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August 31, 1999

Mr. Colin J. Basye, Engineering Associate
Alaska Dept. of Environmental Conservation
Division of Spill Prevention and Response
Storage Tank Program
43335 Kalifornsky Beach Rd, Suite 11
Soldotna, Alaska 99669

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Department of
Environmental Conservation
KDO

RE: Kenai Airport Fuel Service
UST Facility ID #2187, Reckey #90230026801
Interim Remedial Action Report

Dear Mr. Basye:

This report has been prepared to outline proposed further action at the KAFS site in accord with the remedial action work plan submitted to you and dated May 27, 1999. Additionally, historical information and the results of all soil and groundwater sampling to date are reported.

Historical Site Investigation

During the past 8 years, several investigation have been conducted at the Kenai Airport Fuel Service (KAFS) site. The following paragraphs provide a historical account of the work undertaken at the KAFS site to date.

- 1) Phase I UST Site Assessment, (12/91): The initial UST assessment was performed by Northern Test Lab (NTL) during December of 1991. The initial investigation was performed in response to two fuel spills at the KAFS site. Three test pits were excavated to determine the extent of contamination at the site and to determine if additional investigation was necessary. Groundwater samples collected from test pits number 1 (TP-1), 2 (TP-2), and 3 (TP-3) had levels of benzene above state and federal limits and total BTEX in TP-1 exceeded the matrix cleanup level of 15 ppm. NTL recommended further site assessment and installation of monitor wells to determine groundwater flow direction and contamination.
- 2) Kenai Airport Fuel Service UST Site Assessment, (1/94): B.C. Excavating of Anchorage, Alaska was contracted to excavate the four USTs at the KAFS site. NTL was contracted to supervise the removal of the tanks and to assess the level of contamination at the site. Tank removal began on 10/18/93 and was completed on 10/19/93. Approximately 625 gallons of free product were collected from the excavation after the tanks had been removed. Soil and water samples collected during the site assessment had considerable contamination. The tanks did not appear to be leaking, but the fuel lines to the pump stations appeared to leak at all of the joints. After the tanks and the pump equipment had been removed, the excavation was expanded to remove the contaminated soils adjacent to where the tanks had been. Approximately 600 cubic yards of contaminated soil were removed and stockpiled on-site.
- 3) Interim Corrective Action Report & Release Investigation Plan, (6/94): Rozak Engineering was retained to investigate the extent of petroleum release and to prepare a corrective action plan. Inspection of the analytical reports and the excavated area, indicated that the largest releases had occurred in the northwest part of the pit. Five

additional test pits (TP-4, TP-5, ... TP-8) were excavated within the property boundaries between 10/29/93 and 11/2/93. Test pits 5, 6 and 7, located on the southern property boundary, showed no contamination related to the UST site. TP-4, located 100 feet south of the UST pit was found to have high levels of hydrocarbon contamination. Contamination in TP-8, located in a depression near the northeast corner of the UST pit, was believed to have been caused by fuel and water runoff from spill events. Monitor wells were installed in pits TP-6, TP-7 and TP-8 (MW-1, MW-2, and MW-3, respectively). Additionally, five soil borings were drilled and soil samples were collected at the groundwater interface. Soil samples collected from the soil borings were found to be contaminated, but at levels below cleanup standards for soil. After sampling, drill site SB-2, located about 50' north of the old UST site, was developed as MW-4. Groundwater samples were collected from the monitor wells on 08/03/94. Groundwater collected from MW-1 and MW-3 was found to be highly contaminated with BTEX. MW-2 was uncontaminated, but groundwater collected from MW-4 had levels of benzene that exceeded groundwater cleanup standards.

- 4) Remedial Action-Contaminated Soil Stockpile, (6/99): The contaminated soil stockpile at the KAFS site was field screened and segregated into clean (treated) and contaminated piles. Approximately 420 cubic yards of soil were placed in the clean stockpile and about 250 cubic yards were placed in the contaminated stockpile. The stockpile liners were removed and the soil around and below the liners were field screened for contamination. Soils that did not meet field screening criteria were placed on the contaminated soils pile. Contaminated soils were transported to Soil Processing Inc. for thermal remediation. Treated soils were returned to the site and spread on the east end of Lot 4 where the stockpile had been. A small pile of clean soil still remains on site, but the remainder of the soil has been spread on the lot as approved by ADEC.
- 5) Quarterly Groundwater Sampling, (6/99): The three active monitor wells at the KAFS site were surveyed and inspected for suitability of use as monitor wells. Groundwater samples were collected from MW-1, MW-2, and MW-3 on 06/16/99. No free product or sheen was detected in the wells or samples. The groundwater sample collected from MW-1, located approximately 150 feet down-gradient from the old UST site, had levels of benzene, toluene, and ethylbenzene that exceeded cleanup levels. No contaminants were found in the groundwater sample collected from MW-2. Benzene, in excess of cleanup levels, was detected in the water sample collected from MW-4.

