

ROZAK ENGINEERING

Civil, Construction & Environmental Consulting

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June 25, 1999

Alaska Dept. of Environmental Conservation
Division of Spill Prevention and Response
Storage Tank Program
Kenai Area Office
43335 Kalifornsky Beach Rd, Suite 11
Soldotna, Alaska 99669

Fax (907) 262-2294

RECEIVED

JUN 25 1999

Department of
Environmental Conservation
KDO

Attn: Mr. Colin Basye, Engineering Associate

Subject: Approval to Move and Treat Contaminated Soil
Facility: Kenai Airport Fuel Service, UST Facility ID # 2187
ADEC Reckey # 90230026801

On behalf of Mr. Dan Pitts, department approval is requested to move approximately 225-250 cubic yards of gasoline contaminated soil from the UST facility to Soil Processing, Inc's Thermal Soil Remediation Facility at the former UAA/MAPTS Fire Training Center. On June 19 and 21, 1999, we field screened the contaminated soil while an excavator disassembled the stockpile. Approximately 175-200 cubic yards of the soil had PID readings greater than 100 ppm. We placed this "contaminated" soil on the access road north of the stockpile. When we field screened under the liner, another 50 cubic yards of soil with PID >100 ppm was excavated and added to the contaminated soil pile. We covered the pile with 6-mil reinforced polyethylene.

Rozak Excavating & Construction will haul the contaminated soil in end dump trucks, covered with a tarp during transit. The hauling is scheduled for next Wednesday, June 30th, but will depend on remediation of soil currently at SPI's facility. Rozak Engineering will oversee the soil moving to ensure no contaminated material is left on the access road and all of the material is delivered to the treatment facility.

Prepared by,



Ronald T. Rozak, PE
Principal Investigator

Approved by,



Colin J. Basye
Engineering Associate
ADEC

cc: Dan Pitts

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

**DIVISION OF SPILL PREVENTION AND RESPONSE
STORAGE TANK PROGRAM
KENAI AREA OFFICE**

43335 K-Beach Road
Suite 11
Red Diamond Center
Soldotna, Alaska 99669
Phone: (907) 262-5210
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June 4, 1999

Mr. Dan Pitts
Kenai Airport Fuel Service
340 Airport, Way
Kenai, AK 99611

RE: Kenai Airport Fuel Service
Reckey #90230026801
Facility ID #2187
Work Plan

Dear Mr. Pitts:

I met with your consultant yesterday, regarding the above referenced site, to look at the workplan for disposing of the contaminated soil stockpile and to address the remaining issues, according to our letter of March 3, 1999. It was found that several of the items that were requested in our original letter have already been or are being addressed currently, and that some of the sequential items are still pending.

The workplan for the investigation of the contaminated soil stockpile looks acceptable. Mr. Rozak mentioned during our meeting that the stockpile may have been partially or completely remediated by previous efforts, and because of the character of the soils. The conditions he mentioned included his observations that the soil is a medium to coarse sand with gravel, with GRO contamination, which was aerated for two summers. Because of this, he requested that he be allowed to sample the outermost 24 to 36 inches of the soil, and if it comes back clean on field screening, he be allowed to segregate it and take separate confirmation samples for this soil pile. If the confirmation samples come back with contamination levels below applicable limits, it may be disposed of without further remedial efforts. Incineration or other approved means may be used to deal with any remaining contaminated soil. The Department concurs with this plan.

One of the concerns that we had was that, in your Historical Site Information section, you had stated that the groundwater within one mile of the site is not currently used as a private or public source of drinking water, and not expected to be in the near future. After looking over the City of Kenai's documentation regarding this issue, it appears that someone could drill a well on property within this zone if they drilled it more than 200 feet from the city's utilidor, or if they had to cross private property to have access to the city utilities. We need to be sure, by some means, that this could not take place.

