consulting		**$1,080**	**Total Consulting**	**$1,268**	**Total Consulting**	**$1,392**	**Total Consulting**	**$1,696**
Supplies		**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Vacuum gauge, replace		1.00	$22/ea	$22	$28/ea	$28	$31/ea	$31	$38/ea	$38
Oil & filter (4 qt. 10-40)		1.00	$25/ea	$25	$33/ea	$33	$36/ea	$36	$44/ea	$44
Markup			15%	$7	10%	$6	10%	$7	10%	$8
		Total Supplies		**$54**	**Total Supplies**	**$67**	**Total Supplies**	**$74**	**Total Supplies**	**$90**
Analytical		**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
EPA 8015/8020 (air)		3	$115/ea	$345	$152/ea	$455	$167/ea	$501	$203/ea	$609
EPA 8260 w/oxygenates (water)		3	$150/ea	$450	$198/ea	$594	$218/ea	$654	$266/ea	$798
Markup			15%	$119	10%	$105	10%	$116	10%	$141
		Total Analytical		**$914**	**Total Analytical**	**$1,154**	**Total Analytical**	**$1,271**	**Total Analytical**	**$1,548**
		Total Cost/Month		**$2,048**	**Total Cost/Month**	**$2,489**	**Total Cost/Month**	**$2,737**	**Total Cost/Month**	**$3,334**

B

Operations and Maintenance Supplies				
Replacement Granular Activated Carbon (GAC) (Liquid Phase) per pound	$ 1.50	$ 1.98	$ 2.20	$2.68
Replacement Granular Activated Carbon (GAC) (Vapor Phase) per pound	$ 1.50	$ 1.98	$ 2.20	$2.68
Miscellaneous Repair Parts	At Cost	At Cost	At Cost	At Cost

A	Contaminated Soil:					
			2001	2014	2018	2023
		Units	Rate	Rate	Rate	Rate
	Load		$5.00/ton (7.50 yd3)	$7/cubic yd	$8/cubic yd	$10/cubic yd
	Load	hourly	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17
	Transportation	hourly	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17
	Disposal	Ton	see soil remediation, page 57	see soil remediation, page 57	see soil remediation, page 57	see soil remediation, page 57

B	Contaminated Liquid:					
		Units	Rate	Rate	Rate	Rate
	Load and Transport	gallon	$0.75/gal	$0.99/gal	$1.10/gal	$1.34/gal
	Load and Transport	hourly	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17	see equipment (heavy), page 17
	Disposal	gallon	$1	$1.30	$1.40	$1.70

C	Containerized Waste:					
		Units	Rate	Rate	Rate	Rate
	Load/Transport/Dispose - Soil	55 gallon drum	$100/55gal drum	$132/55gal drum	$145/55gal drum	$177/55gal drum
	Load/Transport/Dispose - Water	55 gallon drum	$100/55gal drum	$132/55gal drum	$145/55gal drum	$177/55gal drum

A	Off-Site Remediation					
			2001	2014	2018	2023
	Method	Description	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit
	Asphalt Recycling	Contaminated soil used as a substitute for sand aggregate in asphalt production	$55.00/ton	$73/Ton	$80/Ton	$97/Ton
	Thermal Desorption	Contamination is thermally desorbed from soil in a fixed facility rotary kiln and the vapors are burned in a flame burner	$55.00/ton	$73/Ton	$80/Ton	$97/Ton
	Bioremediation	Soil is bioremediated at a dedicated facility. Costs will vary depending upon the level of contamination found in the soil.	$45.00/ton	$59/Ton	$65/Ton	$79/Ton

B	Off-Site Disposal					
			2001	2014	2018	2023
	Facility	Description	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit
	Class I Landfill (Hazardous)	Accepts 'hazardous' wastes, uncommon for Petroleum UST contamination	$150.00/ton	$198/Ton	$218/Ton	$266/Ton
	Class II Landfill (Designated)	Accepts designated wastes	$40 to $65/ton	$53/Ton to $86/Ton	$58/Ton to $95/Ton	$71/Ton to $116/Ton
	Class III Landfill (Non-hazardous)	Municipal facilities can sometimes accept varying levels depending upon their specific design and permits. May use remediated soil as "cover" material at no cost.	$10 to $30/ton	$13/Ton to $40/Ton	$14/Ton to $44/Ton	$17/Ton to $54/Ton

Cleanup Progress Report											
			2001		2014		2018		2023		
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	$125/hr	$125	$165/hr	$165	$182/hr	$182	$222/hr	$222
Project/Associate Engineer/Geologist	Regulatory liaison, project management and report preparation	8	$90/hr	$720	$119/hr	$950	$131/hr	$1048	$160/hr	$1280
Staff Engineer/Geologist	Report preparation	8	$75/hr	$600	$99/hr	$792	$109/hr	$872	$133/hr	$1064
Drafts Person	Prepare report figures	4	$55/hr	$220	$73/hr	$290	$80/hr	$320	$97/hr	$388
Clerical	Typing/reproduction/mailing	4	$45/hr	$180	$59/hr	$238	$65/hr	$260	$79/hr	$316
			Total Cost	**$1,845**	**Total Cost**	**$2,435**	**Total Cost**	**$2,682**	**Total Cost**	**$2,682**

