MarkAir Nome

MarkAir Trustee
Anchorage, Alaska

Phase II Environmental Site Assessment of

Lot 1, Block 3 (ADA-03692)

ADOT Nome Airport,

Nome, Alaska

Prepared by:

Restoration Science & Engineering
911 West 8th Avenue, Suite 205
Anchorage, Alaska 99501

July, 1997

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1.0 EXECUTIVE SUMMARY

This report was prepared on the behalf of the MarkAir Bankruptcy Trustee, Mr. William Barstow, and presents the results of a site assessment conducted at Lot 1, Block 3 of the State of Alaska Department of Transportation's (ADOT) Airport Lease Lots in Nome, Alaska (see Figure 1). The purpose of this site assessment is to present information to be used to evaluate environmental issues associated with this property and to determine the presence of site impacts from fuel spills.

The subject property is identified by ADOT as Lease # ADA-03692, Lot 1, Block 3 and has served as a commercial aviation facility for more than 17 years. Located on Lot 1 is a 60-ft by 40-ft insulated steel-frame hangar structure. This facility is currently leased to Evergreen Helicopters which has leased the property since 1985. Lot 1 adjoins the Nome Airport Apron and located on the east side of th southern portion of Runway #2 (see Figure 2).

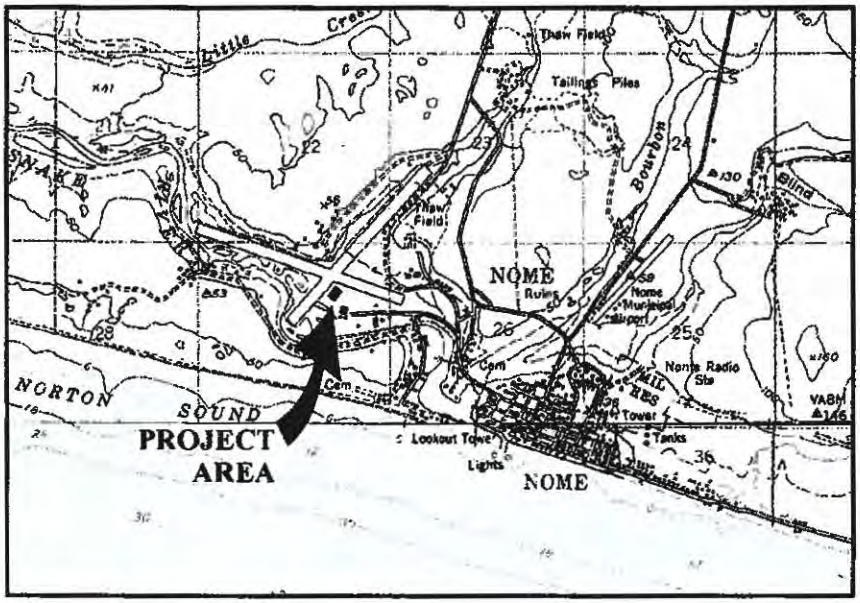
RSE Site assessment activities were conducted on October 11, 1996. The site assessment activities consisted of facility inspection, soil sample collection, and interviewing local personnel. Samples were analyzed for hydrocarbon contaminants. In addition to these site activities, ADOT and ADEC files, site aerial photos, and other available site information were also reviewed.

A significant focus of this report is to evaluate the occurrence and areal impacts of fuel spills. Research of ADEC Contaminated Sites and Leaking Underground Storage Tank (LUST) and Contaminated Sites database did not identify agency-reported petroleum spills on the subject property (Petrick 1996). Lease files and site inspection showed that fuel products have been stored at several areas on the subject property. Soil sample results show that hydrocarbon-impacted soil is at contaminant levels above ADEC level B numeric cleanup standards for DRO (ADEC 1991a). This in-situ soil is located near the 500-gallon heating oil tank at the southernmost corner of the Hangar and in the vicinity of the 2,000-gallon Jet-A AST and dispenser cabinet on the west side of the Hangar.

2.0 SITE DESCRIPTION AND HISTORY

Nome lies on the south side of the Seward Peninsula on the Bering Sea. The city of Nome was founded in 1898 when gold was discovered nearby. The Alaska Department of Transportation Nome Airport property is located on the about one mile west of downtown Nome on the northern banks of the easterly-flowing Snake River. The Nome area including the airport has been subjected to mining activities. Much of the airport area is adjacent to as or constructed on old mine tailings (Dorova 1995).

The Nome Airport was constructed during the years 1940 through 1943 to support World War II activities, and has been used for air transportation continuously since this time. The bureau of Land Management transferred the Nome Airport to the State of Alaska ADOT&PF Airport Leasing in 1965 (Dames and Moore, 1995). The State has leased portions of the airport lands to individuals and companies involved in air transportation activities since this time.



LOCATION MAP

NORTH

AREA MAP

REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS "NOME" (B-1AND C-1), 1:63:360,1950.

NORTH

SUBJECT PROPERTY

VICINITY MAP

REFERENCE: STATE OF ALASKA DEPT. OF TRANSPORTATION & PUBLIC FACILITIES, AIRPORT LEASING, DRAWING TITLED "NOME AIRPORT", APRIL 1985.

FILE: MAPS.CD7 JOB NO.: 96 - 23 DATE: 7/97 SCALE: DRAWN BY: SJM REVISED:	**Figure 1** **LOCATION AND VICINITY MAPS** LOT 1, BLOCK 3 NOME AIRPORT ADOT LEASE NO. ADA-03692 NOME, ALASKA	**RESTORATION** **SCIENCE & ENGINEERING** ph: (907) 278-1023 fax. (907) 276-8967 911 West 8th Avenue, Suite 205 Anchorage, Alaska 99501