Sampling Results and Interpretation

The results reported in Table 1 contain the historical sampling data (soil and groundwater) for the three active monitor wells at the site. Data from these monitor wells is the only time-line presently available to assess changes in groundwater quality at the site. MW-1 and MW-2 were installed in test pits that were excavated on 11/01/93 and 11/02/93. These monitor wells are four inch diameter piezometers with steel security casings, and appear to be suitable for their current use. Before the monitor wells were installed, soil samples were removed from the test pits at the groundwater interface and, thus, analytical results from those soil samples should provide a historical reference point for contaminant levels. MW-4 is a 2-inch-diameter piezometer that was installed by Hughes Drilling Company Inc. on 07/26/94. The first water samples obtained and analyzed from MW-1, MW-2, and MW-4 were collected on 08/03/94. Additional groundwater samples were collected from the monitor wells on 06/16/99. All historical data from test pits, soil borings, and monitor wells are shown on the enclosed site map (Figure 1).

Lab analysis of soil collected, at the groundwater interface, from TP-4 on 10/29/93 showed hydrocarbon and BTEX (total BTEX=257.6 mg/kg) contamination. Soil within the pit was screened with a PID in one foot intervals. PID readings were minimal (<30 ppm) until the soil-water interface was reached, at which point the PID reading jumped to 1200 ppm. These results

indicate that contamination most likely did not originate from the soil surface, but from groundwater. SB-1, located about 85 feet south of TP-4, was drilled on 07/26/94 and a soil sample was collected at the groundwater interface and sent to the lab for analysis. Contamination in the soil sample collected from SB-1 was below the required cleanup level for soil. Field screening of the soil boring showed minimal contamination of the soil above the water table, again, indicating that contamination had originated from groundwater.

TABLE 1 - Soil and Groundwater Analytical Results

MW-1			
Sample Date	11/01/93	08/03/94	06/16/99
Parameter	Soil, <u>mg/kg</u>	Water, <u>mg/l</u>	Water, <u>mg/l</u>
Benzene	U	64.2	12.6
Toluene	U	62.7	21.5
Ethylbenzene	U	2.46	1.45
Total Xylenes	U	11.56	7.09
Ethylene Bibromide (EDB)	U	NA	0.01
MW-2			
Sample Date	11/01/93	08/03/94	06/16/99
Parameter	Soil <u>mg/kg</u>	Water, <u>mg/l</u>	Water, <u>mg/l</u>
Benzene	U	U	U
Toluene	U	U	U
Ethylbenzene	U	U	U
Total Xylenes	U	U	U
Ethylene Bibromide (EDB)	U	NA	U
MW-4			
Sample Date	07/26/94	08/03/94	06/16/99
Parameter	Soil, <u>mg/kg</u>	Water, <u>mg/l</u>	Water, <u>mg/l</u>
Benzene	0.028	0.027	0.0131
Toluene	0.069	1.18	2.11
Ethylbenzene	.025	0.0069	0.245
Total Xylenes	.05	0.039	1.819
Ethylene Bibromide (EDB)	NA	NA	0.0072

.005
1.0
700
10

.005
1.0
7
10

NA = Not Available

Historical data for MW-1 (Table 1) show that on 11/01/93, soil at the groundwater interface, and presumably groundwater, was not contaminated. However, nine months later on 08/03/94, groundwater was found to be contaminated with BTEX (total BTEX = 140.92 mg/l). Contamination had moved down-gradient from the UST site at least as far as MW-1, and presumably farther. MW-1 was sampled again on 06/16/99 and results showed that the level of contamination had dropped significantly (total BTEX=42.64 mg/l), but was still greater than cleanup levels. It is possible, through dilution and microbial activity, that the plume is naturally attenuating. However, more information is needed to make any conclusive assessment of the current extent of contamination.