A

Site Survey				
	2001	2014	2018	2023
	Cost/Event	Cost/Event	Cost/Event	Cost/Event
Site Survey (3 wells)	$450/Event	$594/Event	$653/Event	$795/Event
Site Survey (6 wells)	$700/Event	$924/Event	$1016/Event	$1237/Event

B

Underground Utility Check				
	2001	2014	2018	2023
	Cost/Event	Cost/Event	Cost/Event	Cost/Event
USA Notification for three drilling points	$75/Event	$99/Event	$109/Event	$133/Event
Electromagnetic scan for underground structures	$600/Event	$792/Event	$871/Event	$1061/Event

C

Traffic Control				
	2001	2014	2018	2023
	Cost/Day	Cost/Day	Cost/Day	Cost/Day
Basic Traffic Control for closing one lane	$350/day	$462/day	$508/day	$619/Event
Extensive traffic control requiring multiple flagpersons and closure of lanes	$950/day	$1,254/day	$1379/day	$1680/Event

Total Subcontract or Equipment Markup Amounts				
	2001	2014	2018	2023
	Maximum Markup	Maximum Markup	Maximum Markup	Maximum Markup
Less than $50,000	15%	10%	10%	10%
Greater than 50,000	10%	10%	10%	10%

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
2001												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Project Manager	hr	$105/hr	4	$420	2	$210			1	$105		
Staff	hr	$75/hr	12	$900	8	$600						
Technician	hr	$60/hr	10	$600			10	$600	12	$720		
			Subtotal	**$1,920**	**Subtotal**	**$810**	**Subtotal**	**$600**	**Subtotal**	**$825**		
Equipment Rental/Supplies			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
PID	day	$100/day	1	$100								
Fence w/Gate	Mo.	$400/month	1	$400								
Visqueen	roll	$75/Per Roll	2	$150								
Truck	mi.	0.5/mi	100	$50	100	$50	100	$50	200	$100		
Misc. Supplies	day	$25/day	1	$25	1	$25	1	$25	2	$50		
			Subtotal	**$725**	**Subtotal**	**$75**	**Subtotal**	**$75**	**Subtotal**	**$150**		
Subcontractor			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Backhoe	day	$720/day	1	$720					2	$1,400		
Loader	day	$960/day					1	$960				
18 yd3Truck.	hr	$75/hr					40	$3,000				
Class 2 LF Fees	ton	$65/Ton					225	$14,625				
Soil Backfill	ton	$12/Ton					200	$2,400				
Gravel Backfill	ton	$12/Ton					5	$60				
AsphaltSaw.	hr	$50/hr					4	$200	4	$200		
AsphaltDisp.	ft2	$2/Sq Ft							150	$300		
Asphalt Repave	ft2	$3/Sq Ft							150	$450		
TPH- gas	Ea.	$65/ea	6	$390	6	$390						
TPH -Diesel	Ea.	$65/ea	6	$390	6	$390						
Total Lead	Ea.	$40/ea			1	$40						
CAM 17	Ea.	$200/ea			1	$200						
RCI	Ea.	$180/ea			1	$180						
Markup	Ea.	15%	1	$225	1	$180	1	$3,187	1	$353		
			Subtotal	**$1,725**	**Subtotal**	**$1,380**	**Subtotal**	**$24,432**	**Subtotal**	**$2,703**		
		Task Subtotals:	**Task 1**	**$4,370**	**Task 2**	**$2,265**	**Task 3**	**$25,107**	**Task 4**	**$3,678**		
								Total Cost:		**$35,420**		

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
2014												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Project Manager	hr	$139/hr	4	$556	2	$278			1	$139		
Staff	hr	$99/hr	12	$1188	8	$792						
Technician	hr	$79/hr	10	$790			10	$790	12	$948		
			Subtotal	**$2,534**	**Subtotal**	**$1,070**	**Subtotal**	**$792**	**Subtotal**	**$1,087**		
Equipment Rental/Supplies			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
PID	day	$132/day	1	$132								
Fence w/Gate	Mo.	$528/month	1	$528								
Visqueen	roll	$99/Per Roll	2	$198								
Truck	mi.	$0.565/mi	100	$70	100	$70	100	$70	200	$140		
Misc. Supplies	day	$33/day	1	$33	1	$33	1	$33	2	$66		
			Subtotal	**$961**	**Subtotal**	**$103**	**Subtotal**	**$103**	**Subtotal**	**$206**		
Subcontractor			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Backhoe	day	$950/day	1	$950					2	$1,900		
Loader	day	$1267/day					1	$1267				
18 yd3Truck.	hr	$99/hr					40	$3,960				
Class 2 LF Fees	ton	$86/Ton					225	$19,305				
Soil Backfill	ton	$16/Ton					200	$3,168				
Gravel Backfill	ton	$16/Ton					5	$79				
AsphaltSaw.	hr	$66/hr					4	$264	4	$264		
AsphaltDisp.	ft2	$3/Sq Ft							150	$297		
Asphalt Repave	ft2	$3/Sq Ft							150	$495		
TPH- gas	Ea.	$86/ea	6	$516	6	$516						
TPH -Diesel	Ea.	$86/ea	6	$516	6	$516						
Total Lead	Ea.	$53/ea			1	$53						
CAM 17	Ea.	$264/ea			1	$264						
RCI	Ea.	$238/ea			1	$238						
Markup	Ea.	10%	1	$198	1	$159	1	$2,804	1	$296		
			Subtotal	**$2,180**	**Subtotal**	**$1,746**	**Subtotal**	**$30,847**	**Subtotal**	**$3,252**		
		Task Subtotals:	**Task 1**	**$5,675**	**Task 2**	**$2,919**	**Task 3**	**$31,742**	**Task 4**	**$4,545**		
									Total Cost:		**$44,881**	