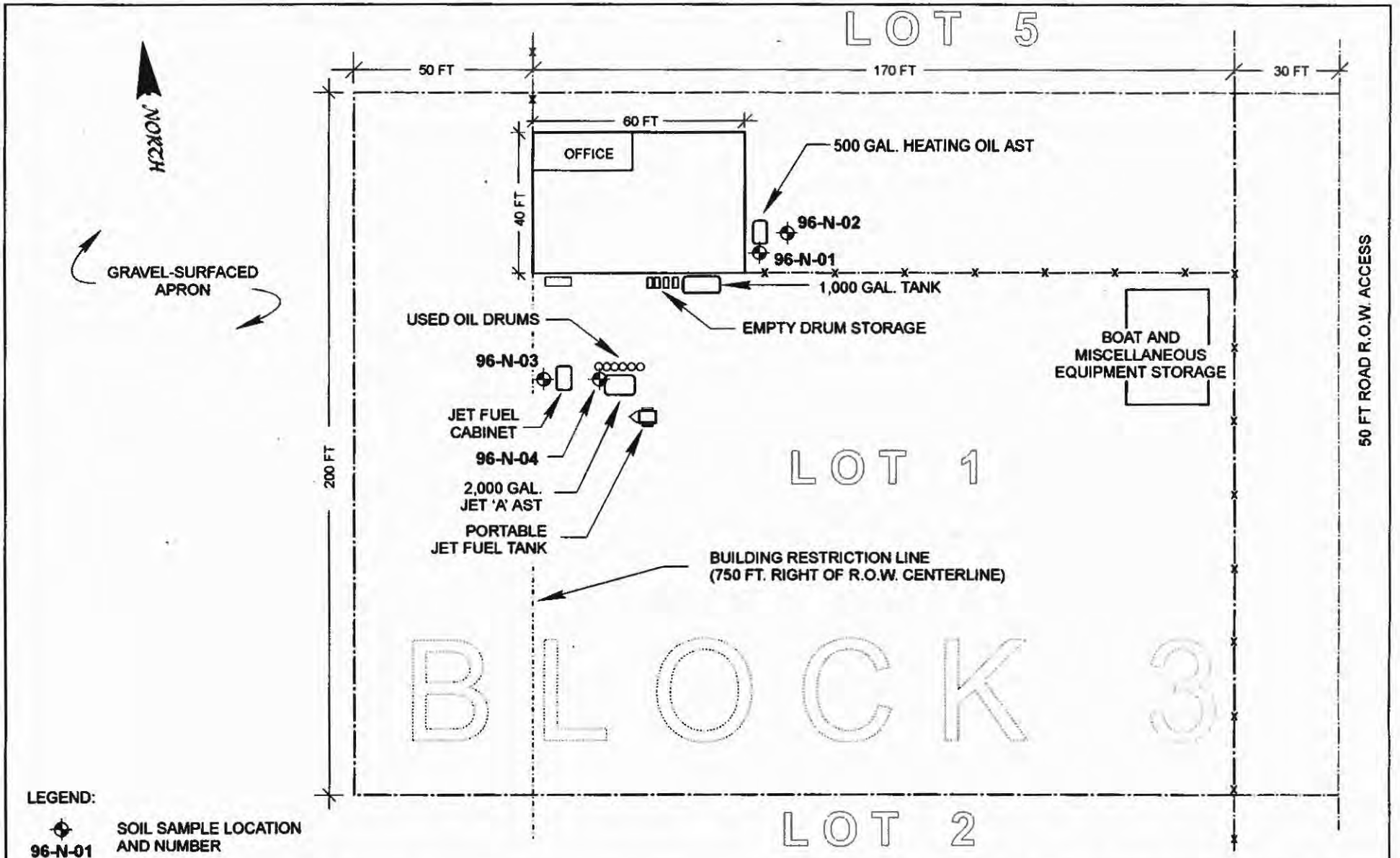
The vegetation on the coast of the Norton Sound is primarily moist and wet tundra, with smaller amounts of alpine tundra with closed spruce forests in upland areas (Viereck and Little, 1972). The airport area is surrounded by tundra with vegetation dominated by grasses and other low-growing tundra shrubs with areas adjacent to freshwater bodies containing small, dense growth of alders, willows, or dwarf birch.

The subject property consist of a 220-ft by 200-ft parcel with a total of 44,000 square feet of area (See Figure 2). A 60-ft by 40-ft insulated steel-frame Hangar/Office building is situated on the northernmost portion of the property. A 12-ft wide by 13-ft high 1-3/4 inch insulated overhead hangar door is located on the west side of the building and adjoins the gravel-surfaced airport apron. A man-door is located on the north wall to the east of the Hangar door and another is located on the south side of the building. The building foundation consists of a six-inch reinforced slab with 1-ft by 1-1/2-ft thickened perimeter footing. This concrete slab was placed over two inches of styrofoam insulation on top of 16-inches of gravel fill placed over "airport fill". The building exterior walls and roof are of galvanized steel and the interior is insulated with 2-1/2 inches of spray on urethane with 3/4-inch TCI fire proofing (Gehmm Co. Inc., 1979). Security fencing secures the northern and eastern property boundaries from unauthorized access. The Hangar is heated by an overhead oil-fired heater served by a 500-gallon heating oil above-ground storage tank (AST) located near the southernmost corner of the building exterior. The Hangar is not equipped with water or sewer utilities. Power is provided by an overhead service connect to a Nome Joint Utilities power distribution line. No pole or pad-mounted transformers are located on the subject property. A 2,000-gallon jet fuel AST and a fuel dispenser cabinet as well as a 500-gallon trailer-mounted jet fuel tank are located on the west side of the Hangar.

In August of 1979 the ADOT issued lease ADA-03692 for a 250-ft by 200-ft parcel to Great Northern Airways (GNA). The intended use of the property at this time was for aviation passenger and freight activities. During 1979 the ADOT brought fill into the apron fronting lots 1, 2, and 3 of Block 3, (ADOT 1996). The existing Hangar building was constructed in 1979-1980 time period and Great Northern Airways operated passenger and freight services from this location. In early 1981 GNA merged with Alaska International Air, Inc. (AIA). AIA continued to operate passenger and freight services from this location and in May of 1984 the existing lease was supplemented naming MarkAir as the tenant. In April of 1985 the lease was amended to reflect the reduction in lease size to the current 220-ft by 200-ft lease configuration. In July of 1985, MarkAir subleased Lot 1, Block 3 of the Nome Airport to Evergreen Helicopters. Evergreen has operated helicopter passenger and freight services from this location since this date and continues to operate to the date of this report.

2.1 Aerial Photography Review

Aerial photography was reviewed to identify or confirm property usage patterns and observe notable site conditions. Aerial photos from 1977, 1986 and 1994 are presented as Figures 3, 4, and 5 in this report. Aerial photos for 1972, 1980 and 1992 were reviewed as presented in Dames and Moore's Phase II ESA of MarkAir Facility at Lot 2, Block 11, Nome (Dames and Moore, 1995).



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REVISED:	

Figure 2
SITE MAP
Lot 1, Block 3
Nome Airport
ADOT Lease NO. ADA-03692
Nome, Alaska

RESTORATION
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REFERENCE: AERIAL PHOTOGRAPHY BY AEROMAP U.S. INC., JULY 12, 1977.