May 27, 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

RECEIVED
MAY 27 1999
Department of
Environmental Conservation
KDO

RE: Kenai Airport Fuel Service, Spill # 90-23-01-268-01
UST Facility ID #2187 340 Airport Way, #1
Remedial Action Work Plan

Dear Mr. Basye:

Rozak Engineering has prepared this work plan for Mr. Dan Pitts, President of Kenai Airport Fuel Service, Inc. The purpose of this plan is to address the following regulatory and departmental requirements, as outlined in your March 3, 1999 letter to Mr. Pitts, for remediating contaminated soil and groundwater associated with the former UST system at this facility.

- 1) Researching historical information in order to establish
 - producing water well locations
 - possible contamination receptors
 - up-gradient contamination sources
 - previous work done in the area
- 2) Characterizing contaminated in-situ soil and groundwater plume
 - install and sample monitor wells to delineate contaminated groundwater plume
 - compare current contamination types and levels with historical levels for soil and groundwater, including ethylene dibromide
 - determine if free product is still present
- 3) Characterizing the 600-700 cubic yards of contaminated soil stockpiled at the site
- 4) Depending on the results of the above work, prepare and implement work plans to reduce contamination to acceptable limits for stockpiled soil, in-situ soil, and groundwater.

Site Description

The Kenai Airport Fuel Service (KAFS) site is located at the Kenai Municipal Airport, between the main terminal building and the air traffic control tower (Figure 1). KAFS occupies three lots leased from the City of Kenai: Lot 4, Block 1, FBO Subdivision and Lots 2A1 and 3A-1, Block 1, FBO Subdivision South Addition No. 2. The facility includes one hanger building (34' x 42'), frame office and shed buildings on skids, and an UST fuel storage system which provides fuel for aircraft. Lot 1A is occupied by the Alaska Flying Network and air freight businesses. The KAFS fueling facility is inside the airport security fence.

The property is relatively flat. Site soils are predominantly, poorly-graded medium sand with layers of fine sand and coarse sand.

An aerial photograph taken July 6, 1975 (Figure 2) shows most of Lot 1A, south half of 2A1, 3A1, 4 and lots to the north are covered with vegetation. The north half of Lot 2A1 is cleared. Two four-engine aircraft are parked northwest of the new UST system, along the edge of the paved taxiway.

During the late-1970's through the early 1980's, these lots were used during the summer by businesses hauling fish and general cargo. Arctic Aviation and Doyle's Fuel Service used trucks to fuel the aircraft. KAFS installed their first UST system at this site in 1984, and generally replaced the other fuel delivery businesses (Dan Pitts, phone conversation, 5-25-99).

The old UST system included three 10,000-gallon tanks (Jet A, aviation gasoline, and 100 low-lead gasoline), two dispensers, and underground piping between the tanks and dispensers. A 1,000-gallon tank (regular unleaded gasoline) was added several years later. This UST system was removed during October 1993. In 1994 KAFS installed a new UST system with two 12,000 gallon tanks approximately 40 feet north of the old system.

During 1993-1994 we observed the water table varying from 6-1/2 to 11 feet below ground surface (bgs) and sloping generally south at a gradient of about 0.0020 to 0.0025 (foot per foot). The Weather Bureau records show total annual precipitation at the Kenai Airport is about 20 inches.

The KAFS facility and surrounding properties are connected to City of Kenai water and sewer systems. There are no water wells on the property.

Historical Site Information

- can not be used as a water source?*

• City Engineer, Jack LaShot, stated the groundwater within one mile of the site is not currently used as a private or public source of drinking water, nor is it expected to be used as a source in the future. The City has an ordinance stating that residents located within the water system service area shall connect to the system if it is within 200 feet of their property. The ground water is not within a wellhead protection area.
- There are no known contamination receptors within one mile of the site.
- There are no known up-gradient contamination sources, however, this area was part of a military facility from the 1940's until 1963 (Phase I - Site Assessment by Northern Test Lab, City of Kenai Maintenance Shop, March 1995). During that period, fuel was commonly stored in 55-gallon drums at various locations, and when the military facility was closed or cleaned up, the drums—including petroleum products, were often buried.