Groundwater sampling of MW-2 has uncovered no contamination to date. Because MW-2 is not in the groundwater flow path from the UST site, we do not expect to find contamination at that location in the future. Benzene and toluene have been found in MW-4 in levels slightly higher than cleanup standards. The benzene level at MW-4 has dropped from 0.027 mg/l (sample collected 08/03/94) to 0.0131 mg/l (sample collected 06/16/99). We believe that groundwater contamination at MW-4 is simply residual from the old UST site and not related to the current UST site. Contamination levels at MW-4 would meet the 10-times cleanup level, if it is determined that groundwater at the site is not used as drinking water and does not have the reasonable potential use as drinking water. 0.005 mg/l

Soil and Contaminant Plume Characterization

The original estimated area of soil contamination extends southward from the old UST location, beyond SB-1, as shown in Figure 2 (Figure 2 was originally submitted to DEC on June 8, 1994 with the Interim Corrective Action Report and Release Investigation Plan). However, the actual extent of soil contamination that could exceed regulatory levels is thought to be located around the south end of the old UST location. Examination of data from SB-1 and TP-4 indicate that contamination at these locations originated from groundwater and not from the surface. In fact, the analytical samples from SB-1 and TP-4 were collected below the water table. Because we believe that the extent of soil contamination does not extend as far south as TP-4, additional soil borings should be drilled between the old UST location and the TP-4 location to determine the level of soil contamination still present at the site. In addition, soil data collected at the site is over five years old and conditions may have changed since the initial investigation.

It is evident from the data, that the groundwater plume has not been sufficiently delineated. No data is available to indicate groundwater contaminant levels along the west side of the property (towards runway). Soil samples from SB-4 (07/26/94) had a low to medium hydrocarbon odor and analytical results showed soil contamination below proposed cleanup levels for soil. Groundwater samples should be collected from the west side of the site to help assess the areal extent of groundwater contamination, and to help assess the groundwater flow pattern.

Scope of Work

We propose to perform soil vapor sampling to delineate the extent of soil and groundwater contamination. Soil vapor sampling will consist of, pushing a 2 inch diameter drive point into the soil to predetermined depths, inserting a vapor sampling probe into the drive point, collecting a vapor sample using an oilless pump, and screening the vapor sample using a PID. Soil vapor sampling will be used to determine placement of additional groundwater monitor wells at the site, and to determine potential remedial strategies. The investigation will include the following:

- Soil vapor sampling at multiple locations along the southern and western sides of the property (see Figure 1). If off-site sampling is required, permission will be obtained from the property owner before sampling is initiated. The drive points used for soil vapor sampling will be removed and the holes back-filled after sampling is completed.
- Two soil borings will be drilled in the area immediately south of the old UST site to determine the degree of remaining soil contamination. Soil samples will be collected at one foot intervals from five feet bgs to one foot below water level. All of the samples will be field screened using a PID. One sample with the highest PID reading will be submitted to the laboratory for analysis. If field screening results do not indicate contamination, a sample will

not be submitted for analysis. If a soil sample is submitted for testing, the sample will be analyzed for GRO and BTEX.

- If possible, groundwater samples will be collected from the locations where soil vapor sampling was performed. In addition, a water sample may be collected from one of the soil borings. If collected, down-gradient water samples will be tested for BTEX and GRO and one may be tested for EDB. If an up-gradient water sample is collected, it will be tested for BTEX, GRO, DRO, RRO, and EDB.
- A report with field data, analytical results, evaluation and recommendations will submitted to ADEC.

The collection, interpretation, and reporting of data will be in accordance with the *UST Procedures Manual*, and the required sampling and analysis will be conducted or supervised by a qualified, impartial third party. Soil and water samples will be collected and preserved in appropriate sample containers furnished by the laboratory, and analyzed by methods listed in *Table 1, UST Procedures Manual*.

Prepared by,



Ronald T. Rozak, PE
Principal Investigator



Attachments:

1. Figure 1. Proposed Sampling Plan
2. Figure 2. Estimated Areal Extent of Soil Contamination
3. Laboratory Analysis Report, Soil, July 26, 1994
4. Laboratory Analysis Report, Water, August 3, 1994
5. Laboratory Analytical Report, Water, June 16 1999

