

# UNDERGROUND STORAGE TANK

## SITE ASSESSMENT

### DURING PIPE REPAIRS

Mom and Pop Chevron  
Old Glenn Highway  
Palmer, Alaska

**RECEIVED**  
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DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
MSDO

Prepared for

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*FAKED REC'D  
4/23/93*

Prepared by

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## INTRODUCTION AND OVERVIEW

Statewide Petroleum Services engaged TERRASAT, INC. in March 1993 to conduct a site assessment during pipe repairs for an underground storage tank (UST) system. The repairs were done at the Mom and Pop Chevron in Palmer, Alaska. Two unleaded gasoline 10,000 gallon capacity USTs are on site. The purpose of the site assessment was to investigate the degree of soil contamination from a leak in the piping. Soil samples were collected and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), and gasoline.

## SITE DESCRIPTION

Mom and Pop Chevron is at mile 46.5 on the Old Glenn Highway in Palmer, Alaska. The site covers approximately 97,600 square feet. Structures on site include a convenience store and two pump islands. The area near the pump islands is paved with concrete and the area surrounding the pump islands is gravel fill. The legal description is Lot 9, Block 3 of the Foothills Subdivision. The sectional description is the northeast 1/4 of the southeast 1/4 of the southeast 1/4 of the northeast 1/4 of Section 34, Township 2 East, Range 18 North, Anchorage.

A residential property borders the gas station to the northeast. The Old Glenn Highway is to the southwest. Areas northwest and southeast of the site are undeveloped. The Matanuska River is approximately 200 feet southwest of the site. An on-site well supplies water to the site.

## HISTORICAL REVIEW

The USTs were installed in 1984. In September 1991, the piping and tanks passed tank tightness tests. In February 1993, standing product was observed in the turbine manhole. A precision line test was conducted by Statewide Petroleum Services and results showed a leak of 4.86 gallons per hour. The leak was reported to the Alaska Department of Environmental Conservation (ADEC) on February 26, 1993. Repairs to the piping were initiated on March 5, 1993. Field screening and sample collection was conducted on March 8 and 9, 1993.

## PROJECT ORGANIZATION

Statewide Petroleum Services managed the project, repaired the UST piping, and installed one monitoring well. Soil screening and sampling were conducted by Rena Anderson of TERRASAT, INC. Laboratory analyses of the soil samples were conducted by Analytica Alaska, Inc.

## **FIELD METHODS**

### **EXCAVATION AND FIELD SCREENING**

Statewide Petroleum Services excavated soil around the piping of one UST to find the leak. Soil was excavated to six feet below ground surface. The leaking pipe joint was at four feet below ground surface. Figure 1 shows the location of the excavation and the site layout.

Following repairs to the pipe joint, TERRASAT, INC. screened the walls and floor of the excavation using a photoionization detector (PID). The PID was used to check for the presence of volatile organic compounds released from the soil. The PID detected volatile compounds from 1432 parts per million (ppm) to over 2500 ppm, indicating the presence of contamination. Air vapors were monitored with an explosimeter to evaluate the potential for an explosion.

### **MONITORING WELL INSTALLATION**

Statewide Petroleum Services excavated below the level of the ground water at a location outside the backfill area of the USTs (figure 1). They installed a 2-inch PVC monitoring well in the excavation to for potential ground water contamination. The well was completed with a five-foot long PVC screen placed at a depth of 7.25 to 12.25 feet below ground surface. The bottom of the screen was placed approximately 3.5 feet below ground water level. A mixture of coarse-grained sand and fine-grained gravel was used as backfill around the well casing. Figure 2 shows the stratigraphy of this excavation and well completion details. Free product was observed on top of the ground water during the well installation.

TERRASAT, INC. checked the monitoring well on March 12, 1993 for the presence of free product. Approximately 1.5 inches of product was measured on the water table.

