Rick Renaud

LEVEL I ENVIRONMENTAL ASSESSMENT

NEWCO Facility
8555/8535 Perimeter Road South
Seattle, Washington

Project No. T-4837-1

Terra Associates, Inc.

Prepared for:

Reid-Middleton & Associates
Everett, Washington

February 22, 2001

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

February 22, 2001
Project No. T-4837-1

Mr. Ken Andersen
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Subject: Level I Environmental Assessment
NEWCO Facility
8555/8535 Perimeter Road South
Seattle, Washington

Dear Mr. Andersen:

We have prepared a Level I Environmental Assessment report for the NEWCO Facility in Seattle. The purpose of our study was to provide our opinions on the probable presence or absence of site contamination by hazardous materials and petroleum products. Our study indicates that the site has historically been agricultural and used for purposes related to the aviation industry.

A Recognized Environmental Condition (REC) has been identified at the site. This REC was a waste-oil UST that was removed from 8535 Perimeter Road in 1996. Contaminated soils identified in the tank excavation were reported removed from the site. The contamination was reported to extend down to the groundwater; however, no groundwater testing was performed at the time the UST was removed.

Concurrent with this study, we constructed three monitoring wells on the site adjacent to the former UST. Testing of the groundwater from the wells indicates that slightly elevated levels of chlorinated solvent degradation products are present in the groundwater. The source of the solvents is presumed to be the waste oil UST. The levels of contamination are low enough that no active remedial measures are warranted at this time. We recommend quarterly sampling of the groundwater for a period of two years to verify that the levels encountered in the monitoring wells are representative of site conditions on a year-round basis.

Our reconnaissance of the subject site and site vicinity indicates that potential sources of groundwater and/or soil contamination exist within the American Society for Testing and Materials (ASTM) recommended search radii from the subject site. However, based on the information we reviewed, it is our opinion that the potential for contamination of the subject site from off-site sources is low.

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Mr. Ken Anderson
February 22, 2001

The attached report describes our study in greater detail. We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

Charles R. Lie

Charles R. Lie
Associate

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CRL/AB:dvp

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Level I Environmental Assessment
NEWCO Facility
8555/8535 Perimeter Road South
Seattle, Washington

1.0 EXECUTIVE SUMMARY

This report presents the findings of our Level I Environmental Assessment of the NEWCO Facility site located at 8555/8535 Perimeter Road South in Seattle.

A Recognized Environmental Condition (REC) has been identified at the site. This REC was a waste-oil UST that was removed from 8535 Perimeter Road in 1996. Contaminated soils identified in the tank excavation were reported removed from the site. The contaminated soils were reported to extend to the groundwater; however, no groundwater sampling was performed at the time the UST and contaminated soils were removed. Concurrent with this study, we have constructed and sampled three monitoring wells in the vicinity of the former waste oil UST. Slightly elevated levels of chlorinated solvent degradation products were found. These levels do not pose a health hazard for individuals working at or near the facility. Based on the levels encountered in the monitoring wells, no active remedial measures are warranted at this time. Quarterly sampling should be performed for a period of two years to verify that the levels encountered in the monitoring wells are representative of site conditions on a year-round basis and that degradation is continuing to occur. Based on the current levels of contamination, it appears that intrinsic remediation can be used to allow the contamination to naturally degrade.

1.1 Scope of Work

Our scope of work for this project included:

- Review of a report compiled by Environmental Data Resources, Inc. (EDR), dated January 3, 2001, which consists of summarized findings after review of available federal and state databases named in the American Society for Testing and Materials (ASTM) Designation E-1527-2000: *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*.
- Site reconnaissance to visually observe existing conditions and analyze potential risks to the subject site from on- and off-site activities.
- Review of 50-year chain-of-title documents provided at the time of our previous study of the site.
- Review of our concurrent geotechnical report for the subject site.
- Review of groundwater testing conducted as part of our concurrent Level II Environmental Assessment report.
- Review of available historical information for the subject site.
- Interview with the current tenants.
- Review of published maps and geological information for the site vicinity.
- Preparation of this report.