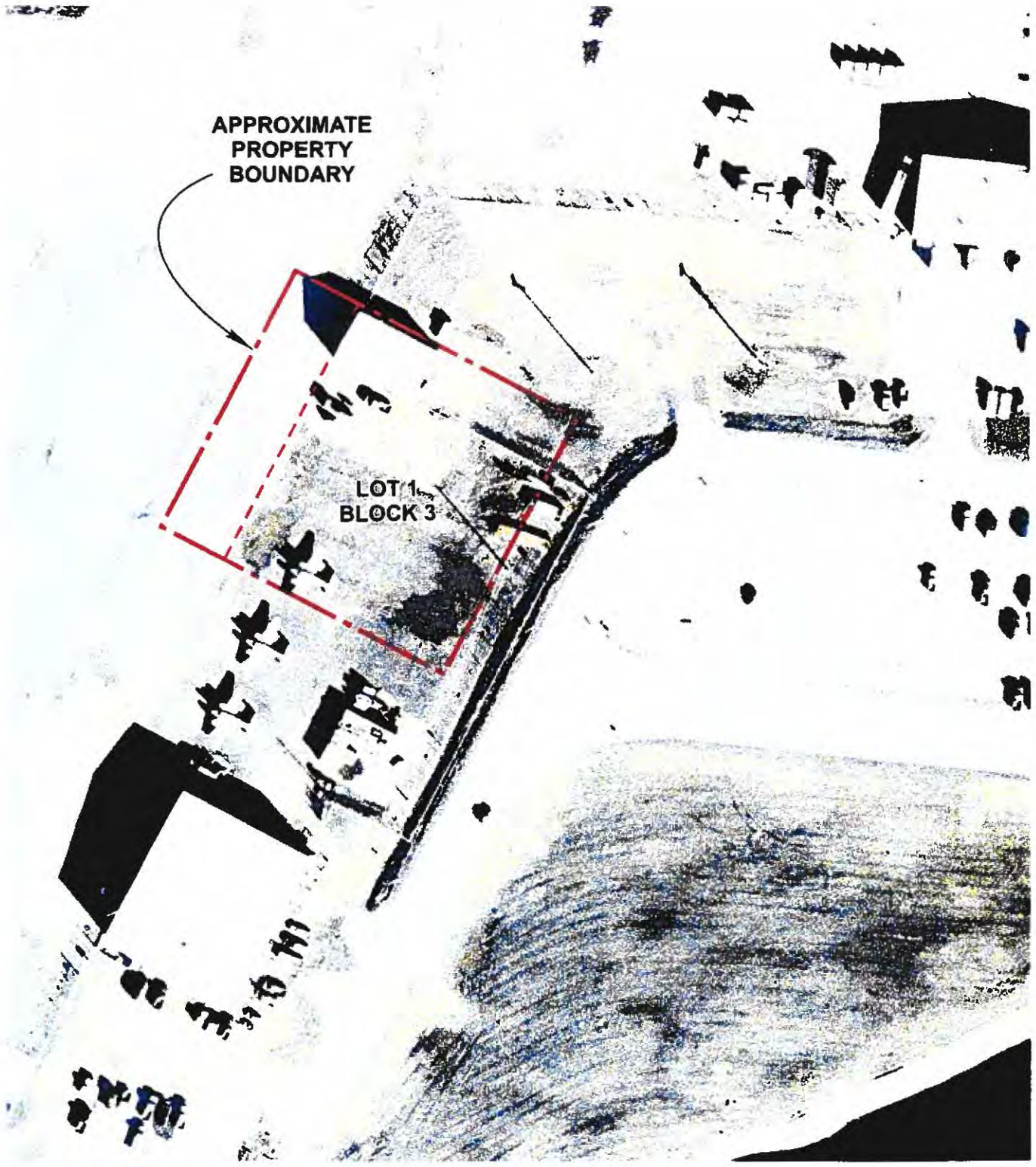
NORTH

FILE: 7-77.CD7 JOB NO.: 96 - 23 DATE: 7/97 SCALE: 1 IN. = 100 FT. DRAWN BY: SJM REVISED:	**Figure 3** **1977 AERIAL PHOTO** Lot 1, Block 3 Nome Airport ADOT Lease No. ADA-03692 Nome, Alaska	**RESTORATION** **SCIENCE & ENGINEERING** ph: (907) 278-1023 fax. (907) 276-8967 911 West 8th Avenue, Suite 205 Anchorage, Alaska 99501

REFERENCE: AERIAL PHOTOGRAPHY BY AEROMAP U.S. INC., SEPTEMBER 26, 1986.

NORTH

FILE: 9-86.CD7 JOB NO.: 96 - 23 DATE: 7/97 SCALE: 1 IN. = 100 FT DRAWN BY: SJM REVISED:	**Figure 4** **1986 AERIAL PHOTO** Lot 1, Block 3 Nome Airport ADOT Lease No. ADA-03692 Nome, Alaska	**RESTORATION** **SCIENCE & ENGINEERING** ph: (907) 278-1023 fax. (907) 276-8967 911 West 8th Avenue, Suite 205 Anchorage, Alaska 99501



REFERENCE: AERIAL PHOTOGRAPHY BY AEROMAP U.S. INC., SEPTEMBER 25, 1994.

NORTH

FILE: 9-94.CD7 JOB NO.: 96 - 23 DATE: 7/97 SCALE: 1 IN. = 100 FT. DRAWN BY: SJM REVISED:	**Figure 5** **1994 AERIAL PHOTO** Lot 1, Block 3 Nome Airport ADOT Lease No. ADA-03692 Nome, Alaska	**RESTORATION** **SCIENCE & ENGINEERING** ph: (907) 278-1023 fax. (907) 276-8967 911 West 8th Avenue, Suite 205 Anchorage, Alaska 99501

1972 Aerial Photo - This aerial photo shows Lot 1 to be disturbed but essentially undeveloped with native vegetation visible. A drainage swale exists to the north between the subject parcel and the Birchwood Hangar. Some debris is scattered on the north side of the drainage swale. No equipment or debris was observed on Lot 1, Block 3 in this photo. A commercial jet is parked on the north side of the Birchwood Hangar (Lot 9, Block 11) and cars are parked around the facility also.

1977 Aerial Photo - This photo shows that the northern portions of Lot 1, Block 3 have received fill materials since the 1972 air photo. The drainage ditch observed in the 1972 photo has also been filled. The southern portion of Lot 3 has not received fill and water ponds are visible. A slough of the Snake River is located several hundred feet south of the property. Three aircraft are positioned across the west edge of Lot 1. Two sheds are located along the southern edge of the property at the top of the south edge of the site fill. Some pallets and other miscellaneous debris are located between the two sheds.

1980 Aerial Photo - This photo shows the 40-ft by 60-ft Hangar building in its present configuration. Automobiles are parked near the northeast and the southwest building corners. A heating oil AST may be visible at the southwest building corner. Additional fill materials measuring 100-ft by 100-ft have been placed on Lot 1. Fill and grading activities have been performed south of the southernmost property boundary accommodating an access road to Lot 3, Block 3 located to the southwest of the subject property. The Lot 3 property appears to have an office trailer with several small planes are parked adjacent. The Birchwood Hangar has two aircraft and several cars parked around it.