### **SAMPLING AND ANALYSIS**

One soil sample (MP-Soil-NE) was collected from below the repaired pipe joint to characterize the degree of contamination present. It was collected from the base of the northwest wall of the excavation. The sample was analyzed using EPA method 8020 for BTEX and EPA method 8015 modified for gasoline range (C6-C10) volatile petroleum hydrocarbons (VPH). Refer to Figure 3 for soil sample locations.

Two soil samples were collected from the monitoring well excavation for characterization. MP-Soil-MW-NE was collected from the northwest wall at 4.5 feet

below ground surface. MP-Soil-MW-NW was collected from the northeast wall at 4.5 feet below ground surface. These samples were analyzed for BTEX and VPH.

Approximately two cubic yards of soil from the pipe repairs excavation were temporarily stockpiled on site (figure 1, stockpile A). Two soil samples were collected from stockpile A and composited in the laboratory. The composite sample, SPA-3, was analyzed for BTEX and VPH.

Approximately 18 cubic yards of soil from the monitoring well excavation were temporarily stockpiled on site (figure 1, stockpile B). Three soil samples were collected from stockpile B and composited in the laboratory. The composite sample, SPB-4, was analyzed for BTEX and VPH.

Clean stainless steel spoons were used to transfer laboratory soil samples to glass jars fitted with teflon-lined closures. Samples were cooled and delivered to the laboratory in a sealed ice chest containing blue ice.

#### LABORATORY RESULTS AND DISCUSSION

Table 1 summarizes laboratory results for analysis of BTEX and VPH in soil samples. Soil sample MP-SOIL-NE from near the leaking pipe contained 3950 parts per million (ppm) total BTEX and 8300 ppm VPH. Gasoline range hydrocarbons were also detected in soil samples from the monitoring well excavation. Soil sample MP-SOIL-MW-NW contained 20.9 ppm total BTEX and 78 ppm VPH. Soil sample MP-SOIL-MW-NE contained 578.4 ppm total BTEX and 1500 VPH. These levels indicate contamination is present above the ADEC matrix cleanup level (Level A) of 15 ppm total BTEX and 100 ppm VPH. Appendix A shows the cleanup matrix for the site.

TABLE 1 SOIL SAMPLE RESULTS (PPM)

SAMPLE ID	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	VPH
Pipe Repairs Excavation					
MP-SOIL-NE	100	1300	350	2200	8300
Monitoring Well Excavation					
MP-SOIL-MW-NW	0.3	2.3	1.3	17	78
MP-SOIL-MW-NE	3.4	120	45	410	1500
Stockpiles					
SPA-3	0.6	21	19	160	590
SPB-4	28	270	66	410	1800

Soil samples collected from the two stockpiles contain 200.6 to 774 ppm total BTEX and 590 to 1800 ppm VPH. These levels of contamination exceed ADEC levels allowed for on site disposal of stockpiles. Therefore, the stockpiles should be disposed of off site or treated to remove contamination.

### QUALITY ASSURANCE

Work performed by TERRASAT, INC. followed the approved *Quality Assurance Program Plan for Site Assessments Under 18 AAC 78 (QAPP)* on file with the ADEC. The QAPP details field screening methods, soil and water sampling, shipping, laboratory analysis and general protocols for proper investigation of UST sites. After encountering contamination a sampling strategy was developed to characterize the remaining contamination.

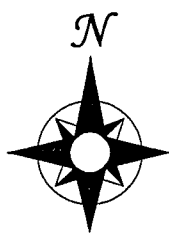
The PID used for soil screening was calibrated each day on site using 102 ppm isobutylene. Sampling equipment was decontaminated before sampling using a non-ionic surfactant wash solution, two potable water rinses, and a final rinse with distilled water. ADEC data deliverables for laboratory analyses of soil samples are included in Appendix B.

The recommended EPA analytical and extraction holding times were met for all the samples. The laboratory QC data indicate acceptable method and instrument performance.