We performed the research for this project and report in general accordance with ASTM Test Designation E-1527-00. Throughout this report, we refer to the section number and applicable ASTM standard for various aspects of the assessment being addressed.

2.0 SITE CONDITIONS

2.1 General

The site consists of two parcels leased from King County, located in the southeast portion of the King County International Airport property. The parcels are side by side and have a total area of approximately 3.9 acres. The approximate location of the two parcels is shown on Figure 1. Land use in the surrounding area is characterized by light industrial development related to the aviation industry.

2.2 Surface

The site is located on a broad alluvial lowland that was formerly the flood plain of the Duwamish River. There is a broad hillside east of the site. The site is relatively flat with elevations ranging between approximately Elev. 15 and Elev. 17.

The site is nearly level and is currently developed with two structures. The address of the southern building is 8555 Perimeter Road and is currently occupied by Aeroflight. It is heated by space heaters and a waste oil-fired furnace. The address of the northern building is 8535 Perimeter Road. It is also heated by space heaters. The tenants in this building are: Seattle Jet Services (SJS), Airtech Instruments Company, and Aero Copter, Inc.

Both buildings have asphalt-paved tarmac to the west, where aircraft are stored. To the east is parking for automobiles. There are chain-link fences between the buildings and south of the southern building. The tarmac connects directly to the taxiway for the airport. The tarmac is moderately cracked and shows minor staining. Both buildings are two stories high, allowing maintenance and repair of aircraft to be completed within the buildings.

We did not note any litter on the site, nor did we observe any unusual soil conditions, ground staining, or odors that would indicate significant contamination. The site is serviced by municipal water, sewer, garbage, and power. The site and vicinity layout are shown on Figure 3.

2.3 Adjacent Development

The subject site is in an area consisting of mainly residential development. The properties in the immediate vicinity of the site are:

North: general aviation aircraft hangars

South: aircraft aprons

East: Perimeter Road, Airport Way South, and railroad tracks

West: taxiways and runways

The subject site and immediate vicinity are shown on Figure 3.

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2.4 Geotechnical Study

We are concurrently performing a Geotechnical Study and Level II Environmental Assessment for the subject site. The environmental sampling consisted of the drilling and installation of three shallow monitoring wells to the west of the 8535 Building.

The subsurface conditions we encountered were somewhat variable across the site. We observed approximately 2.5 feet of medium dense fill soils overlying 6.0 inches of topsoil immediately below the asphalt. This was underlain by one to four feet of very soft to medium stiff, clayey silt and silty clay. Below this, sands extended to depths of 33 to 40 feet. Approximately 6 to 14 feet of soft to medium stiff to very stiff sandy silt to clayey silt was observed below the sand in Test Boring B-1, located at the northeast edge of the site. This was underlain by medium dense to dense, silty gravelly sand with shell fragments to 46 feet below existing surface grades. The borings encountered stiff, clayey silt and sandy silt layers below the sand to 53 feet below existing surface grades.

The surficial conditions we observed in the geotechnical borings are consistent with the surficial soils encountered in the drilling and construction of the monitoring wells.

2.5 Geologic Conditions

We reviewed the *Preliminary Geologic Map of Seattle and Vicinity, Washington*, by H.H. Waldron *et.al.*, 1962 and *Geology of Seattle, Washington, United States of America*, by R.W. Galster and W.T. Laprade, 1991. In the Waldron report, the site is mapped as Quaternary alluvium. In the latter report, it is mapped as Holocene alluvium and modified land.

This information correlates with the reports discussed in the previous section of this report.

2.6 Hydrogeologic Conditions

For the purposes of this report, we will assume that the gradient is to the west, based on our local experience and surface topography. Measurements in the three groundwater monitoring wells indicate that the groundwater gradient on this site is towards the west. Local variations in groundwater gradients will occur as a result of man-made features, such as drainage ditches, fill materials, sewers, and roads. The topography of the area is shown on Figure 2.

