

**DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE**

**80-100 CHARLOTTE STREET, ROCHESTER, NEW YORK
JULY 17, 2002**

AREAS OF CONCERN:

1. Gasoline Contamination Attributable to Former On-Site Underground Storage Tank (UST).

Preliminary estimates indicate that an on-site plume of petroleum-impacted overburden soils covers approximately 5,045 ft² and has an average thickness of 3 ft (i.e., volume = 15,135 ft³ = 560 yd³, weight = 1,008 tons). This contaminated soil is present above or near the water table, which is present in close proximity to the interface with underlying bedrock. The extent of petroleum impact in bedrock is unknown; however, some bedrock contamination is likely. Groundwater in the area of the UST petroleum plume exceeds TOGS 1.1.1 groundwater standards or guidance values. Based on correlation of PID readings to available analytical laboratory test results, it is estimated that approximately 75% of the impacted soil (i.e., volume = 11,350 ft³ = 420 yd³, weight = 756 tons) exceed NYSDEC TAGM 4046 recommended soil cleanup objectives (RSCOs).

The contaminated soil is generally covered by an average thickness of 6.2 feet of fill material and soil that are not contaminated with petroleum or other VOCs. As such, approximately 1,160 yd³ (i.e., 2,085 tons) of fill material and soil overly the petroleum-contaminated soil in the UST plume that is present near the interface with bedrock.

Recommended Actions:

Task 1.0 (UST Petroleum Plume)

- Develop corrective action plan (CAP).
- Incorporate findings into existing health and safety plan (HASP) and existing environmental management plan (EMP) for 14-60 Charlotte Street.
- Remediate (i.e., perform source removal, transport and dispose) petroleum-impacted soil that exceeds NYSDEC TAGM 4046 recommended soil cleanup objectives.
- Perform in-situ remediation of dissolved contamination groundwater above and within bedrock.

Task 1.0A (Contingency to Redevelop the Site for Residential Use)

- Remove, transport and dispose of petroleum-impacted soil that does not exceed NYSDEC TAGM 4046 recommended soil cleanup objectives in order to redevelop the Site for residential purposes.
- Require Environmental Engineering Controls (e.g., sub-slab vapor barrier and/or venting system) on future buildings.

2. Elevated Heavy Metals in Fill Material

Fill material extends from the ground surface to an average depth of 4.7 feet as evidenced at most of the 29 test borings advanced at the Site. This fill material is suspected to contain debris from former site structures and may also include fill material from off-site sources. Assuming the fill is present across the Site (33,976.8 ft²) at an average thickness of 4.7 ft, it is estimated that 5,915 yd³ (i.e., approximately 10,650 tons) of fill is present on the Site.

Four of six samples consisting of fill material contained some heavy metals (e.g., arsenic, barium, lead and mercury) at concentrations exceeding NYSDEC TAGM 4046 recommended soil cleanup objectives.

Recommended Actions:

Task 2.0

- Incorporate findings into existing HASP and existing EMP for 14-60 Charlotte Street.
- The Monroe County Department of Health typically requires a minimum one-foot layer of clean fill for residential redevelopment at similar sites. As such, remove upper one-foot of fill from Site (i.e., 2,265 tons), transport off-site and dispose of at approved landfill facility.
- Place and compact one foot thick layer of crusher run at ground surface.
- Require environmental engineering controls (e.g., cover with impervious material of minimum one foot thick layer of clean soil or fill) for future development/disturbance.

3. Off-Site Petroleum-Based Contamination

Soil in the saturated zone and groundwater located in the northwest and southwest corners of the Site are impacted with petroleum-based contaminants that appear attributable to off-site sources. The contaminated soil at these locations does not appear to exceed NYSDEC TAGM 4046 recommended soil cleanup objectives; however, a sample of groundwater at the northwest corner of the Site exceeds NYSDEC TOGS 1.1.1 groundwater standards and guidance values.

Recommended Actions:

Task 3.0

- Incorporate findings into existing HASP and existing EMP for 14-60 Charlotte Street.
- Require Environmental Engineering Controls (e.g., sub-slab vapor barrier and/or venting system) on future buildings.

4. Stained Surface Soil

Surface soils in an unpaved area on the northwest corner of the Site were determined to be contaminated with heavy-weight oil (e.g., lube oil, engine oil, or waste oil) that contains SVOCs and heavy metals at concentrations exceeding NYSDEC TAGM 4046 recommended soil cleanup objectives. It is estimated that cleanup could involve the removal and disposal of approximately 4 tons of impacted soil from this area.