### CONCLUSIONS

Field screening results and laboratory data for soil samples collected during this site assessment indicate the presence of gasoline contamination in soil at this site. Gasoline range hydrocarbon levels in soil range from 20.9 to 3950 ppm BTEX and 78 to 8300 ppm VPH which exceeds the ADEC matrix cleanup levels for this site. Free product was observed on the ground water table during the installation of MW-1. On March 12, TERRASAT, INC. measured 1.5 inches of free product on the water table in MW-1. The presence of free product indicates that ground water in the area has been impacted. However, the extent of ground water contamination is unknown at this time.

FIGURE 1  
Site Map



Well



Property Boundary

Heating Oil  
UST

Store

Excavations

Pump Island

Approximate UST  
Locations

Stockpiles

B

A

OLD GLENN HIGHWAY



Approximate Scale (feet)

FIGURE 2


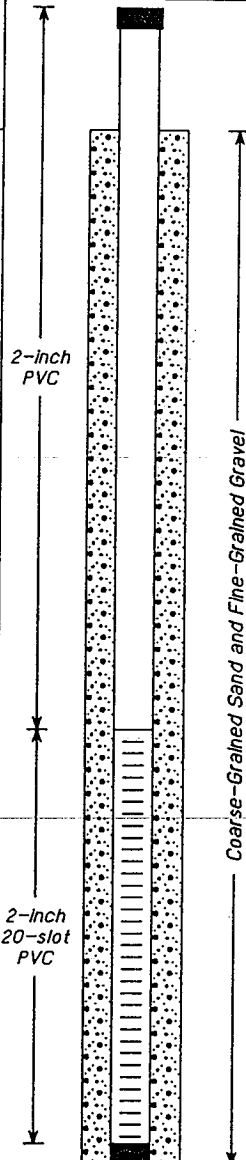
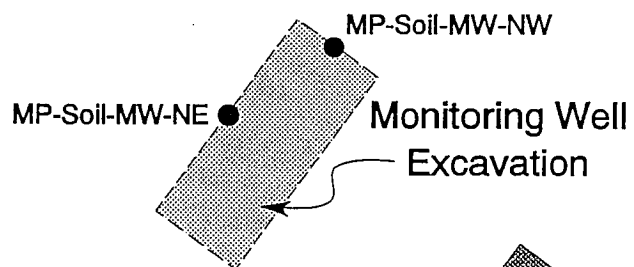
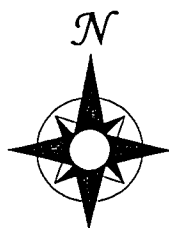
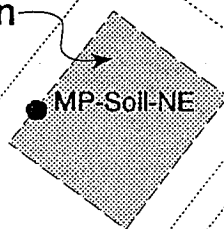
TERRASAT, INC. MONITORING WELL MW-1										
PROJECT <u>Mom and Pop Chevron, Palmer</u>										
DATE INSTALLED <u>03-09-93</u>										
INSTALLATION METHOD <u>Backhoe</u>										
EXCAVATION COMPANY <u>Statewide Petroleum Services</u>										
SURFACE ELEVATION <u>200 feet</u>										
TOTAL DEPTH <u>12.5 Feet</u>										
LOGGED BY <u>Rena Anderson</u>										
CHEMICALS (ppm)		PID READING (ppm)	DEPTH (feet)	SAMPLE ID	SAMPLE LOCATION	BLOWS/FOOT	GRAPHIC LOG	USCS SOIL CLASS	MATERIALS DESCRIPTION AND REMARKS	WELL CONSTRUCTION
VPH	BTEX									
1500 78	5784 20.9	>2500	1	MW-NE MW-NW	☒			GW	Light olive gray sandy GRAVEL sand fine- to medium-grained, gravel coarse-grained with cobbles to 10 inches in diameter, (FILL), frozen to approximately 5 feet	
			2					soil samples collected from excavation walls		
			3							
			4					PT	Moderate brown silty PEAT approximately 75% organics including roots and twigs, damp, strong hydrocarbon odor observed	
			5							
			6					GW	Light olive gray sandy GRAVEL sand fine- to medium-grained, gravel coarse-grained with cobbles to 10 inches in diameter, damp, strong hydrocarbon odor observed	
			7							
			8					Ground water observed at 9 feet		
			9							
			10					Bottom of excavation at 12.5 feet free product observed on water table, no water samples collected		
			11							
			12							
			13							
			14							
			15							