1986 Aerial Photo - This photo shows a helicopter parked on the apron to the south west of the Hangar. A portable fuel tank is visible near the southwest building corner and various drums and other equipment are stored on the south and west side of the Hangar building. Numerous automobiles are parked on the north side of the Hangar. The Birchwood Hangar formerly located to the north of the property no longer exists. An asphalt-surfaced parking lot has been installed on property to the southeast of Lot 1. Lot 3, Block 3 to the south of the subject property has been developed and has a 100-ft by 125-ft hangar structure.

1992 Aerial Photo - This photo shows that the existing security fencing had been installed on Lot 1. The jet fuel dispenser cabinet is visible as is the 2,000-gallon Jet Fuel AST. These items appear to be located very close to the equipment locations noted on October 11, 1996. The 500-gallon heating oil AST is also visible at a similar location to that observed on October 11, 1996. A container van or other equipment is located on the property to the southwest of the Hangar. Two aircraft are visible to the west of Lot 1 on Lot 3.

1994 Aerial Photo - This photo generally shows the current configuration of the subject property including the Jet Fuel AST and dispenser and the heating oil AST. River boats and other equipment are stored on the south edge of the property. A drainage ditch is visible and drains to the south of the southern edge of the property.

2.1 Hangar Interior Areas

The interior of the Hangar building was inspected and usage observations as well as chemical and waste management activities were noted. The northeast side of the Hangar interior is occupied by a wood-frame coat room and office area. The space above the office area is used for storage of materials. The center of the Hangar bay area is used for helicopter storage and maintenance activities. On the east end of the wood-frame office chemical products are stored in an orderly fashion on a wood-frame shelf. Adjacent to this area along the northeast building wall is a shop work bench area that includes a drill press and parts storage bins (See Photos). Along the east wall of the Hangar facility more parts are stored along with welding equipment, a portable generator, battery charger and lube oils. An empty parts wash tank is situated at about the center of the east Hangar wall. Along the south interior wall slings, and other helicopter operation equipment is stored. Several barrels of lube oil are stored in the northwest corner of the building. No floor drains were observed in this facility.

2.2 Exterior Areas

Exterior areas of the subject property include a small portion of the parking lot located to the north of the Hangar outside of the fencing-secured areas of the property. Adjacent to the east Hangar wall a 500-gallon heating oil AST is located (see photos). Adjacent to the south hangar wall a dismantled snowmachine, ten empty fuel drums and an empty 1,000-gallon AST are stored. Located about 20-ft to the south of the south Hangar wall is a 4-ft by 7-ft by 4-ft high Jet-A fuel dispenser cabinet. This dispenser is served by a 1-1/2 inch diameter fuel hose connected to a 2,000-gallon skid-mounted portable Jet-A AST. During the site visit a 500-gallon trailer-mounted Jet-A tank was parked to the south of the 2,000-gallon AST. On the east side of the 2,000-gallon AST six drums of used-oil were stored of which four were near full and two were approximately one-half full. On the southern portion of the fenced-in area miscellaneous debris and three trailered riverboats were stored.

2.3 Chemicals Fuels Used and Stored On-Site

A variety of fuels, chemical and used oil products and containers were observed at various locations on site. The following summarizes the site observations:

Interior Area

Exxon 2389 Turbine Oil	LPS Lubricant
Grease	Texaco Hydraulic Oil (petroleum based)
Methyl ethyl ketone (5-gal)	Rubbing compound
Plastic Cleaner and Polish	Mirror glaze
Aluminum Jelly	Magnaflux Developer
Aluminum cleaner	Deicing agent
Spray paints	Dupont paint activators
Paint thinner	Electric Parts Cleaner
Acetone	Rubber cement

Interior Area (continued)

WD40 spray lubricant	Contact Adhesive
Wood Stain	Laminating Resin
Oxygen/Acetylene	Thread-cutting oil
Auto transmission fluid	Auto motor oil
Auto anti-freeze	Hydraulic fluid
2-cycle oil	Rust Tammer
Engine Enamel Spray Paint	Auto Body filler
Brulin 815 MX Industrial cleaner	Propane tank (5-gal)

Exterior Areas

5 barrels of used oil	1,000-gallon AST (empty)
2,000-gallon Jet-A AST	10 barrels (empty)
500-gallon heating oil AST	500-gallon Jet Fuel trailer

2.4 Waste Management Practices

The Lot 1, Block 3 facility is not served by water or sewer utilities. Most of the properties in the Airport vicinity have water hauled to the site by truck and sanitary waste is trucked away for disposal at the Nome wastewater treatment facility. ADOT lease maps indicate the possible presence of an underground sewage pipe that extends from the old Birchwood Hangar to Lot 5, Block 3, located adjacent to the north boundary of the subject property (ADOT 1996). The Birchwood Hangar was demolished in approximately 1985 and the debris was hauled off-site for disposal (pers comm. J. Oliver 1997). Solid waste generated at Lot 1, Block 3 facility has been hauled off-site to the Nome Landfill. Interviews with ADOT and site personnel did not yield information indicating that solid waste debris is buried in the fill on the subject property. A search of ADEC UST database as well as interviews with site and ADOT personnel indicate no record of underground storage tanks at this site (pers. comm Jerry Oliver 1997; E. Penttila 1996).

Helicopter washing is performed on-site and the wash water is allowed to run off Hangar slab onto the property surface. Mr. Penttila indicated in interviews that when Evergreen first occupied the site there was evidence of soil staining from fuel or used oil drums that were stored next to the heating oil AST by the former occupants of the property. Evergreen manages its used oil in 55-gallon drums and the drum contents are picked up by Checker Cab for used oil recycling. Mr. Penttila also acknowledged that there has been a nominal amount of fuel spillage related to Evergreen's Jet Fuel handling practices but did not recall any major fuel spill events. A review of ADEC files yielded no records of reportable fuel spills at the site. Results of hydrocarbon analyses from RSE's October 1996 soil sampling activities yielded high levels of hydrocarbons in surficial soil near the Jet-A and heating oil ASTs. In addition, observation of a coffee can placed beneath the Jet Fuel hose fitting indicated ongoing leaks from these connections. Based upon these hydrocarbon residuals, RSE on the behalf of the Bankruptcy Trustee notified the ADEC Fairbanks office of the fuel releases to the land of the State and the site was assigned a spill number of 97389915401 (pers. comm. K. Adler 1997).