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
2018												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Project Manager	hr	$152/hr	4	$608	2	$304			1	$152		
Staff	hr	$109/hr	12	$1,308	8	$872						
Technician	hr	$87/hr	10	$870			10	$870	12	$1,044		
			Subtotal	**$2,786**	**Subtotal**	**$1,176**	**Subtotal**	**$870**	**Subtotal**	**$1,196**		
Equipment Rental/Supplies			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
PID	day	$145/day	1	$145								
Fence w/Gate	Mo.	$581/month	1	$581								
Visqueen	roll	$109/Roll	2	$218								
Truck	mi.	$.622/mi	100	$100	100	$100	100	$100	200	$200		
Misc. Supplies	day	$36/day	1	$36	1	$36	1	$36	2	$72		
			Subtotal	**$1,080**	**Subtotal**	**$136**	**Subtotal**	**$136**	**Subtotal**	**$272**		
Subcontractor			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Backhoe	day	$1045/day	1	$1,045					2	$2,090		
Loader	day	$1,394/day					1	$1,394				
18 yd3Truck.	hr	$109/hr					40	$4,360				
Class 2 LF Fees	ton	$94/Ton					225	$21,150				
Soil Backfill	ton	$17/Ton					200	$3,400				
Gravel Backfill	ton	$17/Ton					5	$85				
AsphaltSaw.	hr	$73/hr					4	$292	4	$292		
AsphaltDisp.	ft2	$4/Sq Ft							150	$300		
Asphalt Repave	ft2	$4/Sq Ft							150	$600		
TPH- gas	Ea.	$94/ea	6	$564	6	$564						
TPH -Diesel	Ea.	$94/ea	6	$564	6	$564						
Total Lead	Ea.	$58/ea			1	$58						
CAM 17	Ea.	$290/ea			1	$290						
RCI	Ea.	$261/ea			1	$261						
Markup	Ea.	10%	1	$217	1	$174	1	$3,068	1	$328		
			Subtotal	**$2,390**	**Subtotal**	**$1,911**	**Subtotal**	**$33,749**	**Subtotal**	**$3,610**		
		Task Subtotals:	**Task 1**	**$6,256**	**Task 2**	**$3,223**	**Task 3**	**$34,755**	**Task 4**	**$5,078**		
										Total Cost:		**$49,312**

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
2023												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Project Manager	hr	$185/hr	4	$740	2	$370			1	$185		
Staff	hr	$133/hr	12	$1,596	8	$1064						
Technician	hr	$106/hr	10	$1060			10	$1060	12	$1,272		
			Subtotal	**$3,396**	**Subtotal**	**$1,434**	**Subtotal**	**$1,060**	**Subtotal**	**$1,457**		
Equipment Rental/Supplies			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
PID	day	$177/day	1	$177								
Fence w/Gate	Mo.	$708/month	1	$708								
Visqueen	roll	$133/Roll	2	$266								
Truck	mi.	$0.655/mi	100	$100	100	$100	100	$100	200	$200		
Misc. Supplies	day	$44/day	1	$44	1	$44	1	$44	2	$88		
			Subtotal	**$1,295**	**Subtotal**	**$144**	**Subtotal**	**$144**	**Subtotal**	**$288**		
Subcontractor			**Task 1**		**Task 2**		**Task 3**		**Task 4**			
Personnel	**unit**	**Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**		
Backhoe	day	$1,273/day	1	$1,273					2	$2,546		
Loader	day	$1,698/day					1	$1,698				
18 yd3Truck.	hr	$133/hr					40	$5,320				
Class 2 LF Fees	ton	$114/Ton					225	$25,650				
Soil Backfill	ton	$21/Ton					200	$4,200				
Gravel Backfill	ton	$21/Ton					5	$105				
AsphaltSaw.	hr	$89/hr					4	$356	4	$356		
AsphaltDisp.	ft2	$5/Sq Ft							150	$300		
Asphalt Repave	ft2	$5/Sq Ft							150	$750		
TPH- gas	Ea.	$114/ea	6	$684	6	$684						
TPH -Diesel	Ea.	$114/ea	6	$684	6	$684						
Total Lead	Ea.	$71/ea			1	$71						
CAM 17	Ea.	$353/ea			1	$353						
RCI	Ea.	$318/ea			1	$318						
Markup	Ea.	10%	1	$264	1	$211	1	$3,733	1	$395		
			Subtotal	**$2,905**	**Subtotal**	**$2,321**	**Subtotal**	**$41,062**	**Subtotal**	**$4,347**		
		Task Subtotals:	**Task 1**	**$7,596**	**Task 2**	**$3,899**	**Task 3**	**$42,266**	**Task 4**	**$6,092**		
										Total Cost:		**$59,853**

November 2023 Remediation Cost Guidelines Appendix

July 1, 2023

The Underground Storage Tank Cleanup Fund (Fund) has completed this Remediation Cost Guidelines Appendix to the Fund Cost Guidelines to include generalized remediation costs. The goals of this Appendix are to allow the Fund to:

- provide claimants and consultants with a starting reference point for remediation costs,
- help claimants and consultants identify when additional justifications are necessary,
- identify remediation costs that fall within typical boundaries for ideal conditions for streamlined approval,
- identify remediation costs that need a more detailed review,
- increase review capacity,
- reimburse remediation costs without delays, and
- encourage efficient remedial corrective action implementation.