cc: Dan Pitts, Kenai Airport Fuel Service

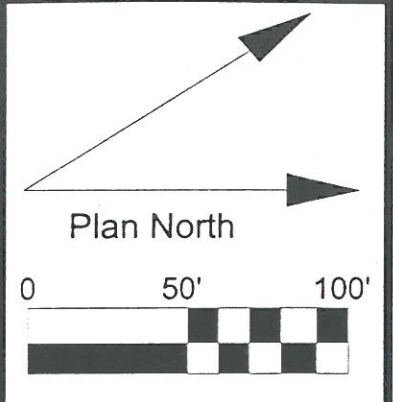
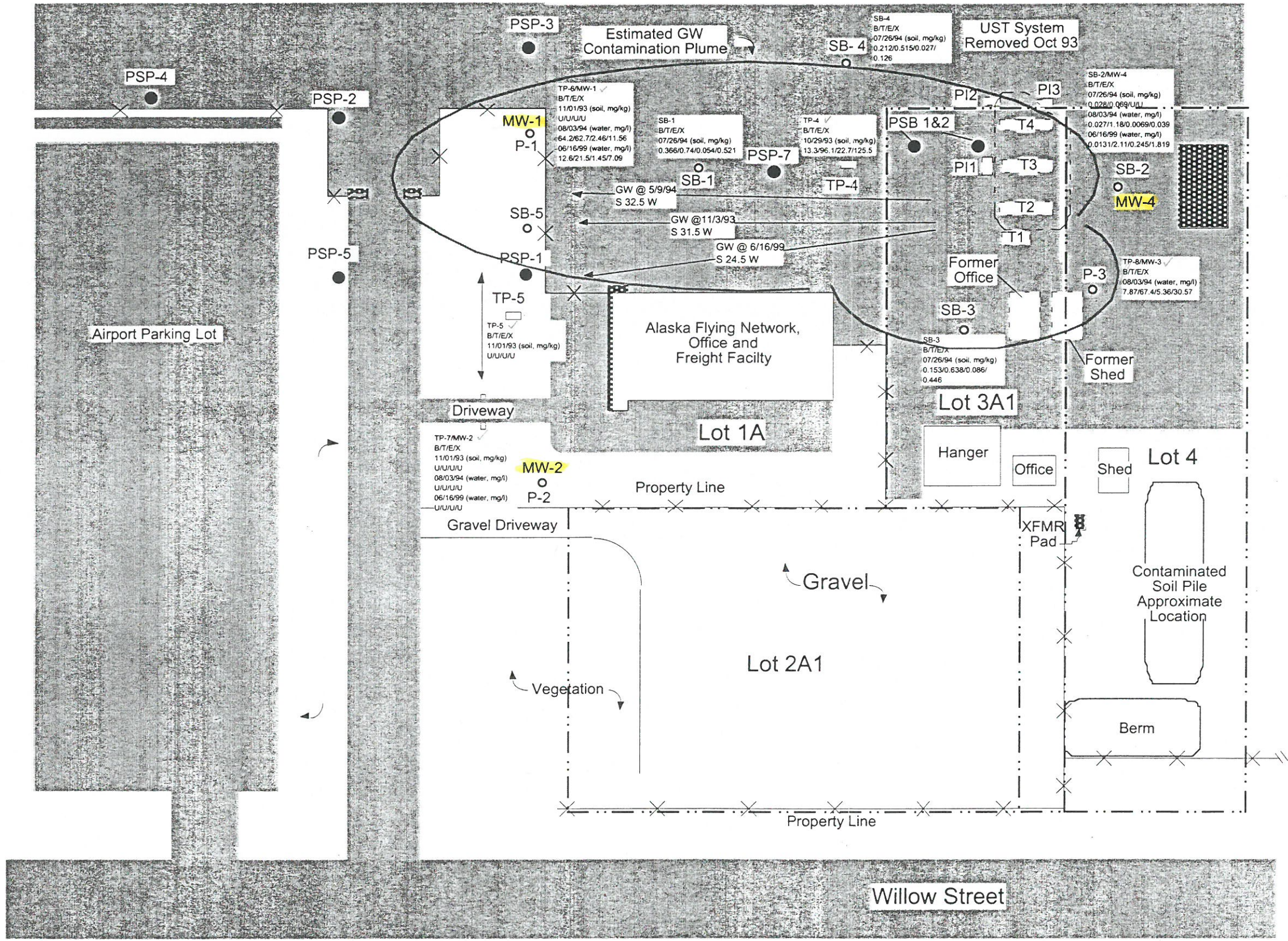


Figure 1. Proposed Sampling Plan

Kenai Airport Fuel Service
Rozak Engineering, 08/99

Legend

- Chain Link Fence
- Property Line
- Asphalt
- Concrete

- TP - Test Pit
- SB - Soil Boring
- MW - Monitor Well
- P - Piezometer
- PI - Pump Island
- T - Tank
- PSP - Proposed Sampling Point
- PSB - Proposed Soil Boring