3.0 GEOLOGY AND HYDROGEOLOGY

The Nome Airport is located near the coast of Norton Sound in a maritime/continental climate transitional zone (Hartman and Johnson 1984). The mean annual precipitation in Nome is 15.6 inches with a maximum daily precipitation of record of 2.36 inches occurring in August of 1956 (Leslie 1989). The peak annual flow of the Snake River likely follows spring snowmelt in early May with flow increase occurring related to summer and late summer precipitation events followed by winter during which the flow declines until the spring thaw. The coastal area of Nome and the airport can be subject to storm-surge sea flooding as well as ice-dam flooding from the Snake River (US Army Corp of Engineers, 1993; FEMA, 1983). The airport itself lies within the 100-year floodplain. A flood with a recurrence interval between 2 and 5 years can reach the height of the airport runway (Jones and Fahl, 1994).

The city of Nome and the nearby airport area are located on a broad coastal plain that extends from Anvil mountain locted two to three miles to the north to the east-west running coast of Norton Sound. The mountain foothills are overlain by colluvial deposits derived from the weathering of bedrock which is exposed in the hills near Anvil Mountain, Banner Peak and Newton Peak. This bedrock is principally marble with some graphitic, calcareous schist to the east near Banner Peak (Hummel, 1962). The coastal plain area is covered by glacial outwash till whereas areas bordering the Norton Sound coasts consist of recent beach deposits (Hopkins et. al, 1960; Hummel 1962). In undisturbed areas the coastal plain surface consists of a nearly continuous mantle of loess, silty gravel, peaty silt, and peat ranging in thickness from about one foot to more than 30 ft. Well logs from the FAA facility near the airport indicate a depth to bedrock between 33 to 50 ft (Waller and Mathur, 1962).

The dominant soil series in areas that have not been worked by mining operations is Kuskokwim silt loam consisting of a poorly-drained soil having a thick surface mat of organic material. These soils are perennially frozen below about 3.5 ft and near the base of the organic mat. Most of the Seward Peninsula is underlain by continuous permafrost and the thickness of ground at Nome is about 330 ft (Ferrians, 1965). Except for areas adjacent to large water bodies, permafrost is typically occurs at shallow depths (Dorova, 1995). Surface water is abundant in the vicinity of the Nome Airport as it located on the mouth of the Snake River in a region replete with small streams and lakes.

Water wells installed in the Nome area range in depth from 12 ft to 130 ft below the ground surface (Waller and Mathur, 1962). A drilling log from a water well installed less than 1/4 mile to the east of the subject facility yielded gravel from 0 to 11 ft, blue clay (dense silt) from 11 to 19 ft, with an undetermined interval occurring from 19 ft to bedrock located at a depth of 43 ft. Water recovered from the well was noted to be brackish (Waller and Mathur, 1962). The city of Nome obtains water from Moonlight Springs located about 3.5 miles north of Nome near the base of Anvil Mountain. Drinking water is collected via an infiltration gallery, treated, and piped to the residents of Nome.

Permafrost controls the movement of the active zone groundwater which is thawed during the brief summer thaw period. The permafrost upper boundary is virtually impermeable and acts as confining layer, restricting downward movement of water. Based upon this, the upper permafrost generally impedes downward movement of petroleum products. Near surface groundwater in the seasonally thawed zone (active layer) is expected to move in directions controlled by the topography of the permafrost surface.

4.0 SITE SAMPLING RESULTS

4.1 Sampling and Analytical Methods

Field sampling activities were conducted on October 11, 1996 by Mr. Mark Greenough a subcontractor to Restoration Science and Engineering. Sampling activities included collecting near-surface soil samples at exterior locations around the site building next to the above-ground storage tanks (ASTs) and the Jet-A fuel cabinet.

Various aspects of the sampling operation were photographed, and observations relating to the environmental condition of the properties were recorded in a field notebook (See Appendix A). All sampling was performed in general accordance with ADEC Non-UST Contaminated Site Soil Cleanup and Guidance standards (ADEC 1991a, 1991b).

The subsurface soil interval targeted for sampling was accessed using hand-digging implements. Soil samples were collected using a clean stainless steel spoon. Soil collected for analyses was placed directly into method or laboratory-specified clean sample containers. Soil samples were preserved by chilling with blue ice at approximately four degrees centigrade. Soil samples were transported to CTE Environmental Labs (CT&E) in Anchorage. Soil analyses included diesel range organics (DRO) by Alaska Method 102 (AK102); gasoline range organics (GRO) by AK101, and benzene, ethylbenzene, toluene, and xylenes (BETX) by AK 101/EPA Method 8020. Soil sample results are provided in Table 1 and laboratory reports are provided in Appendix B. Photos of the site inspection and sampling activities are provided in Appendix A.

4.2 Sampling Results

The results of soil samples 96-N-1, 96-N-2, 96-N-3, and 96-N-4 collected from the east and south sides of the site building showed hydrocarbon constituents to be above ADEC Level B cleanup standards.

5.0 QUALITY ASSURANCE AND DATA VALIDATION

Sample collection methods and resultant analytical data was judged to be of sufficient quality to meet the project data quality objective of comparison of the site hydrocarbon soil concentrations with ADEC numeric cleanup standards.

TABLE 1

HYDROCARBON ANALYTICAL RESULTS
LOT 1, BLOCK 3, NOME AIRPORT

Sample I.D.	Sample Date	Depth (ft)	GRO[1] (mg/Kg)	Volatile Aromatics (BTEX)[2] (mg/Kg)						DRO[3] (mg/Kg)	% Solids
				Benzene	Toluene	E.Benzene	p & m Xylenes	o-Xylenes	Total BTEX		
96-N-01	10-11-96	1.5	447	0.0496U[4]	0.0968	0.743	2.43	5.68	8.95	22,800	87.78
96-N-02	10-11-96	1.0	2.42	0.0505J	0.134	0.0506U	0.0688	0.0506U	0.203	513	93.16
96-N-03	10-11-96	1.2	1190	0.0670	0.272	1.61	2.29	21.8	26.04	10,300	94.67
96-N-04	10-11-96	1.2	133	0.0513U	0.0513U	0.0764	0.582	2.76	3.42	2,420	89.61
ADEC Level B Cleanup Standards (mg/Kg)			100	0.5					15	200	

Notes:

1. Gasoline Range Organics (GRO) by EPA Method 5030/8015 modified. Modification of Method 8015 to measure GRO in the C_6 to the start of C_{10} hydrocarbon range using a purge and trap extraction and GC analysis with PID/FID.

2. Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020.

3. AK-102 Diesel Range Organics (DRO) Method 3550/8100 modified. Modification of EPA Method 8100 to measure DRO in the C_{10} to the start of the C_{25} hydrocarbon range using a solvent extraction (methylene chloride) and gas chromatography (GC) analysis with flame ionization detector (FID). DRO cleanup levels are subject to ADEC regional supervisor discretion ranging from 200-500 mg/Kg.