3.0 SITE HISTORY RESEARCH

3.1 Aerial Photography Review

At Walker and Associates in Seattle, Washington, we reviewed available aerial photographs of the site and vicinity for the years 1936, 1946, 1956, 1960, 1970, 1974, 1980, 1985, 1990, and 1997.

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The following site history sequence is based on our review of available aerial photographs.

1936 The site is vacant land. King County International Airport is present, but is much smaller than the current runway and taxiway. There is a cluster of buildings centered at the present location of the main terminal building, one-half mile north of the subject site.

1946 There is a building on the site. The runway and taxiways have been expanded from the previous photograph. There are no buildings adjacent to the site.

1956 The building present on the site remains. There is also a Quonset hut-style building on the site. Interstate 5, which is currently located east of the site, is not present. There are no buildings immediately adjacent to the site.

1970 The site resembles the conditions in the 1956 photograph. The buildings north and south of the site are present.

1974 The north half of the site is covered with grass. The south half of the site appears to be paved. The buildings north and south of the site are present.

1980 The existing buildings are present. The site and vicinity resemble the existing conditions.

1985 The site and vicinity resemble the existing conditions.

1990 The site and vicinity resemble the existing conditions.

1997 The site and vicinity resemble the existing conditions.

The aerial photographs do not present any information that contradicts the other historical information we reviewed.

3.2 Map Review

We reviewed the *U.S. Geological Survey (USGS) South Seattle, Washington Quadrangle Map,* and the *Edmonds East, Washington Quadrangle Maps,* dated 1949, 1968, and 1973. The original 1949 map shows that a road or taxiway crossed the site from north to south. The site is shown as being vacant in 1949. Two buildings are shown on the site in 1968.

An undated Kroll real estate map shows a large building between the current location of the two buildings on the site. It is identified as "Gunnery Revetment 3-989." There are also two small buildings to the north.

3.3 City Directory Review

Cole City Directories are listings by address of the persons or businesses that owned or leased properties within cities and towns. We reviewed city directories from 1940 to the present. This information is presented in Appendix A. Historical tenants had aircraft-related industrial businesses, which is similar to the current tenants.

3.4 Sanborn Map Review

Sanborn Maps were created to aid in underwriting fire insurance policies. These maps were updated until the 1960s. They typically show the types of buildings and their use for the areas of coverage.

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We requested a search of available Sanborn Maps by EDR. EDR informed us that historical Sanborn Maps are not available for the portion of Seattle that includes this site. This is consistent with our experience.

3.5 Tax Records

We visited the Puget Sound Regional Archives to review historic tax information for the subject site. Our review of the records available for King County International Airport showed no available information for the subject property. This suggests that the property was undeveloped prior to the existing buildings.

3.6 Chain-of-Title Review

The property is owned by King County. A chain-of-title for the property was not available for our review.

3.7 Tenant Interviews

During our site visit on January 24, 2001, we interviewed the tenants of both buildings. The tenant interviews are included in Appendix B. The lessee of the property owns Aeroflight.

Aeroflight operates an aircraft rental, cargo, instruction, and repair and maintenance facility, which includes aircraft deicing and refueling services. Four fuel tankers are currently in use on the site. The fuel tank farm is located off-site. The business handles lubricants, oils, antifreeze, deicing fluids, and jet fuel. These materials include: propylene glycol, isopropyl alcohol, MEK, ZEP solvent, diethyl glycol, paint, paint thinner, lubricants, and oils. According to Aeroflight personnel, the quantities used are less than 200 pounds per year and the majority of these chemicals are consumed in use. Waste oil is used to fuel the furnace that heats the shop. Ash from the furnace is removed yearly by a commercial hazardous materials disposal firm. Waste oil is held in a concrete containment vault on the north side of the building. The tenants of the 8535 Building are Airtech, Seattle Jet Services (SJS), and Aero Copters, Inc.

Airtech operates a retail sales and repair shop for marine, industrial, and aircraft instruments. They use small quantities of petroleum naptha solvent for cleaning parts, and small amounts of paint for touching up instrument cases. The naptha is consumed in use.