- Previous assessment work done at the KAFS site or within 1000 feet of the site include:
 1. Kenai Airport Fuel Service, Phase I UST Site Assessment Report, December 1991, by Northern Test Lab. Followup investigation for two jet fuel releases (20 to 100 gallons) at the site reported in September of 1990, Spill #90-23-01-268-01.
 2. Kenai Airport Fuel Service, UST Removal Site Assessment Report, January 1994, by Northern Test Lab. Documents the removal of four tanks, dispensers and piping by B.C Excavating. Fuel contamination was encountered; approximately 600 cubic yards of contaminated soil was excavated and stockpiled at the facility, and 625 gallons of free product was removed from the groundwater in the tank pit. All visible product was removed, but not all the contaminated soil was removed.
 3. Lot 1, Block 5, Cook Inlet Industrial Air Park Subdivision (Formerly Carver Drilling Company, currently KAFS Tesoro Gas Station), Expanded Phase I Environmental Site Assessment Report, August 27, 1993, by Rozak Engineering. Prior to property transaction, evaluated for presence of contamination or environmental impairments. Subsurface contamination was detected, from on-site and off-site sources. This 1/2 half acre property is approximately 800 feet southeast of the KAFS UST site, and immediately south of the City of Kenai Maintenance Shop property.
 4. Lot 1, Block 5, Cook Inlet Industrial Air Park Subdivision, Corrective Action Report, March 25, 1994, by Rozak Engineering. Excavation and assessment of contamination detected during the Phase I investigation. Contaminated soil was stockpiled on site and subsequently remediated. Contamination in the groundwater smear zone appeared to be from an up-gradient source, not from the site activities, and was not remediated as part of this project. For additional information on the up-gradients sources of off-site contamination see City of Kenai Maintenance Shop, Phase I SA Report (Item 7).
 5. Kenai Airport Fuel Service, Interim Corrective Action Report and Release Investigation Plan, June 8, 1994, by Rozak Engineering. Report for the test holes and sampling during October-November 1993 to determine the approximate extent of contaminant migration, and a plan for additional soil borings and monitor wells to determine the full extent of the contamination and to develop a method to remediate the soil and groundwater contamination. Due to lack of funds, the scope of additional investigation was limited to drilling and sampling five holes and one monitor well. The analytical results were transmitted to ADEC, but the field data and lab analysis results were not evaluated and a report was not prepared.
 6. Kenai Airport Fuel Service, Corrective Action Plan - Contaminated Soil Pile, June 24, 1994 and revision June 28, 1994, by Rozak Engineering. For on-site treatment of the 600 cubic yards of petroleum contaminated soil stockpiled at the site. The soil is still stockpiled at the site; current status of treatment is not known, final verification samples have not been collected.

7. City of Kenai Maintenance Shop, Phase I Site Assessment Report, March 1995, by Northern Test Lab. Response to request from ADEC to assess the shop property for potential sources of contamination discovered at the Carver Drilling Company site (Items 3 and 4). Phase I included historical research, interviews, and site reconnaissance. Eight potential sources of contamination on or adjacent to the site were identified, generally attributed to former military or subsequent City operations. This 11 acre site is approximately 800 feet east and southeast of the KAFS UST site.
8. City of Kenai Maintenance Shop, Phase II Site Assessment Report, June 1995, by Northern Test Lab. This investigation included a drilling and sampling program to assess potential sources of contamination identified during Phase I. Of the eight potential sources of contamination identified in Phase I, four appeared to be significant sources or contamination, with two additional areas of potential problems. According to the City Engineer, Jack LaShot, some of the contaminated soil was excavated and is currently stockpiled at the site and groundwater monitor wells were recently sampled.
9. City of Kenai Maintenance Shop Site Assessment, 1998 Environmental Investigation Workplan, January 1998, by Kent & Sullivan, Inc. City Engineer Jack LaShot said the work was done; the report would be finished in several weeks [by early-June]. Project scientist Peter Campbell said the up-gradient contaminant concentrations were non-detect for aromatics and gas range, and only a trace of diesel range. Mr. Campbell also stated the southwesterly groundwater flow direction shown in the Phase II report (June 1995) was not accurate. The ditch and stream may have influenced the results. He believes the flow direction should be southerly, similar to other sites in the vicinity. (Phone conversation with Ron Rozak, May 24, 1999).
10. City of Kenai Airport- 1998 Underground Storage Tank Removal Report, September 30, 1998, by Kent & Sullivan, Inc. Assessment for removal of two jet fuel storage tanks, piping, and four dispensers located south of the airport terminal building. About 200 cubic yards of soil contaminated with jet fuel was removed, another 200 cubic yards was left in place. Three monitor wells near the UST site and two up-gradient wells, installed south the Alaska Flying Network facility by Rozak Engineering, were surveyed. Groundwater flows south at a gradient of 0.0014 ft/ft. The Kenai Airport UST site is about 900 feet south of the KAFS UST site.