4. U qualifier indicates the analyte was undetected at the detection limits noted; i.e. 0.5U indicates the analyte was undetected at a method detection limit of 0.5 mg/Kg.

All samples were collected and analyzed in accordance with 18 AAC 75 and in accordance with RSE's non-UST QAPP. All field documentation was reviewed for completeness, accuracy and the presence of unexpected results. All soil samples analyses were conducted by CT&E in an approved laboratory in accordance with 18 AAC 75. Data deliverable packages show acceptable methods and laboratory instrument performance.

Recommended extraction and analytical holding times were met for all samples. No unusual or unexpected problems were encountered during sample collection. A review of field and laboratory reports indicated that no significant procedural or method deviations were made. Laboratory work was in conformance with provisions of CT&E's Quality Assurance Program Plan. The sample 96-N-01 benzene result was J-flagged and a sample remark on 96-N-02 results stated that matrix interference occurred on the BTEX analyses. Sample remarks on results for sample 96-N-03 stated that BFB surrogate recovery does not meet QC goals due to matrix interference. Appendix B provides a copy of the Laboratory Analytical Results.

6.0 REFERENCES

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INTERVIEWS/CONVERSATIONS

Ms. Becky Iles. 1996. Personal conversation regarding prior site use of Lots 1A/1B Block 304. ph: 907-451-5201.

Mr. Mark Greenough. 1996, 1997. Personal Conversations with Mr. Greenough former MarkAir Environmental Manager. ph: 907-522-2078.

Mr. Bill Petrick. 1996. Personal conversation regarding contaminated sites or UST site located in Deadhorse airport area. ph: 269-7500.

Mr. Jerry Oliver. 1997. ADOT Nome Airport Manager Personal conversation regarding use of Lot 1, Block 3, Nome Airport. ph-907-443-2500.

Ms. Kimberly Adler. 1997. ADEC Fairbanks Office June 3, 1997. 907-451-2107

Mr. Eric Penttila . 1996. Evergreen Helicopters Nome Operations Manager 907-443-5334.

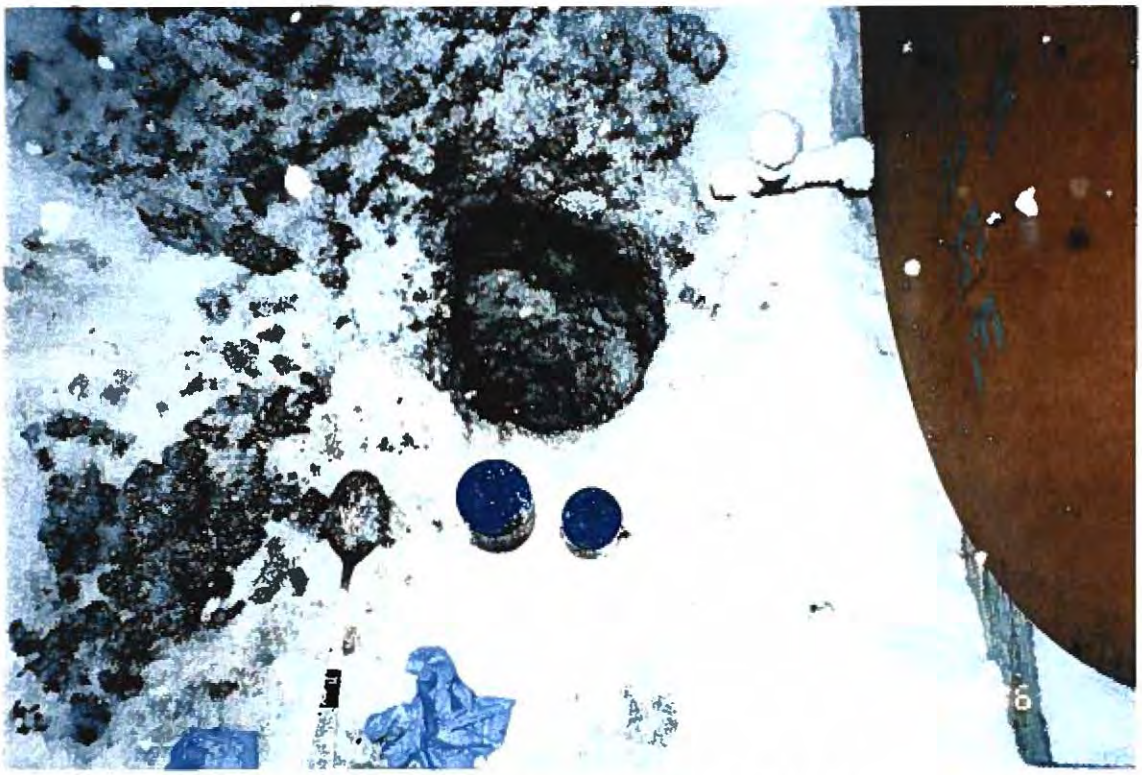
APPENDIX A

SITE PHOTOS - OCTOBER 11, 1996

Nome MarkAir Building (Leased to Evergreen Helicopters)
(Looking Northeast), 10-11-96

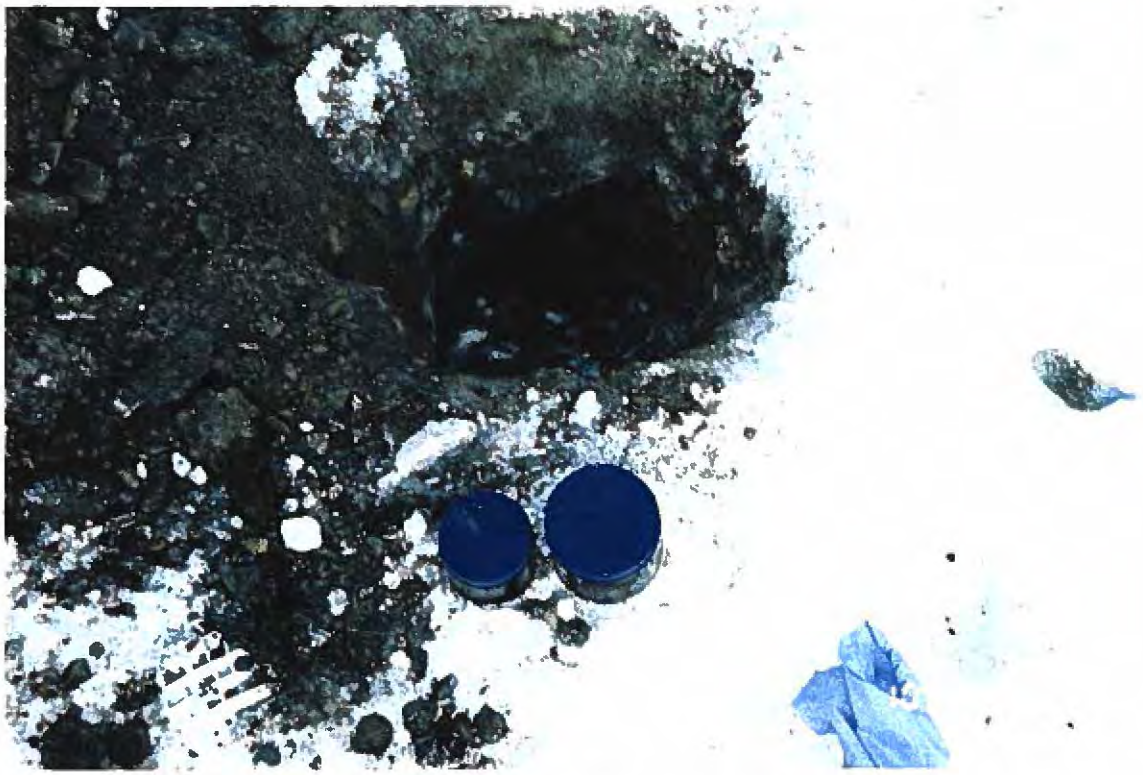
South-facing wall of MarkAir Building (Leased to Evergreen Helicopters)
(Looking Northeast), 10-11-96