The Fund Cost Guidelines is a guideline only, it does not establish reimbursement limits for listed items and activities, or guarantee reimbursement of any specific amounts.

Costs are evaluated for reimbursement based on specific site conditions for each claim. The goals of this Appendix are NOT to:

- establish remediation cost thresholds which cannot be exceeded,
- deny reasonable remediation costs, and/or
- delay payments while additional justification is sought.

Costs in the Remediation Cost Guidelines Appendix were developed by a team of Fund Water Resource Control Engineers and Engineering Geologists using the following:

- remediation technology and phase parameters found in the California Leaking Underground Fuel Tank Guidance Manual (September 2012 LUFT Manual- Updated December 2015),
- decades of collective experience reviewing remediation costs statewide,
- years of historical and recent experience assessing and remediating sites in the field,
- comments received from Fund stakeholders, and
- Remedial Action Cost Engineering Requirements (RACER) System - A computer-based tool for preparing cost estimates for environmental remediation. RACER provides location-specific estimates based on annually updated multi- agency pricing data and is suited for estimating full life-cycle costs for Comprehensive Environmental Response, Compensation, and Liability Act and Resource Conservation and Recovery Act hazardous waste sites. RACER was modified for use on petroleum UST sites.

Fund staff will continue to carefully consider parameters and costs, including those not contained in or that fall outside of the Fund Cost Guidelines, in determining the eligibility of costs for reimbursement. These parameters include but are not limited to unforeseen or challenging site conditions, regional specific water quality objectives, era of lifecycle regulatory requirements, regional billing rates, unplanned delays, and health and safety considerations.

Claimants are encouraged to submit justifications for costs that fall outside of these guidelines for Fund consideration. Such justifications will aid the Fund in making cost eligibility determinations more efficiently.

Remediation Cost Guidelines				
Excavation				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Prepare CAP	Low	$7,000	$8,057	The CAP would typically include the following: -Assessment of contamination in soil and groundwater -Current CSM -Remedial action cleanup goals -FS evaluation/screening -Selection of remedy -Identify life-cycle expectations for remedial action schedule and objectives Note: Pilot test costs are not included
	Medium	$10,000	$11,510	
	High	$14,000	$16,114	
Prepare RAP	Low	$8,000	$9,208	The RAP would typically include the following: -Selected remedial technology -Basis of design -Remedial action schedule and objectives -Implementation schedule -Excavation layout -Grading and erosion control -Stormwater pollution prevention -Soil transport and disposal -Traffic control -Air monitoring and dust control -Confirmation sampling -Backfill compaction and geotechnical requirements
	Medium	$11,000	$12,661	
	High	$15,000	$17,265	
Design drawings/ specifications	Low	$8,000	$9,208	< 100 tons of soil; minimal design drawings required by local agencies. Assumes shoring or dewatering is not required.
	Medium	$11,000	$12,661	>100 tons < 1,000 tons of soil; moderate design drawings required by local agencies. Assumes shoring or dewatering is not required.
	High	$15,000	$17,265	>1,000 tons < 3,500 tons of soil; extensive design drawing required by local agencies. Assumes shoring or dewatering is not required.
Permits	Varies	Varies	Varies	Permits, as needed (e.g. encroachment, building, grading, SWPPP, air permits, traffic control plan, discharge, and planning permits). Cost may vary based on local permitting agency requirements. Permit fees, bond premiums, and labor to obtain permits and bonds may be submitted for reimbursement.
Excavation activities	Low	$65/ton	$75/ton	> 1,000 tons < 3,700 tons of soil; cost is all-inclusive of time, materials, and contractor labor for the excavation preparation, mobilization/demobilization, equipment, excavation, loading, transportation, disposal (Class III landfill 50 miles from site), laboratory analytical, and limited resurfacing for an excavation.
	Medium	$75/ton	$86/ton	> 100 tons < 1,000 tons of soil; cost is all-inclusive of time, materials, and contractor labor for the excavation preparation, mobilization/demobilization, equipment, excavation, loading, transportation, disposal (Class III landfill 50 miles from site), laboratory analytical, and limited resurfacing for an excavation.
	High	$150/ton	$173/ton	< 100 tons of soil; cost is all-inclusive of time, materials, and contractor labor for the excavation preparation, mobilization/demobilization, equipment, excavation, loading, transportation, disposal (Class III landfill 50 miles from site), laboratory analytical, and limited resurfacing for an excavation.