Soil and Contamination Plume Characterization

Objectives and Approach

The initial objective is to delineate the current degree and extent of subsurface contamination associated with the releases at the UST facility and to characterize the contaminated soil in the stockpile at the site. We will gather information to help determine the degradation rates and appropriate remedial action(s). The investigation will include the following:

Contamination Plume Delineation

- There are currently three monitor wells at the site suitable for collecting water level data; MW1, MW2 and MW4. The top of casing at each well will be surveyed and water levels will be measured to determine the direction of flow and gradient of the groundwater. All readings will be measured to an accuracy of 0.01 foot. Our consulting hydrogeologist, Geoff Coble, may conduct a slug test to determine the hydraulic conductivity of the aquifer.
- The monitor wells will be inspected to determine if they are suitable for collecting representative water samples, and repaired if necessary to provide security and integrity. The column of water in each well will be checked for presence of free petroleum product.
- If the wells are acceptable, groundwater samples will be collected from each well. In addition, the initial sample round will include testing with field instruments for temperature, pH, conductivity, and oxygen. If the existing wells are not suitable for water sample points, we will install several new wells, one 10 feet east of MW1 and one 80 to 100 feet further south. Any new wells will be at least 15 feet bgs. Depending on the initial results, need for additional data, or the recommendations of our hydrogeologist, field testing may be modified on subsequent sampling events.
- Data collected from the initial groundwater investigation will be reviewed, compared with historical data, and evaluated to determine the location for additional well points necessary to delineate the areal extent of the groundwater contamination. If contamination is detected in MW4, a monitor well will be installed north of the new UST site to establish background concentrations of contaminants up-gradient of the KAFS facility.
- A report which documents our findings from the survey, initial sampling, comparison with historical data, estimate of the extent of contamination, and recommendations for additional monitor wells and soil borings, will be prepared and submitted to the ADEC project manager.
- After receiving approval from ADEC, additional soil borings will be drilled to determine the degree and extent 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. The sample at each boring with the highest potential for contamination will be submitted to the laboratory for analysis. If field screening results are non-preferential, the sample collected at the soil-water interface will be submitted for analysis. All soil samples will be analyzed for DRO, GRO, BTEX and VOCs. A report with field data, analytical results, evaluation and recommendations will submitted to ADEC.