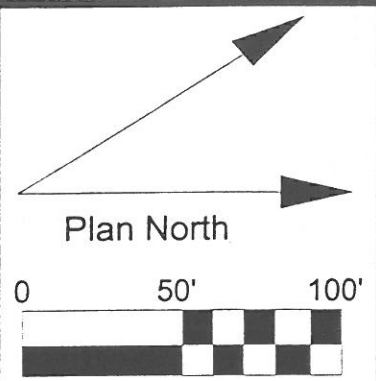
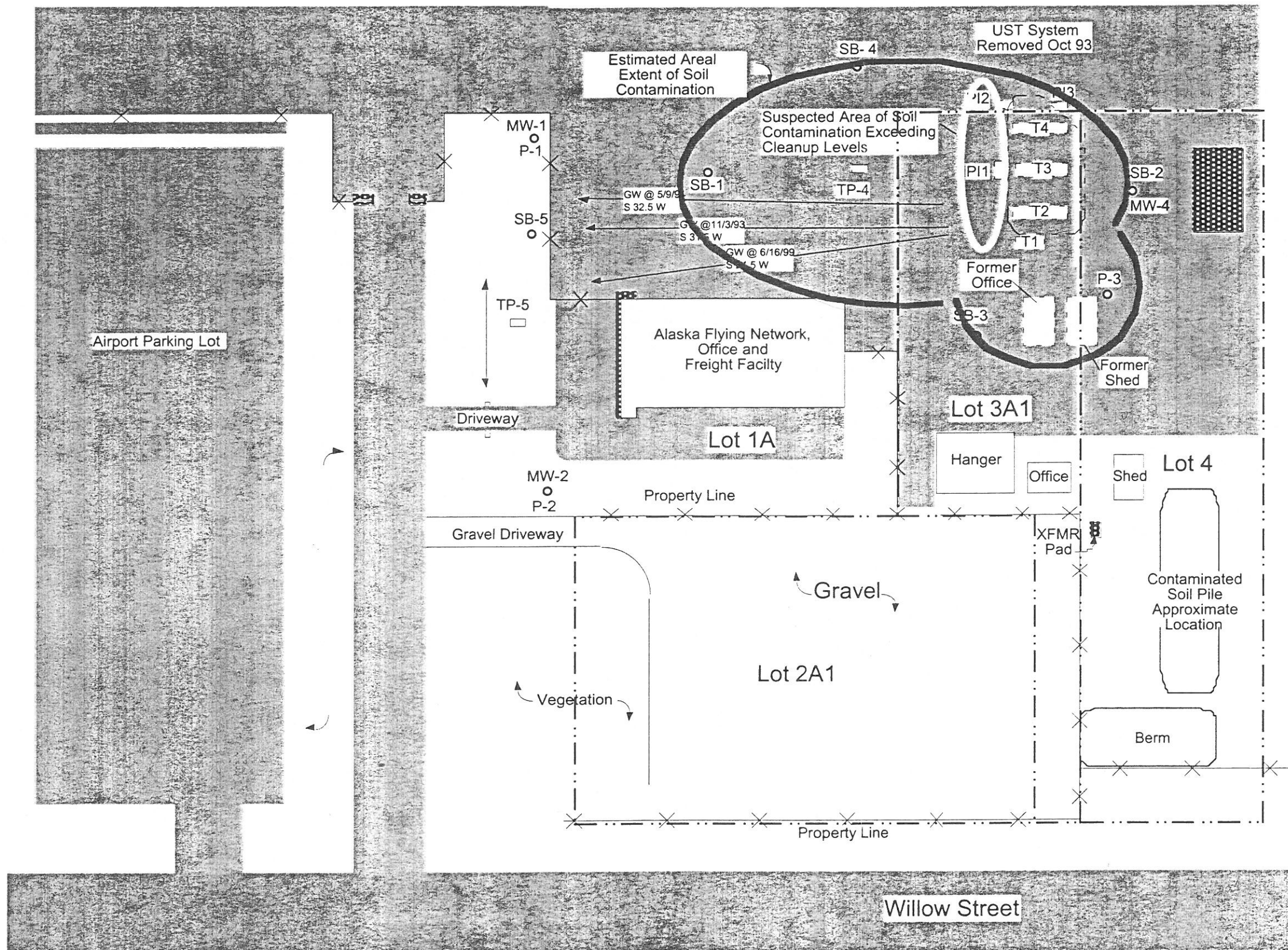


Figure 2. Estimated Areal Extent of Soil Contamination
 Kenai Airport Fuel Service
 Rozak Engineering, Adapted from Original Dated 06/24/94

Legend	
TP	- Test Pit
SB	- Soil Boring
MW	- Monitor Well
P	- Piezometer
T	- Tank
PSP	- Proposed Sampling Point
PSB	- Proposed Soil Boring
✕	- Chain Link Fence
---	- Property Line
▨	- Asphalt
■	- Concrete