Excavation (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Coordination, oversight, and management by consultant	Low	$18,000	$20,718	Excavation duration approximately two weeks; includes nominal site supervision, and project management.
	Medium	$34,000	$39,134	Excavation duration approximately three weeks; includes nominal to moderate site supervision, and project management.
	High	$60,000	$69,060	Excavation duration approximately four weeks; includes moderate site supervision, and project management.
Excavation report	Low	$5,000	$5,755	Summary of excavation activities including: waste manifests; post remedial analytical results; and figure showing excavation and dimensions.
	Medium	$7,000	$8,057	
	High	$9,000	$10,359	

Soil Vapor Extraction (fixed system, not used in conjunction with other technologies)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Prepare CAP	Low	$8,500	$9,784	The CAP would typically include the following: -Assessment of contamination in soil and groundwater -Current CSM -Remedial action cleanup goals -FS evaluation/screening -Selection of remedy -Identify life-cycle expectations for remedial action schedule and objectives Note: Pilot test costs are not included
	Medium	$10,500	$12,086	
	High	$15,000	$17,265	
Prepare RAP	Low	$7,500	$8,633	The RAP would typically include the following: -Selected remedial technology -Basis of design -Remedial action schedule and objectives -Implementation schedule -Draft O&M Plan
	Medium	$9,500	$10,935	
	High	$12,500	$14,388	
Pilot testing	Low	$18,000	$20,718	One day (24 hours) pilot test with one newly installed SVE well (cost for SVE well captured below) and pre-existing observation wells.
	Medium	$25,000	$28,775	Two day (48 hours) pilot test with two SVE wells (cost for SVE wells captured below) and pre-existing observation wells.
	High	$32,000	$36,832	Three day (72 hours) pilot test with three SVE wells (cost for SVE wells captured below) and pre-existing observation wells.
Design drawings/specifications	Low	$6,000	$6,906	Basic design drawings and specifications for two SVE wells with typical 100 scfm blower and vapor treatment using two 2,000 lb carbon canisters.
	Medium	$8,000	$9,208	Basic design drawings and specifications for four SVE wells with typical 250 scfm blower and vapor treatment using thermal oxidizer.
	High	$12,000	$13,812	Basic design drawings and specifications for eight SVE wells with typical 500 scfm blower and vapor treatment using thermal oxidizer.
Permits	Varies	Varies	Varies	Permits, as needed (e.g. encroachment, building, air permits, traffic control plan, discharge, and planning permits). Cost may vary based on local permitting agency requirements. Permit fees, bond premiums, and labor to obtain permits and bonds may be submitted for reimbursement.
Remediation well installation	Low	$14,000	$16,114	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs.
	Medium	$22,000	$25,322	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs.
	High	$32,000	$36,832	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs.
Remediation equipment (Cost to rent versus purchase of equipment must be justified with cost/benefit evaluation)	Low	$22,000	$25,322	New turn-key skid mounted SVE system with a typical 100 scfm blower and vapor treatment with two 2,000 lb carbon canisters.
	Medium	$65,000	$74,815	New turn-key skid mounted SVE system with 250 scfm blower with thermal oxidizer for vapor treatment.
	High	$90,000	$103,590	New turn-key skid mounted SVE system with 500 scfm blower with thermal oxidizer for vapor treatment.

Soil Vapor Extraction (fixed system, not used in conjunction with other technologies) (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
System Installation	Low	$40,000	$46,040	Fixed system with approximately 200 square foot remediation compound, with approximately 150 linear feet of trenching for SVE conveyance piping, system manifold, electrical drop, and fencing.
	Medium	$50,000	$57,550	Fixed system with approximately 200 square foot remediation compound, with approximately 250 linear feet of trenching for SVE conveyance piping, system manifold, electrical drop, and fencing.
	High	$65,000	$74,815	Fixed system with approximately 400 square foot remediation compound, with approximately 350 linear feet of trenching for SVE conveyance piping, system manifold, electrical drop, and fencing.
Coordination, oversight, and management by consultant	Low	$8,000	$9,208	60 hours of technician and/or engineer time.
	Medium	$14,000	$16,114	100 hours of technician and/or engineer time.
	High	$22,000	$25,322	160 hours of technician and/or engineer time.
Startup/Shakedown	Low	$8,000	$9,208	Two technicians over two days with engineering support.
	Medium	$14,000	$16,114	Two technicians over four days with engineering support.
	High	$20,000	$23,020	Two technicians over six days with engineering support.
O&M	Low	$6,000/ month	$6,906/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to six samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	Medium	$10,000/ month	$11,510/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to eight samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	High	$12,000/ month	$13,812/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to ten samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
System installation report (Includes well installation report)	Low	$5,000	$5,755	Final O&M plan with start up procedures, as-builts, and well installation report with EDD.
	Medium	$7,000	$8,057	
	High	$9,000	$10,359	
Well destruction by over-drilling	Low	$3,000	$3,453	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs. Assumes over drill of well to 25 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$5,000	$5,755	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs. Assumes over drill of well to 25 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$8,000	$9,208	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs. Assumes over drill of well to 25 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.