Contaminated Stockpile Characterization

- Approximately 600 cubic yards of contaminated soil excavated at the former UST site during October 18-20, 1993 was stockpiled on 50 ft x 120 ft x 20 mil HDPE liner at the east half of Lot 4. The contaminated soil was fine and medium sand with some gravel, and very few fines. The soil was covered with a 12-mil fabric.
- Analytical results of soil samples collected below the tanks, before the soil was excavated, showed VPH concentrations were 10 to 200 times greater than EPH concentrations. This indicates most of the soil contamination was from aviation gasoline, although we believe some of the contamination was jet fuel based on reports that 20 to 100 gallons spilled during September 1990. We estimate the average VPH concentration in the soil pile was 5,000 to 10,000 ppm when the soil was stockpiled in 1993. The soil pile was not field screened or analyzed to characterize the contamination.
- When the soil was stockpiled, the contractor installed five perforated pipes wrapped with polyester fabric, three near the bottom and two slightly above the middle (Figure 4). The perforated pipes connected to solid headers at the west end.
- A one horsepower blower was connected to the headers and operated intermittently during the summer of 1994, and several short periods during 1995. Refer to Corrective Action Plan - Contaminated Soil Pile, June 28, 1994, by Rozak Engineering. Due to a lack of funds, the soil vapor venting operation was not monitored or sampled by Rozak Engineering.
- The stockpile will be field screened to determine if contaminant concentrations are low enough to warrant collecting lab samples for confirmation of treatment. Sixty samples will be collected from various depths in the pile, but none less than two 18 inches beneath the surface of the pile. We will use hand auger equipment to collect samples full depth of the pile at two foot intervals in 28 locations, as shown on attached sampling plan (Figure 4A).
- If contaminant concentrations appear to exceed the cleanup level, three discrete samples will be collected, from the locations with the highest potential for contamination, and submitted to the laboratory for analysis. Field screen data and analytical results will be evaluated and reported to ADEC, along with a remediation plan to bring the contamination levels to acceptable limits.
- If concentrations appear to be less than the cleanup levels, seven verification samples will be collected from the locations and depths showing the highest levels of contamination (18AAC78.605, Table C). All samples will be analyzed for DRO, GRO and BTEX. The sample showing the highest level of contamination will also be analyzed for VOCs.

Regulatory Considerations

The release investigation and cleanup work at this site is governed by the ADEC *Underground Storage Tank Regulations* 18 AAC 78. When the UST removal and initial corrective action was performed in 1993-1994, the UST regulations, as amended through August 21, 1991, required that soil with a matrix score of 37 be cleaned up to Category B levels. Section 345 of those regulations also stated that "contaminated groundwater will have received sufficient reduction in all contaminants if (1) the applicable water quality criteria of 18 AAC 70 have been met." The cleanup levels were usually the more stringent of the final State or Federal Maximum Contaminant Levels (MCLs) for Organic and Inorganic Chemicals. The cleanup levels are summarized below:

TABLE 1 - SOIL AND WATER CLEANUP LEVELS (1993)

<u>Parameter</u>	<u>Soil,</u> <u>mg/kg</u>	<u>Water,</u> <u>mg/l</u>
Diesel range petroleum hydrocarbons (DRO)	200	NA
Gasoline range petroleum hydrocarbons (GRO)	100	NA
Total BTEX (Benzene, Toluene, Ethylbenzene & Xylenes)	15	NA
Benzene	0.5	0.005
Toluene	-	2.0
Ethylbenzene	-	0.7
Total Xylenes	-	10

The current UST regulations, as amended through January 22, 1999, allows for cleanup levels, summarized in Table 2 (below) to be determined by several methods:

- SOIL: Table A1, Method One (Category B) or Table B2, Method Two, with the individual standards for benzene, toluene, ethylbenzene, and total xylenes obtained from Table B1 (Under 40 Inch Zone, Migration to Groundwater)
- WATER: Table C, Groundwater Cleanup Levels:

TABLE 2 - SOIL AND WATER CLEANUP LEVELS (1999)

<u>Parameter</u>	<u>Soil,</u> <u>mg/kg</u>	<u>Water,</u> <u>mg/l</u>
Diesel range petroleum hydrocarbons (DRO)	250	NA
Gasoline range petroleum hydrocarbons (GRO)	300	NA
Total BTEX (Benzene, Toluene, Ethylbenzene & Xylenes)	NA	NA
Benzene	0.02	0.005
Toluene	5.4	1.0
Ethylbenzene	5.5	0.7
Total Xylenes	78	10

The groundwater at this facility and surrounding area is not a current or reasonable expected potential source for drinking water. Subject to conditions specified in the regulations, the cleanup levels may be increased to 10 times the cleanup concentrations listed in Table 2.

Initially, we propose to use the petroleum hydrocarbon cleanup levels listed below (Table 3) for the remedial action work at this site. Some of the cleanup levels may be increased to 10 times if ADEC staff approve a determination of groundwater use made under 18 AAC 75.350, in consultation with the site landowner, the public, and appropriate government officials.