Seattle Jet Services (SJS) repairs and maintains both fixed wing and rotary aircraft, and operates charter and limited cargo services. It occupies the majority of the 8535 Building. The hazardous materials used on the site include lubricants and oils, nickel-cadmium batteries, ZEP solvent, and small amounts of paint. According to SJS personnel, they use and generate less than 200 pounds of hazardous waste per year. The drums of materials are kept on a grid over a spill-containment basin. The lubricants, oils, and batteries are recycled off-site by a commercial recycling service. Aeroflight provides fueling and deicing services to SJS.

AeroCopters Inc. provides aerial photography services. The owner maintains a small office in the building. They were not available for an interview. According to SJS personnel, the aircraft and photography darkroom are located off-site.

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3.8 Flightcraft/Seattle Air Corporation Tank Removal

In 1996, a 500-gallon underground storage tank (UST) was removed from the area just west of the 8535 Building. The report of this incident is included in Appendix C.

The tank contained waste oil and was found to have holes when it was excavated. There was evidence of contamination in the soil surrounding the tank. The contaminated soils were reported to extend to the groundwater. The contaminated soil was removed and disposed of off-site. A total of 7.01 tons of soil was removed. The soils in the walls of the excavation were tested to confirm that the petroleum-contaminated soil (PCS) had been removed. The excavation was backfilled, compacted, and covered with asphalt. Laboratory analysis of the soil indicates that there was less than 100 ppm of motor oil and less than 50 ppm of diesel in the soil. No groundwater testing was done at the time the UST or the contaminated soils were removed from the site.

To document the existing condition of the groundwater at the former UST site, we constructed three monitoring wells adjacent to the UST location concurrent with this study. Our Level II Environmental Assessment is attached as Appendix D of this report.

4.0 REGULATORY DOCUMENT REVIEW

We reviewed a report dated January 3, 2001, compiled for the subject site by our subcontractor, EDR. EDR searches Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology) databases for sites within a specified radius that may pose a risk to the subject site. EDR conducted its search to the minimum search radii given in ASTM Test Designation E-1527-00: *Standard Practice for Environmental Site Assessments*. Facilities situated within the selected radii of the site are listed in Appendix E. The following databases were searched by EDR in compiling their report:

Searched to One Mile:

- National Priorities List (NPL) by EPA, dated June 13, 2000
- Delisted NPL by EPA, dated June 13, 2000
- Corrective Action Report (CORRACTS) by EPA, dated April 20, 2000
- Confirmed and Suspected Contaminated Sites List (CSCSL) by Ecology, dated May 25, 2000
- Superfund (CERCLA) Consent Decrees (CONSENT) by EPA, no date listed
- Records of Decision (ROD) by NTIS, dated January 31, 1999
- State Hazardous Sites List (HSL) by Ecology, dated August 29, 2000
- Former manufactured gas (Coal Gas) sites, EDR proprietary database, no date listed

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Searched to One-Half Mile:

- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) by EPA, dated April 16, 2000
- Resource Conservation Recovery Act Information System facilities that treat, store, and/or dispose of hazardous waste (RCRIS-TSD) by EPA, dated June 21, 2000
- Municipal Solid Waste Facilities (State LF) by Ecology, dated September 1, 1999
- Leaking Underground Storage Tank (LUST) List by Ecology, dated October 10, 2000
- Independent Cleanup Reports (WA ICR) by Ecology, dated August 31, 2000

Searched to One-Fourth Mile:

- No Further Remedial Action Planned (NFRAP) List by EPA, dated April 16, 2000
- Underground Storage Tank (UST) List by Ecology, dated October 10, 2000
- Resource Conservation Recovery Act Information System (RCRIS) Generators by EPA, dated June 21, 2000
- Mines Master Index File (MINES) by U.S. Department of Labor, dated August 1, 1998

Searched to Target Property:

- Emergency Response Notification System (ERNS) by EPA, dated August 8, 2000
- Facility Index System (FINDS) by EPA, dated July 7, 2000
- Hazardous Materials Information Reporting System (HMIRS) by U.S. Department of Transportation, dated June 30, 1999
- Material Licensing Tracking System (MLTS) by the Nuclear Regulatory Commission, dated April 23, 2000
- Federal Superfund Liens (NPL Liens) by EPA, dated October 15, 1991
- PCB Activity Database System (PADS) by EPA, dated January 1, 2000
- RCRA Administration Action Tracking System (RAATS) by EPA, dated April 17, 1995
- Toxic Chemical Release Inventory System (TRIS) by EPA, dated December 31, 1997
- Toxic Substances Control Act (TSCA) by EPA, dated December 31, 1998
- Washington State Emissions Data System (Air Emissions) by Ecology, dated December 31, 1997

The southern building did not appear in any of the databases reviewed for this report. The northern building was present on the UST, LUST, and ICR databases. Sixty-seven sites of record were found in the EDR search. In addition, 36 orphan sites were identified in the EDR search. Orphan sites are properties with insufficient detail to map in the EDR computer database. We review all listed sites on a site-by-site basis. Several sites are within the northern area of the King County Airport (Boeing Field); however, they cannot be located from the given information. These sites are down or crossgradient of the subject site; therefore, they can be considered a minimal to low risk.

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Section 7.2.1.1 of ASTM Test Designation E-1527-00 requires review of, and comment on, the following databases for an Level I Environmental Assessment.

4.1 Federal Records

4.1.1 National Priority List (Superfund Sites)

Section 7.2.11 of the ASTM standards requires a review of NPL sites within a one-mile radius of subject site. EDR conducted a records search for listed NPL sites within a one and one-fourth mile radius of the subject site. No Superfund sites were identified in the EDR search within one and one-fourth mile radius.

4.1.2 Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)

Section 7.2.1.1 of the ASTM standards requires a review of federal CERCLIS sites within a one-half mile radius of the subject site. EDR conducted a records search for listed CERCLIS sites within a three-fourth mile radius of the subject site. CERCLIS sites are potential hazardous waste sites that have been reported to the EPA.

No CERCLIS sites were identified in the EDR search within a three-fourth mile radius of the subject site.

4.1.3 Resource Conservation Recovery Act Information System - Treatment Storage and Disposal (RCRIS-TSD)

Section 7.2.1.1 of the ASTM standards requires a review of RCRIS TSD sites within a one-half mile radius of the subject site and RCRIS CORRACTS TDS sites within a one-mile radius of the subject site.

EDR conducted a records search for listed RCRIS TSD sites within a three-fourth mile radius of the subject site. These are treatment, storage, or disposal sites for hazardous wastes.

No TSD sites were identified in the EDR search within a three-fourth mile radius of the subject site.

CORRACTS sites are TSD facilities that have been reviewed by the EPA and have required corrective actions to bring the facility into compliance with federal laws and regulations. Four CORRACTS sites were identified within a one and one-fourth mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
Rhodia, Inc. 9229 East Marginal Way South, RH Seattle, Washington	One-fourth to one-half mile southwest, downgradient of the subject site.	The site has confirmed metals and cyanide, and conventional inorganic contamination. Corrosive wastes are also expected to be present. There is a long history of low-priority RCRA violations. It is awaiting a Site Hazard Assessment. This site is also discussed in Section 4.2.1 of this report.

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Name/Address	Location	Ecology Notes
Boeing Plant 2 7755 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	The site is undergoing an Independent Remedial Action due to confirmed contamination by halogenated organic compounds, metals and cyanide, PCBs, petroleum products, non-halogenated solvents, and polynuclear aromatic hydrocarbons (PAHs). The company is an RCRIS-LQG with a series of low-priority violations. Some of the PCS is due to LUSTs, as discussed in Sections 4.2.4 and 4.2.5 of this report.
Boeing D & SG MFC 1008 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	The RCRA Facility Assessment has been completed. The site has medium prioritization for a RCRA Facility Investigation.
Boeing A&M Development Center 9725 East Marginal Way South Seattle, Washington	One-half to one mile west-southwest, downgradient of the subject site.	The RCRA Facility Assessment has been completed, there is a need for a RCRA Facility Investigation, RFI Imposition, Stabilization Measures Evaluation, and Stabilization Measures Implemented. Prioritization is high. It is not on the NPL. This site is also discussed in Section 4.2.1 of this report.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by off-site CORRACTS sites is low to minimal.