Soil Vapor Extraction (fixed system, not used in conjunction with other technologies) (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Well destruction by pressure grouting	Low	$1,600	$1,842	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs; Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$2,800	$3,223	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs; Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$5,100	$5,870	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs; Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
System decommission and site restoration	Low	$7,000	$8,057	Remove system, manifold, and all appurtenances (entire remediation system) from the site; disconnect and cap the piping in-place.
	Medium	$15,000	$17,265	Includes all parameters in the low cost plus removal of compound, grout and cap piping in-place, and minimal resurfacing of areas altered by remediation system.
	High	$45,000	$51,795	Includes all parameters of the medium cost plus removal of piping, and moderate resurfacing of areas altered by remediation system.

Soil Vapor Extraction (mobile system)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Daily rates	Low	$1,400	$1,611	Includes costs for SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment, mobilization, materials, fuel, and task appropriate field labor balanced with electronic monitoring devices.
	Medium	$1,750	$2,014	Includes costs for SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment, mobilization, materials, fuel, and task appropriate field labor balanced with electronic monitoring devices.
	High	$2,100	$2,417	Includes costs for SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment, mobilization, materials, fuel, and task appropriate field labor balanced with electronic monitoring devices.
Weekly rates	Low	$4,800	$5,525	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	Medium	$6,000	$6,906	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	High	$7,300	$8,402	SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment.
Monthly rates	Low	$19,000	$21,869	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	Medium	$24,000	$27,624	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	High	$29,500	$33,955	SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment.

Air Sparge & Soil Vapor Extraction (fixed system)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Prepare CAP	Low	$9,000	$10,359	The CAP would typically include the following: -Assessment of contamination in soil and groundwater -Current CSM -Remedial action cleanup goals -FS evaluation/screening -Selection of remedy -Identify life-cycle expectations for remedial action schedule and objectives Note: Pilot test costs are not included
	Medium	$11,000	$12,661	
	High	$15,000	$17,265	
Prepare RAP	Low	$9,000	$10,359	The RAP would typically include the following: -Selected remedial technology -Basis of design -Remedial action schedule and objectives -Implementation schedule -Draft O&M Plan
	Medium	$11,000	$12,661	
	High	$15,000	$17,265	
Pilot testing	Low	$20,000	$23,020	One day (24 hours) pilot test with one SVE well and two air sparge wells (cost for remediation wells captured below), and pre-existing observation wells.
	Medium	$27,000	$31,077	Two day (48 hours) pilot test with two SVE wells and two air sparge wells (cost for remediation wells captured below), and pre-existing observation wells.
	High	$34,000	$39,134	Three day (72 hours) pilot test with three SVE wells and four air sparge wells (cost for remediation wells captured below), and pre-existing observation wells.
Design drawings/specifications	Low	$9,000	$10,359	Design drawings for an AS/SVE system with four AS wells and two SVE wells. Minimal design drawings and specifications as required by local agencies.
	Medium	$12,500	$14,388	Design drawings for an AS/SVE system with eight AS wells and four SVE wells. Moderate design drawings and specifications as required by local agencies.
	High	$15,000	$17,265	Design drawings for an AS/SVE system with sixteen AS wells and eight SVE wells. Extensive design drawings and specifications as required by local agencies.
Permits	Varies	Varies	Varies	Permits, as needed (e.g. encroachment, building, air permits, traffic control plan, discharge, and planning permits). Costs may vary based on local permitting agency requirements. Permit fees, bond premiums, and labor to obtain permits and bonds may be submitted for reimbursement.
Remediation well installation	Low	$30,000	$34,530	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs; four AS wells (two-inch diameter) to a depth of 35 ft bgs.
	Medium	$50,000	$57,550	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs; eight AS wells (two-inch diameter) to a depth of 35 ft bgs.
	High	$100,000	$115,100	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs surface; sixteen AS wells (two-inch diameter) to a depth of 35 ft bgs.

Air Sparge & Soil Vapor Extraction (fixed system) (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Remediation equipment (Cost to rent versus purchase of equipment must be justified with cost/benefit evaluation)	Low	$45,000	$51,795	New turn-key skid mounted SVE system with a 100 scfm blower and vapor abatement of two-1,000 lb carbon canisters. Turn-key skid mounted air sparge system capable of sparging up to four sparge wells at flow rates and pressures based on pilot test results.
	Medium	$85,000	$97,835	New turn-key skid mounted SVE system with a 250 scfm blower with thermal oxidizer for vapor treatment. Turn-key skid mounted air sparge system capable of sparging up to eight sparge wells at flow rates and pressures based on pilot test results.
	High	$115,000	$132,365	New turn-key skid mounted SVE system with a 500 scfm blower and thermal oxidizer for vapor treatment. Turn-key skid mounted air sparge system capable of sparging up to 16 sparge wells at flow rates and pressures based on pilot test results.
System installation	Low	$56,000	$64,456	Approximately 200 square foot remediation compound, with approximately 150 linear feet of trenching for the AS/SVE conveyance piping, system manifold, electrical drop, and fencing.
	Medium	$65,000	$74,815	Approximately 200 square foot remediation compound, with approximately 250 linear feet of trenching for the AS/SVE conveyance piping system manifold, electrical drop, and fencing.
	High	$95,000	$109,345	Approximately 400 square foot remediation compound, with approximately 350 linear feet of trenching for the AS/SVE conveyance piping, system manifold, electrical drop, and fencing.
Coordination, oversight, and management by consultant	Low	$8,000	$9,208	60 hours of technician and/or engineer time.
	Medium	$14,000	$16,114	100 hours of technician and/or engineer time.
	High	$22,000	$25,322	160 hours of technician and/or engineer time.
Startup/Shakedown	Low	$8,000	$9,208	Two technicians over two days with engineering support.
	Medium	$14,000	$16,114	Two technicians over four days with engineering support.
	High	$20,000	$23,020	Two technicians over six days with engineering support.
O&M	Low	$6,500/ month	$7,482/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to six samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	Medium	$7,500/ month	$8,633/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to eight samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	High	$8,500/ month	$9,784/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to ten samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
System installation report (Includes well installation report)	Low	$6,000	$6,906	Final O&M plan with start up procedures and as-builts, and well installation report with EDD.
	Medium	$8,000	$9,208	
	High	$10,000	$11,510	