TABLE 3 - SOIL AND WATER CLEANUP LEVELS (PROPOSED)

<u>Parameter</u>	<u>Soil,</u> <u>mg/kg</u>	<u>Water,</u> <u>mg/l</u>
Diesel range petroleum hydrocarbons (DRO)	250	NA
Gasoline range petroleum hydrocarbons (GRO)	300	NA
Total BTEX (Benzene, Toluene, Ethylbenzene & Xylenes)	NA	NA
Benzene	0.5	0.005
Toluene	5.4	2.0
Ethylbenzene	5.5	0.7
Total Xylenes	78	10

EOD analysis ? method ?

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*.

Schedule

The proposed schedule for this work is summarized below:

April to mid May 1999	Gather historical information (done)
Late May to early June	Inspect/repair monitor wells, survey GW gradient and direction
Early June	Collect GW samples
Early June	Field screen and sample soil stockpile
Late June	Evaluate field data and analysis results, prepare report
Early to mid July	Install and sample additional soil borings and monitor wells, as needed
Late July	Evaluate additional field data and analysis results, prepare report
Late September	Survey GW, collect 2nd quarter GW samples
Late October	Evaluate field analysis data, prepare 2nd quarter report
Late December	Survey GW, collect 3rd quarter GW samples

Late January 2000	Evaluate field data & analysis results, prepare 3rd quarter report
Late March	Survey GW, collect 4th quarter GW samples
Late January 2000	Evaluate field data & analysis results, prepare 4th quarter report, with evaluation and summary of all work to date

Depending on the results of the above investigation, a plan for future investigation and/or a remediation program will be developed and submitted to ADEC.