500-Gallon Heating Oil AST and Sample Location 96-N-01 (Looking West), 10-11-96



MarkAir Nome Hangar Sample Location 96-N-01 10-11-96

500-Gallon Heating Oil AST and Sample Location 96-N-02
(Looking West), 10-11-96



MarkAir Nome Hangar Sample Location 96-N-02
10-11-96

Area to the Southeast of Nome MarkAir Building (Leased to Evergreen Helicopters) (Looking South), 10-11-96

2000-gallon AST and Fuel Dispenser Cabinet (Looking South), 10-11-96

Soil Sample Location 96-N-03 from North Side of Jet A Fuel Cabinet (Looking East)
10-11-96

Soil Sample 96-N-04 In Front of 2000-Gallon Jet A AST (Looking East)
10-11-96

North Side of Jet A Fuel Cabinet (Looking East)
10-11-96

Rear of Jet A Fuel Cabinet (Looking West)
10-11-96

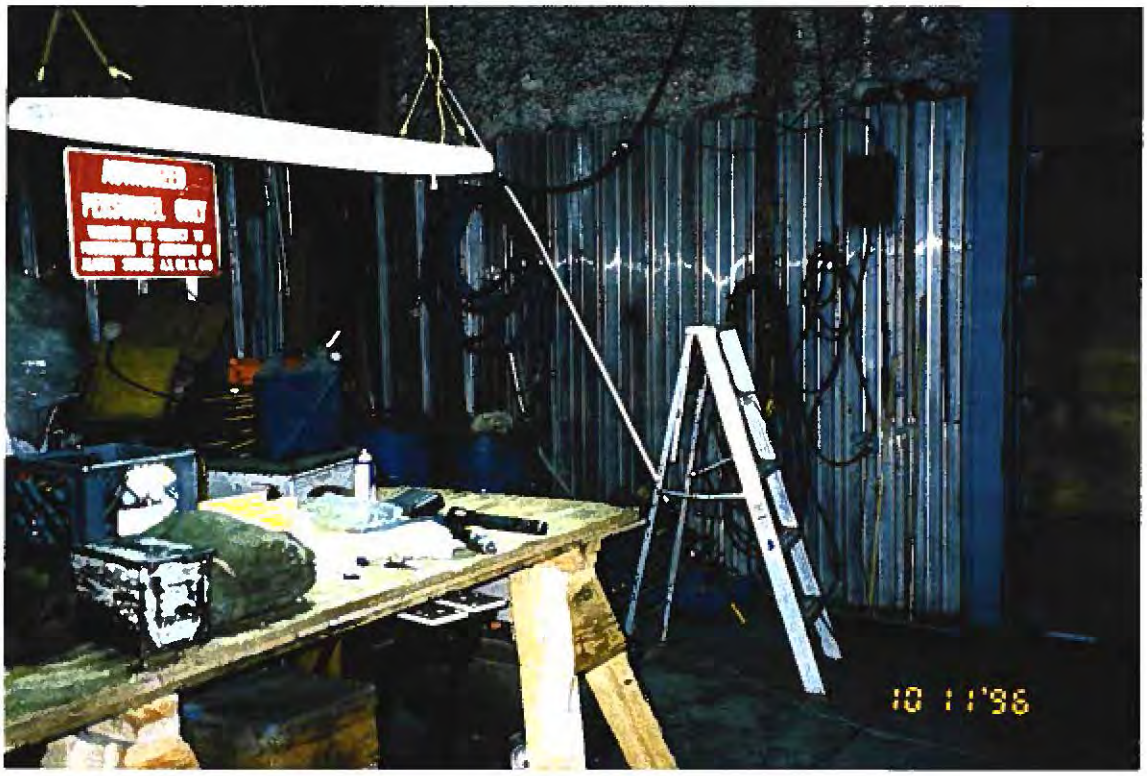
MarkAir Nome Hangar Interior Office
(Looking North), 10-11-96

**MarkAir Nome Hangar Interior (Leased to Evergreen Helicopters)
(Looking West), 10-11-96**

**MarkAir Nome Hangar Interior Hazmat Storage (Leased to Evergreen Helicopters)
(Looking East), 10-11-96**

MarkAir Nome Hangar Interior
(Looking East at East wall), 10-11-96

MarkAir Nome Hangar Interior Southwest Building Wall (Looking West), 10-11-96



MarkAir Nome Hangar Interior Northwest Building Corner (Looking West) 10-11-96

MarkAir Nome Hangar Interior 12-ft Hangar Door (Looking West), 10-11-96

MarkAir Nome Hangar Used Oill by Parts Cleaning Tank 10-11-96

APPENDIX B

LABORATORY ANALYTICAL RESULTS AND CHAIN-OF CUSTODY

CT&E Environmental Services Inc.
Laboratory Division

96.5556

CHAIN OF CUSTODY

PO#: _____

Reports to:
RESTORATION SCIENCE & ENGINEERING
911 W. 8TH AVE, SUITE 205
ANCHORAGE, AK.
Phone: 278-1023 Fax: 276-8967

Invoice to:
SAME

Lab
CT&E Environmental Services Inc.
200 W Potter Dr.
Anchorage, AK 99518-1605
Phone (907) 562-2343 Fax: (907) 561-5301

Contact person for questions concerning these samples: DAVE NYMAN Phone: 278-1023 Fax: 276-8967