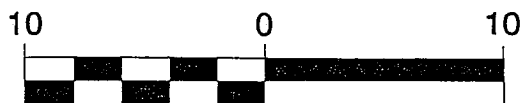
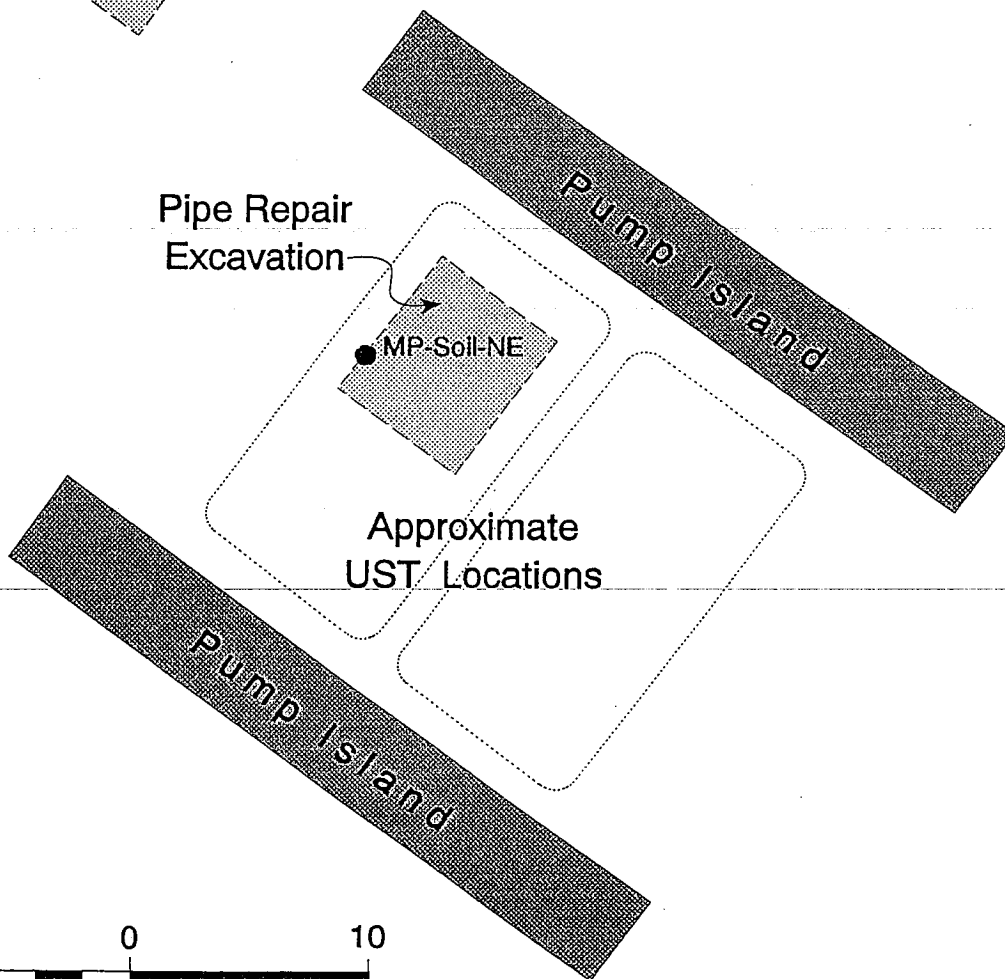
FIGURE 3  
Sample Locations



Pipe Repair  
Excavation



Approximate  
UST Locations



Approximate Scale (feet)