Recommended Actions:

- Include cleanup of this material under recommended actions of Task 1.0 (UST Petroleum Plume).

DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE
80-100 Charlotte Street, Rochester, New York
July 17, 2002

TASK 1.0 - UST PETROLEUM PLUME

EXPENDITURE CATEGORY	RATE	QUANTITY	ESTIMATED COST
TASK 1.0 –UST PETROLEUM PLUME (CAP, EMP, HASP, Soil Removal, In-Situ Groundwater Treatment, Post Monitoring, Report)			
Project Manager	\$98/hr	12	\$1,176.00
Sr. Professional	\$88/hr	60	\$5,280.00
Professional	\$78/hr	60	\$4,680.00
Specialist	\$63/hr	24	\$1,512.00
Technician/Draftsman	\$52/hr	80	\$4,160.00
Total Labor			\$16,808.00
Subcontractors:			
HASP review by CIH	\$100		\$100.00
Analytical Laboratory Testing	\$5,000		\$5,000.00
Soil Disposal as Non-Hazardous (above TAGM RSCOs)	\$18/ton	760	\$13,680.00
Soil Transport as Non-Hazardous (above TAGM RSCOs)	\$8/ton	760	\$6,080.00
Excavation and Stage Uncontaminated Soil	\$6/CY	870	\$5,220.00
Excavation and Loading Contaminated Soil (above TAGM RSCOs)	\$6/ton	760	\$4,560.00
Provide, Place, and Compact Crusher-Run Backfill (above TAGM RSCOs)	\$18/ton	760	\$13,680.00
Place and Compact Backfill Sourced On-Site	\$8/CY	870	\$6,960.00
Proctor Test and Compaction Testing	\$350		\$350.00
In-Situ Groundwater Treatment (Direct O ₂ injection, etc.)	\$50,000		\$50,000.00
Install Two 4" Recovery Wells	\$4,000		\$4,000.00
Mark-Up (5%)			\$5,481.50
Total Subcontractor			\$115,111.50
Equipment Rental			
PID and/or FID Meter Rental	\$300/wk	1	\$300.00
Particulate Meter Rental	\$300/wk	1	\$300.00
Total Equipment Rental			\$600.00
Total Task 1.0 Costs			\$132,519.50
TOTAL TASK 1.0 COSTS PLUS 20% CONTINGENCY			\$159,023.40

DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE
80-100 Charlotte Street, Rochester, New York
July 17, 2002

**TASK 1.0A - CONTINGENCY TO REDEVELOP THE SITE
FOR RESIDENTIAL USE IN AREA OF UST PLUME**

EXPENDITURE CATEGORY	RATE	QUANTITY	ESTIMATED COST
TASK 1.0A –Contingency to Redevelop the Site for Residential Use in Area of UST Plume (Address contaminated soil not exceeding RSCOs, develop & implement environmental engineering controls)			
Labor			
Project Manager	\$98/hr	4	\$392.00
Sr. Professional	\$88/hr	24	\$2,112.00
Professional	\$78/hr	24	\$1,872.00
Specialist	\$63/hr	16	\$1,008.00
Technician/Draftsman	\$52/hr	60	\$3,120.00
Total Labor			\$8,504.00
Subcontractors:			
Soil Disposal as Non-Hazardous (below TAGM RSCOs)	\$18/ton	252	\$4,536.00
Soil Transport as Non-Hazardous (below TAGM RSCOs)	\$8/ton	252	\$2,016.00
Excavation and Stage Uncontaminated Soil	\$6/CY	290	\$1,740.00
Excavation and Loading Contaminated Soil (below TAGM RSCOs)	\$6/ton	252	\$1,512.00
Provide, Place, and Compact Crusher-Run Backfill (below TAGM RSCOs)	\$18/ton	252	\$4,536.00
Place and Compact Backfill Sourced On-Site	\$8/CY	290	\$2,320.00
Proctor Test and Compaction Testing	\$150		\$150.00
Install environmental engineering controls (75% of Site)	\$18,750		\$18,750.00
Mark-Up (5%)			\$1,778.00
Total Subcontractor			\$37,338.00
Equipment Rental			
PID and/or FID Meter Rental	\$300/wk	1	\$300.00
Particulate Meter Rental	\$300/wk	1	\$300.00
Total Equipment Rental			\$600.00
Total Task 1.0A Costs			\$46,442.00
TOTAL TASK 1.0A COSTS PLUS 20% CONTINGENCY			\$55,730.40

DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE
80-100 Charlotte Street, Rochester, New York
July 17, 2002

TASK 2.0 – FILL MATERIAL

EXPENDITURE CATEGORY	RATE	QUANTITY	ESTIMATED COST
TASK 2.0 – FILL MATERIAL (EMP, HASP, Remove and Dispose Top One Foot of Fill, Place One Foot Clean Fill Over Site)			
Project Manager	\$98/hr	1	\$98.00
Sr. Professional	\$88/hr	4	\$352.00
Professional	\$78/hr	4	\$312.00
Specialist	\$63/hr	2	\$126.00
Technician/Draftsman	\$52/hr	40	<u>\$2,080.00</u>
Total Labor			\$2,968.00
Subcontractors:			
Analytical Laboratory – TCLP Testing, etc.			\$2,000.00
Fill Disposal as Non-Hazardous	\$18/ton	2265	\$40,770.00
Fill Transport as Non-Hazardous	\$8/ton	2265	\$18,120.00
Excavation and Loading Fill	\$6/ton	2265	\$13,590.00
Provide, Place, and Compact Crusher-Run Backfill	\$18/ton	2265	\$40,770.00
Proctor Test and Compaction Testing	\$350		\$350.00
Mark-Up (5%)			<u>\$5,780.00</u>
Total Subcontractor			\$121,380.00
Equipment Rental			
Particulate Meter Rental	\$300/wk	1	<u>\$300.00</u>
Total Equipment Rental			\$300.00
Total Task 2.0 Costs			\$124,648.00
TOTAL TASK 2.0 COSTS PLUS 20% CONTINGENCY			\$149,577.60

DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE
80-100 Charlotte Street, Rochester, New York
July 17, 2002

**TASK 3.0 - CONTINGENCY TO REDEVELOP THE SITE FOR RESIDENTIAL USE
IN AREA OF OFF-SITE SOURCE OF PETROLEUM HAS IMPACTED SITE**

EXPENDITURE CATEGORY	RATE	QUANTITY	ESTIMATED COST
TASK 3.0 –Contingency to Redevelop the Site for Residential Use in Area of Contamination Attributable to Off-Site (EMP, HASP, implement environmental engineering controls)			
Labor			
Project Manager	\$98/hr	2	\$196.00
Sr. Professional	\$88/hr	16	\$1,408.00
Professional	\$78/hr	16	\$1,248.00
Specialist	\$63/hr	8	\$504.00
Technician/Draftsman	\$52/hr	32	<u>\$1,664.00</u>
Total Labor			\$5,020.00
Subcontractors:			
Proctor Test and Compaction Testing	\$150		\$150.00
Install environmental engineering controls (25% of Site)	\$6,250		\$6,250.00
Mark-Up (5%)			<u>\$320.00</u>
Total Subcontractor			\$6,720.00
Equipment Rental			
PID and/or FID Meter Rental	\$300/wk	1	\$300.00
Particulate Meter Rental	\$300/wk	1	<u>\$300.00</u>
Total Equipment Rental			\$600.00
Total Task 3.0 Costs			\$12,340.00
TOTAL TASK 3.0 COSTS PLUS 20% CONTINGENCY			\$14,808.00

**DAY ENVIRONMENTAL, INC.
CORRECTIVE ACTION COST ESTIMATE
80-100 Charlotte Street, Rochester, New York
July 17, 2002**

TOTAL CORRECTIVE ACTION ESTIMATED COSTS

EXPENDITURE CATEGORY	ESTIMATED COST	20% CONTINGENCY	TOTAL COSTS PLUS 20% CONTINGENCY
TASK 1.0 –UST PETROLEUM PLUME	\$132,519.50	\$26,503.90	\$159,023.40
TASK 1.0A –Contingency to Redevelop the Site for Residential Use in Area of UST Plume	\$46,442.00	\$9,288.40	\$55,730.40
TASK 2.0 – FILL MATERIAL	\$124,648.00	\$24,929.60	\$149,577.60
TASK 3.0 –Contingency to Redevelop the Site for Residential Use in Area of Contamination Attributable to Off-Site	\$12,340.00	\$2,468.00	\$14,808.00
TOTAL ESTIMATED PROJECT COSTS	\$315,949.50	\$63,189.90	\$379,139.40