4.1.4 Resource Conservation Recovery Act Information System (RCRIS) - Generators

Facilities reporting under RCRIS have filed paperwork describing their waste management practices. ASTM requires a search of the site and adjoining properties. RCRIS Small Quantity Generators (SQGs) are generally defined as businesses that generate less than 220 pounds of hazardous waste per month and never accumulate more than 2,200 pounds of waste. Large Quantity Generators (LQGs) are generally defined as businesses that produce more than 220 pounds of hazardous waste per month.

EDR conducted a records search for listed RCRIS generator sites within a one-half mile radius of the subject site. This exceeds the ASTM requirements. No RCRIS-TSD or RCRIS-LQG generator sites were identified in the EDR search within a one-half mile radius of the subject site. Twelve RCRIS-SQG generators were identified within a one-fourth mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
SEA PAC Resources, Inc. 8465 Perimeter Road South Seattle, Washington	Less than one-eighth mile north-northeast, crossgradient of the subject site.	No violations found.
Burlington Resource Aviation 7777 Perimeter Road, Hangar A Seattle, Washington	Less than one-eighth mile north-northeast, crossgradient of the subject site.	One low-priority violation. Compliance achieved.

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Name/Address	Location	Ecology Notes
Flightcraft, Inc. Seattle 8285 Perimeter Road South Seattle, Washington	Less than one-eighth mile north-northwest, crossgradient of the subject site.	No violations found. Site is also listed in WA ICR for petroleum contamination, as detailed in Sections 4.2.3 and 4.2.5 of this report.
Armored Transport Maintenance 7595 Perimeter Road Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	No violations found.
Operations NW Region I-5 Military Road Seattle, Washington	One-fourth to one-half mile north-northeast, crossgradient of the subject site.	No violations found.
McCaw Flight Operations 7777 Perimeter Road South Seattle, Washington	Less than one-eighth mile north-northeast, crossgradient of the subject site.	No violations found.
US West Communications W00D04 7679 Perimeter Road South Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	No violations found.
Thaw Corporation 8300 Military Road Seattle, Washington	One-fourth to one-half mile north-northeast, crossgradient of the subject site.	No violations found.
US DOT FAA Seattle Hub AFS 7675 Perimeter Road South Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	No violations found.
Federal Express Perimeter Road South 7607 Perimeter Road South Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	No violations found. Also on WA ICR for contamination of soil and groundwater by petroleum products from a LUST. Final cleanup report received in 1991.
Contract Applications, Inc. 7600 Perimeter Road Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	No violations found.
Ameriflight, Inc. Hangar 5 7585 Perimeter Road South Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	No violations found.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by these off-site RCRIS-SQG sites is low.

4.1.5 Emergency Response Notification System (ERNS)

ASTM requires a search of the ERNS database for the subject site. The ERNS database is a raw, unedited database of complaints that have been received by the EPA that may include hazardous waste incidents.

EDR conducted a records search for listed ERNS entries for the subject site. No ERNS listings for the sites were found.

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4.1.6 CONSENT Superfund (CERCLA) Consent Decrees

CONSENT is a listing of sites where major legal settlements have established responsibility and standards for cleanup at NPL (Superfund) sites. EDR conducted a records search for listed CONSENT sites within a one-mile radius of the subject site.

One CONSENT site was identified within the search radius. This site is:

Name/Address	Location	Ecology Notes
Duwamish River Adjacent to Boeing Plant II 7700 Block East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	The preliminary assessment has been completed. Full text of the Consent Decree is on file.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by this off-site CONSENT site is low.