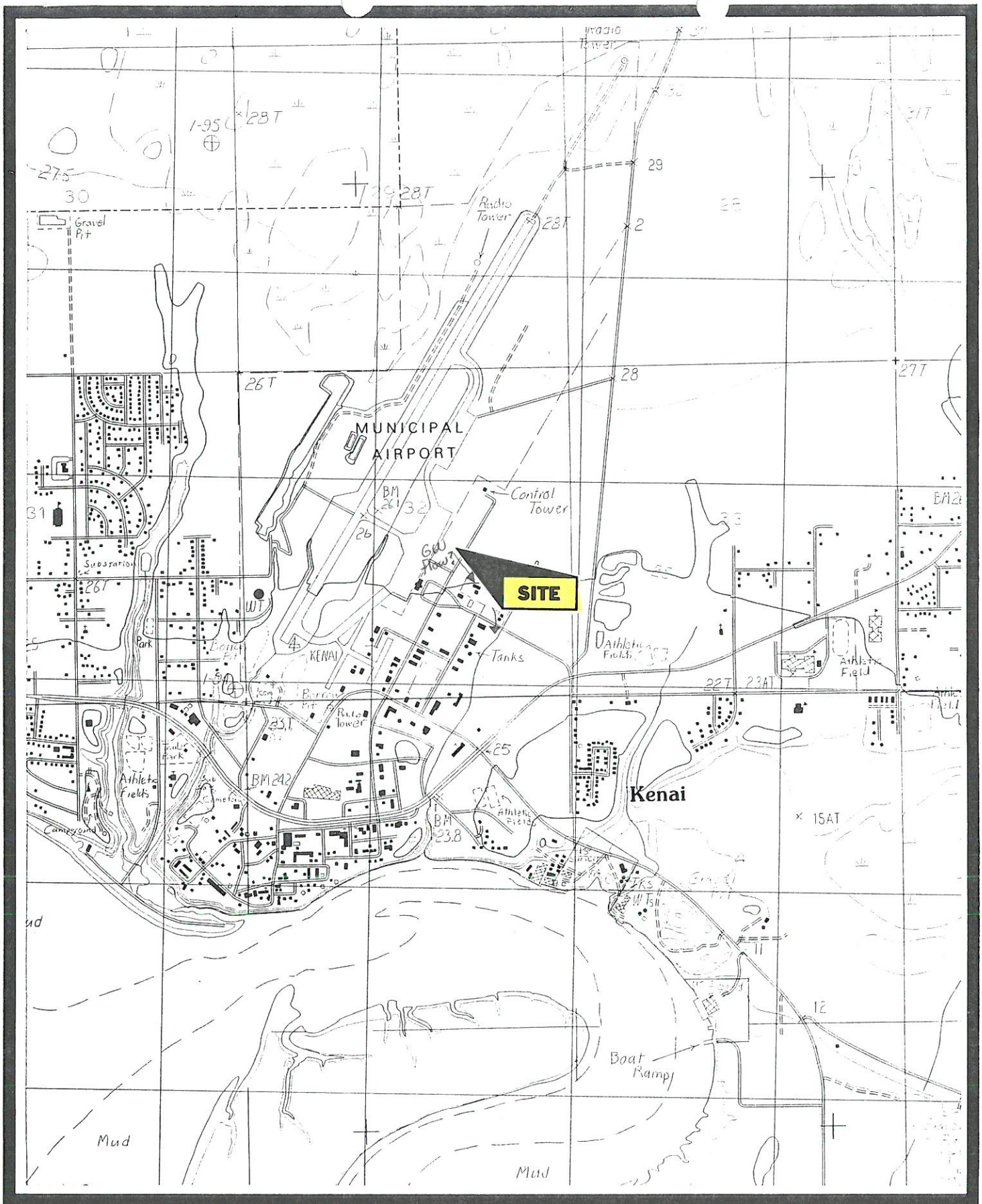
Prepared by,



Ronald T. Rozak, PE
Principal Investigator

cc: Dan Pitts, Kenai Airport Fuel Service

Attachments: Figure 1, Topographic Map: Kenai (Site Vicinity)
Figure 2, Aerial Photograph: Kenai Airport Fuel Service (Vicinity)
Figure 3, Plan – Remedial Action, KAFS
Figure 4, Plan and Section - Contaminated Soil Pile, KAFS
Figure 4A, Field Screen Sampling Plan – Contaminated Soil Pile, KAFS

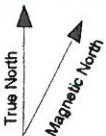


TOPOGRAPHIC MAP: KENAI

From: USGS 7.5' Quadrangle KENAI (C-4) SE, ALASKA
 Provisional Edition 1986, Contour Interval 5 Meters