Air Sparge & Soil Vapor Extraction (fixed system)(cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Well destruction by over drilling	Low	$7,000	$8,057	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs; four AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$13,000	$14,963	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs; eight AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$25,000	$28,775	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs; sixteen AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
Well destruction by pressure grouting	Low	$3,800	$4,374	Two SVE wells (two-inch diameter) to a depth of 25 ft bgs; four AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$7,200	$8,287	Four SVE wells (two-inch diameter) to a depth of 25 ft bgs; eight AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$11,000	$12,661	Eight SVE wells (two-inch diameter) to a depth of 25 ft bgs; sixteen AS wells (two-inch diameter) to a depth of 35 ft bgs. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
System decommission and site restoration	Low	$15,000	$17,265	Remove system, manifold, and all appurtenances (entire remediation system) from the site; disconnect and cap the piping in-place.
	Medium	$25,000	$28,775	Includes all parameters in the low cost plus removal of compound, grout and cap piping in-place, and minimal resurfacing of areas altered by remediation system.
	High	$50,000	$57,550	Includes all parameters of the medium cost plus removal of piping, and moderate resurfacing of areas altered by remediation system.

Air Sparge and Soil Vapor Extraction (mobile system) - Typical duration 3 to 6 months				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Daily rates	Low	$1,700	$1,957	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	Medium	$1,800	$2,072	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	High	$2,200	$2,532	SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment.
Weekly rates	Low	$5,500	$6,331	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	Medium	$6,100	$7,021	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	High	$7,500	$8,633	SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment.
Monthly rates	Low	$22,400	$25,782	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	Medium	$24,400	$28,084	SVE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment.
	High	$29,900	$34,415	SVE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment.

Multi-Phase Extraction (fixed system) - Typical duration 18 to 24 months				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Prepare CAP	Low	$9,000	$10,359	The CAP would typically include the following: -Assessment of contamination in soil and groundwater -Current CSM -Remedial action cleanup goals -FS evaluation/screening -Selection of remedy -Identify life-cycle expectations for remedial action schedule and objectives Note: Pilot test costs are not included
	Medium	$11,000	$12,661	
	High	$15,000	$17,265	
Prepare RAP	Low	$10,000	$11,510	The RAP would typically include the following: -Selected remedial technology -Basis of design -Remedial action schedule and objectives -Implementation schedule -Draft O&M Plan
	Medium	$12,000	$13,812	
	High	$16,000	$18,416	
Pilot testing	Low	$24,000	$27,624	One day (24 hours) pilot test measuring one MPE well and three to four observation wells. Cost includes pilot test summary report. Well installations are not included.
	Medium	$30,000	$34,530	Two day (48 hours) pilot test measuring two MPE wells and four to five observation wells. Cost includes pilot test summary report. Well installations are not included.
	High	$40,000	$46,040	Three day (72 hours) pilot test measuring with three MPE wells and five to six observation wells. Cost includes pilot test summary report. Well installations are not included.
Design drawings/ specifications	Low	$12,000	$13,812	Minimal design drawings and specifications with two MPE wells.
	Medium	$15,000	$17,265	Moderate design drawings and specifications with four MPE wells.
	High	$18,000	$20,718	Extensive design drawings and specifications with eight MPE wells.
Permits	Varies	Varies	Varies	Permits, as needed (e.g. encroachment, building, air permits, traffic control plan, discharge, and planning permits). Cost may vary based on local permitting agency requirements. Permit fees, bond premiums, and labor to obtain permits and bonds may be submitted for reimbursement.
Remediation well installation	Low	$15,000	$17,265	Two MPE wells (four-inch diameter) to a depth of 35 feet below ground surface.
	Medium	$25,000	$28,775	Four MPE wells (four-inch diameter) to a depth of 35 feet below ground surface.
	High	$40,000	$46,040	Eight MPE wells (four-inch diameter) to a depth of 35 feet below ground surface.
Remediation equipment (Cost to rent versus purchase of equipment must be justified with cost/benefit evaluation)	Low	$70,000	$80,570	New turn-key skid mounted MPE system with a typical 100 scfm blower and vapor treatment with two 2,000 lb carbon canisters. Two groundwater extraction submersible pumps with two 2,000 lb carbon canisters.
	Medium	$110,000	$126,610	New turn-key skid mounted MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Four groundwater extraction submersible pumps with two 2,000 lb carbon canisters.
	High	$150,000	$172,650	New turn-key skid mounted MPE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment. Eight groundwater extraction submersible pumps with two 2,000 lb carbon canisters.