Special Instructions: _____

Project Name/Number: NOME PROJECT, MARKAIR LOT 1, BLOCK 3

Sampled By: MARK F. GREENOUGH

Lab #	Sample #	Date/Time Sampled	# of Containers	Sample Matrix	DRO AK102	GRO/BTEX					CORRECTED			Comments
1	96-N-01	10/11/96-0955	2	SOIL	X	X								SAMPLE TIME 0955 HRS
2	96-N-02	10/11/96-1050	2	SOIL	X	X								" " 1050 HRS
3	96-N-03	10/11/96 1230	2	SOIL	X	X								" " 1230 HRS
4	96-N-04	10/11/96 1330	2	SOIL	X	X								" " 1330 HRS

Sample Receipt:	Relinquished By:	Relinquished By:	Relinquished By:
Number of Containers	Signature: Mark F. Greenough Time: 1004	Signature: Time:	Signature: Time:
COC Seals/Intact Y/N/NA	Printed Name: MARK F. GREENOUGH Date: 10/14/96	Printed Name: Date:	Printed Name: Date:
Temperature	Received By:	Received By:	Received at Laboratory By:
Turnaround Required	Signature: Time:	Signature: Time:	Signature: Heather Hall Time: 10:00
Data Deliverables Required (Level I) Level II Level III	Printed Name: Date:	Printed Name: Date:	Printed Name: Heather Hall Date: 10/14/96

CT&E Environmental Services Inc.
Laboratory Division

Laboratory Analysis Report

November 12, 1996

Dave Nyman
Restoration Science & Eng
911 West 8th Ave Suite 205
Anchorage, AK 99501

Client Name	Restoration Science & Eng
Project ID	Nome Project, Mark Air L1,B3 [965556]
Printed	November 12, 1996

Enclosed are the analytical results associated with the above project.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value that falls below PQL, but is greater than the MDL.
B - Indicates the analyte is found in the blank associated with the sample.
* - The analyte has exceeded allowable limits.
GT - Greater Than
D - Secondary Dilution
LT - Less Than

CT&E Environmental Services Inc.

CT&E Ref.#	965556001	**Client PO#**	
Client Name	Restoration Science & Eng	**Printed Date/Time**	11/12/96 08:34
Project Name/#	Nome Project, Mark Air L1,B3	**Collected Date/Time**	10/11/96 09:55
Client Sample ID	96-N-01	**Received Date/Time**	10/14/96 10:00
Matrix	Soil	**Technical Director: Stephen C. Ede**	
Ordered By			
PWSID		**Released By**	Stephen C Ede

Sample Remarks:
BTEX - Matrix interference
DRO - Pattern consistent with weathered middle distillate

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Solids	87.78		%	SM18 2540G			10/18/96	DAV
GRO/8020 Combo								
Volatile Pet. Hydrocarbons	447	99.3	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Benzene	0.0496 U	0.0496	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Toluene	0.0968	0.0496	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Ethylbenzene	0.743	0.0496	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
P & M -Xylene	2.43	0.0496	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
o-Xylene	5.68	0.0496	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Diesel Range Organics	22800	448	mg/Kg	AK102 DRO		10/15/96	11/06/96	WAA

CT&E Environmental Services Inc.

CT&E Ref.#	965556002	**Client PO#**	
Client Name	Restoration Science & Eng	**Printed Date/Time**	11/12/96 08:35
Project Name/#	Nome Project, Mark Air L1,B3	**Collected Date/Time**	10/11/96 10:50
Client Sample ID	96-N-02	**Received Date/Time**	10/14/96 10:00
Matrix	Soil	**Technical Director: Stephen C. Ede**	
Ordered By			
PWSID		**Released By**	Stephen C Ede

Sample Remarks:
DRO - Pattern consistent with weathered middle distillate
DRO - Heavier hydrocarbon than diesel contributing to quantitation

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Solids	93.16		%	SM18 2540G			10/18/96	DAV
GRO/8020 Combo								
Volatile Pet. Hydrocarbons	2.42	1.01	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Benzene	0.0505 J	0.0506	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Toluene	0.134	0.0506	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Ethylbenzene	0.0506 U	0.0506	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
P & M -Xylene	0.0688	0.0506	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
o-Xylene	0.0506 U	0.0506	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Diesel Range Organics	513	4.21	mg/Kg	AK102 DRO		10/15/96	10/16/96	WAA

CT&E Environmental Services Inc.

CT&E Ref.#	965556003	**Client PO#**	
Client Name	Restoration Science & Eng	**Printed Date/Time**	11/12/96 08:35
Project Name/#	Nome Project, Mark Air L1,B3	**Collected Date/Time**	10/11/96 12:30
Client Sample ID	96-N-03	**Received Date/Time**	10/14/96 10:00
Matrix	Soil	**Technical Director: Stephen C. Ede**	
Ordered By			
PWSID		**Released By**	Stephen C Ede

Sample Remarks:
GRO8020 - BFB surrogate recovery does not meet QC goals due to matrix interference
DRO - Pattern consistent with weathered middle distillate

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Solids	94.67		%	SM18 2540G			10/18/96	DAV
GRO/8020 Combo								
Volatile Pet. Hydrocarbons	1190	92.4	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Benzene	0.0670	0.0462	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Toluene	0.272	0.0462	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Ethylbenzene	1.61	0.0462	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
P & M -Xylene	2.29	0.0462	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
o-Xylene	21.8	4.62	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Diesel Range Organics	10300	418	mg/Kg	AK102 DRO		10/15/96	11/06/96	WAA

CT&E Environmental Services Inc.

CT&E Ref.#	965556004	**Client PO#**	
Client Name	Restoration Science & Eng	**Printed Date/Time**	11/12/96 08:35
Project Name/#	Nome Project, Mark Air L1,B3	**Collected Date/Time**	10/11/96 13:30
Client Sample ID	96-N-04	**Received Date/Time**	10/14/96 10:00
Matrix	Soil	**Technical Director: Stephen C. Ede**	
Ordered By			
PWSID		**Released By**	Stephen C Ede

Sample Remarks:
DRO - Pattern consistent with weathered middle distillate

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Solids	89.61		%	SM18 2540G			10/18/96	DAV
GRO/8020 Combo								
Volatile Pet. Hydrocarbons	133	10.3	mg/Kg	8015M/8020		10/15/96	10/18/96	MMP
Benzene	0.0513 U	0.0513	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Toluene	0.0513 U	0.0513	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Ethylbenzene	0.0764	0.0513	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
P & M -Xylene	0.582	0.0513	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
o-Xylene	2.76	0.0513	mg/Kg	8015M/8020		10/15/96	10/17/96	MMP
Diesel Range Organics	2420	43.8	mg/Kg	AK102 DRO		10/15/96	11/06/96	WAA