SCALE 1:25 000

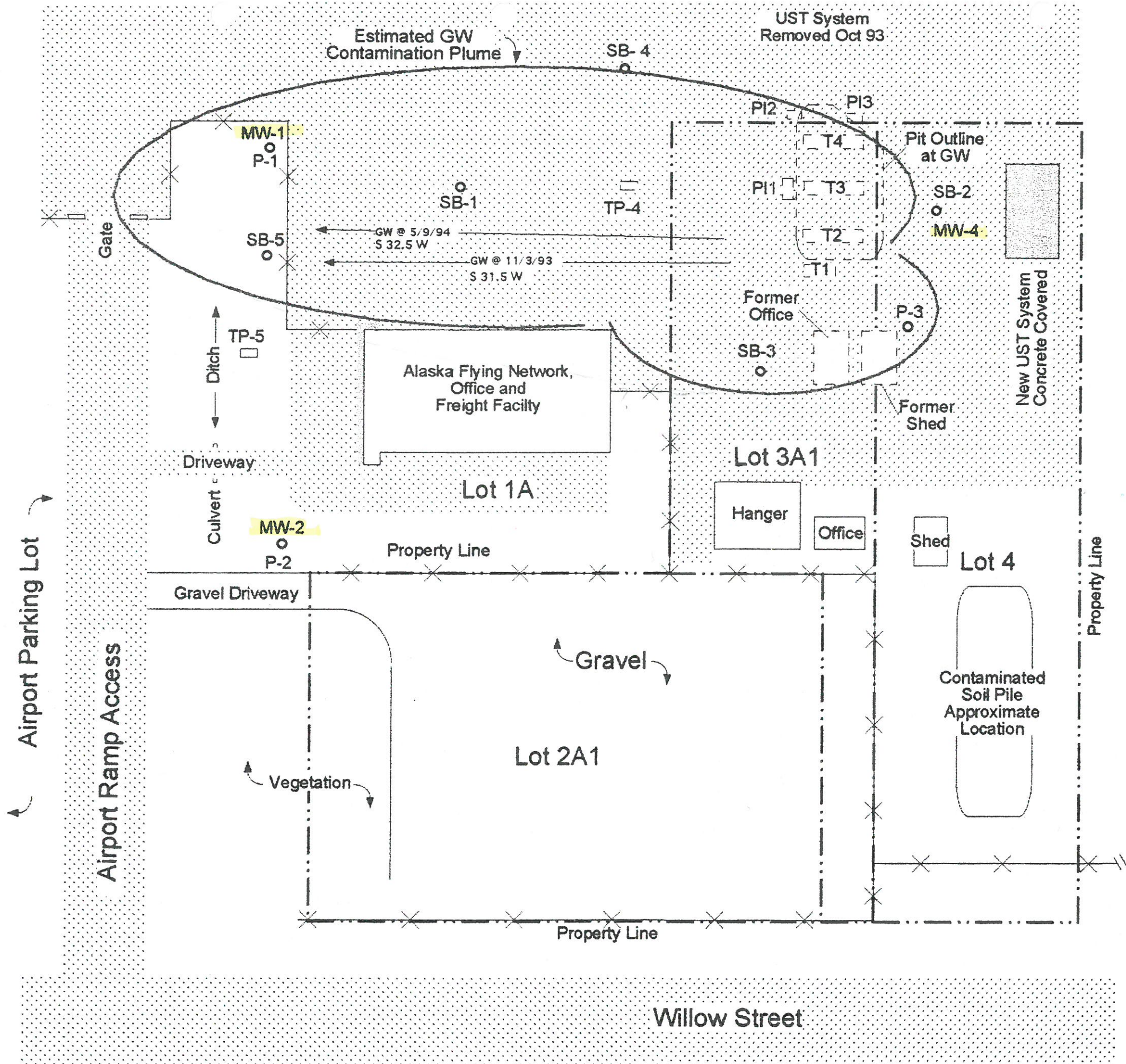




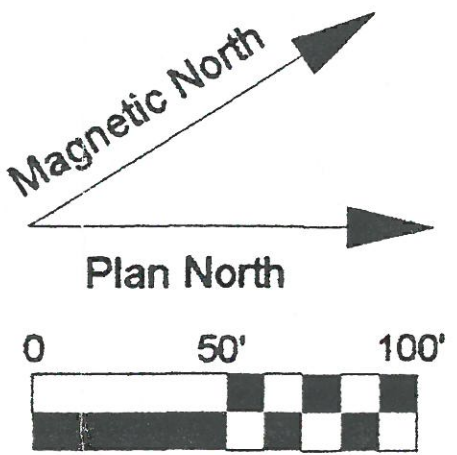
Aproximate Scale
1" = 200'

Aerial Photograph
Kenai Airport Fuel Service, Inc.
Excerpt from Aeromap U.S. Inc.,
Roll # KMS4 Exp. # 14A-37 7/6/75

Fig. 2



Note 1: Property line and bearings from McLane & Assoc. Plot Plan June 22, 1993.
 Note 2: Soil borings SB1 through SB5 done July 26, 1994.



Legend

TP	- Test Pit	✕	Chain Link Fence
SB	- Soil Boring	✕	Property Line
MW	- Monitor Well	○	Asphalt
P	- Piezometer	□	Concrete
PI	- Pump Island	○	
T	- Tank	○	
PMW	- Proposed Monitor Well Location	○	

Fig. 3

Plan - Remedial Action
 Kenai Airport Fueling Service
 Lots 2A1, 3A1, and 4
 FBO Subd. South Adrn. No. 2, Kenai
 Rozak Engineering May 1999