Multi-Phase Extraction (fixed system) - Typical duration 18 to 24 months (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
System installation	Low	$65,000	$74,815	Approximately 200 square foot remediation compound, with approximately 150 linear feet of trenching for the AS/SVE conveyance piping, system manifold, electrical drop, and fencing.
	Medium	$85,000	$97,835	Approximately 200 square foot remediation compound, with approximately 250 linear feet of trenching for the AS/SVE conveyance piping system manifold, electrical drop, and fencing.
	High	$110,000	$126,610	Approximately 400 square foot remediation compound, with approximately 350 linear feet of trenching for the AS/SVE conveyance piping, system manifold, electrical drop, and fencing.
Coordination, oversight, and management by consultant	Low	$8,000	$9,208	60 hours of technician and/or engineer time.
	Medium	$14,000	$16,114	100 hours of technician and/or engineer time.
	High	$22,000	$25,322	160 hours of technician and/or engineer time.
Startup/Shakedown	Low	$8,000	$9,208	Two technicians over two days with engineering support.
	Medium	$14,000	$16,114	Two technicians over four days with engineering support.
	High	$20,000	$23,020	Two technicians over six days with engineering support.
O&M	Low	$8,000/ month	$9,208/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to six samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	Medium	$10,000/ month	$11,510/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to eight samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
	High	$12,000/ month	$13,812/ month	Includes bi-weekly visits, materials and equipment, analytical costs (up to ten samples), utilities (electrical), and monthly vapor monitoring reports, and quarterly remediation system operations reports.
System installation report (Includes well installation report)	Low	$6,000	$6,906	Final O&M plan with start up procedures and as-builts, and well installation report with EDD.
	Medium	$8,000	$9,208	
	High	$10,000	$11,510	
Well destruction by over drilling	Low	$4,000	$4,604	Two MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$7,000	$8,057	Four MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$11,000	$12,661	Eight MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 35 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.

Multi-Phase Extraction (fixed system) - Typical duration 18 to 24 months (cont.)				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Well destruction by pressure grouting	Low	$2,200	$2,532	Two MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	Medium	$3,500	$4,029	Four MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
	High	$5,000	$5,755	Eight MPE wells (four-inch diameter) to a depth of 35 feet below ground surface. Assumes over drill of well to 5 ft bgs, consultant oversight, mob/demob, sealing material, backfill to surface, and surface patch at grade.
System decommission and site restoration	Low	$15,000	$17,265	Remove system, manifold, and all appurtenances (entire remediation system) from the site; disconnect and cap the piping in-place.
	Medium	$25,000	$28,775	Includes all parameters in the low cost plus removal of compound, grout and cap piping in-place, and minimal resurfacing of areas altered by remediation system.
	High	$50,000	$57,550	Includes all parameters of the medium cost plus removal of piping, and moderate resurfacing of areas altered by remediation system.

Multi-Phase Extraction (mobile system) - Typical duration 18 to 24 months				
Remediation Technology & Phase	**Range**	**2020 Cost**	**2023 Cost**	**Parameters**
Daily rates	Low	$1,900	$2,187	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Two groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Daily rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	Medium	$2,100	$2,417	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Four groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Daily rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	High	$2,500	$2,878	MPE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment. Eight groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Daily rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
Weekly rates	Low	$6,700	$7,712	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Two groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Weekly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	Medium	$7,500	$8,633	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Four groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Weekly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	High	$8,600	$9,899	MPE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment. Eight groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Weekly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
Monthly rates	Low	$26,000	$29,926	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Two groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Monthly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	Medium	$29,500	$33,955	MPE system with a typical 250 scfm blower and thermal oxidizer for vapor treatment. Four groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Monthly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.
	High	$34,250	$39,422	MPE system with a typical 500 scfm blower and thermal oxidizer for vapor treatment. Eight groundwater extraction submersible pumps with two 2,000 lb carbon canisters. Monthly rates for mobile remediation events include costs for equipment, mobilization, materials, fuel, and field labor.

Key
AS = Air Sparge
bgs = below ground surface
CAP = Corrective Action Plan
CSM = Conceptual Site Model
EDD = GeoTracker Survey_XYZ electronic data deliverable
FCG = Fund Cost Guidelines
ft bgs = feet below ground surface
FS = Feasibility Study
HSA = Hollow Stem Auger
IDW = Investigative Derived Waste
lb = pound
LTCP = Low-Threat Underground Storage Tank Case Closure Policy (Policy)
LUST = Leaking Underground Storage Tank
MPE = Multi-Phase Extraction
NA = Not Applicable
O&M = Operation and Maintenance
RAP = Remedial Action Plan
ROI = Radius of Influence
SA = Site Assessment
scfm = standard cubic feet per minute
SVE = Soil Vapor Extraction
SWPPP = Stormwater Pollution Prevention Plan
TD = Total Depth
UST = Underground Storage Tank
WQO = Water Quality Objectives