4.2 State Records

4.2.1 Confirmed or Suspected Contaminated Sites List (CSCSL)

Section 7.2.1.1 of the ASTM standards requires a review of state lists of hazardous waste sites (state hazardous waste site - SHWS in ASTM) identified for investigation or remediation within a one-mile radius of the subject site. EDR conducted a records search for listed CSCSL sites within a one and one-fourth mile radius of the subject site, exceeding ASTM standards.

Twenty-two sites were identified in the EDR search within a one and one-fourth mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
Boeing Isaacson Property 8625 East Marginal Way Seattle, Washington	One-fourth to one-half mile west, downgradient of the subject site.	The site was contaminated by metals and cyanide. An independent cleanup was undertaken. A final cleanup report was received in April 2000. The site is also listed on the WA ICR for this condition.
Rhodia, Inc. AKA Monsanto Company Seattle Plant 9229 East Marginal Way South RH Seattle, Washington	One-fourth to one-half mile west, downgradient of the subject site.	The site has confirmed metals and cyanide, and conventional inorganic contamination. Corrosive wastes are also expected to be present. There is a long history of low-priority RCRA violations. It is awaiting a Site Hazard Assessment. This site is also discussed in Section 4.1.3 of this report.

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Name/Address	Location	Ecology Notes
Jorgensen Forge Corporation 8531 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	This site is an RCRIS-LQG, with low-priority violations. Contamination by polychlorinated biphenyls (PCBs), and non-halogenated solvents is confirmed. Groundwater and soil is also contaminated by petroleum products from a UST. It is undergoing an independent cleanup for the metals and solvents. A final cleanup report was received in September 1999, regarding the UST. This site is also discussed in Section 4.2.5 of this report.
American Avionics King County Airport 7023 Perimeter Road South Seattle, Washington	One-half to one mile north-northwest, crossgradient of the subject site.	Suspected contamination of soil by petroleum products and non-halogenated solvents. Source not stated. Undergoing independent cleanup. Interim cleanup report received. This site is also discussed in Section 4.2.5 of this report.
Boeing Isaacson Thompson 8541 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Confirmed contamination by non-priority pollutant metals. Awaiting Site Hazard Assessment.
Boeing Plant 2 7755 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Site is undergoing an Independent Remedial Action due to confirmed contamination by halogenated organic compounds, metals and cyanide, PCBs, petroleum products, non-halogenated solvents, and polynuclear aromatic hydrocarbons (PAHs). The PCS is due to LUSTs, as discussed in Sections 4.1.3, 4.2.3, and 4.2.4 of this report.
Kenworth Truck Company 8801 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Confirmed contamination by petroleum products, phenolic compounds, and non-halogenated solvents due to underground storage tank leaks, and spills. This is discussed in Sections 4.2.3 and 4.2.4 of this report. Undergoing Independent Remedial Action. This site is also on the WA ICR for these conditions.
Arco Welding Products BOC Gases 7700 - 14th Avenue South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Confirmed metals contamination of groundwater and soil by a UST. Preliminary Assessment completed, awaiting Risk Assessment. This site is also on WA ICR for this condition.
Malarkey Asphalt Company 8700 Dallas Avenue South Seattle, Washington	One-half to one mile west-southwest, downgradient of the subject site.	Undergoing Independent Remedial Action due to contamination by base/neutral/acid organic compounds, metals and cyanide, PCBs, Pesticides, Dioxin, and PAHs.
Spencer Industries, Inc. 8410 Dallas Avenue South Seattle, Washington	One-half to one mile west-southwest, downgradient of the subject site.	Contamination by halogenated compounds has been confirmed, but they are below MTCA cleanup levels.

KCSlip4 43212

SEA409742

Name/Address	Location	Ecology Notes
Helmer Property 6700 Martin Luther King Seattle, Washington	One-half to one mile northeast, potentially upgradient.	The site is undergoing independent remedial action due to petroleum contamination.
KHY & LI property 9056 - 37th Avenue South Seattle, Washington	One-half to one mile southeast, potentially upgradient.	The site is awaiting risk assessment for an unreported condition.
Boeing A&M Development Center 9725 East Marginal Way South Seattle, Washington	One-half to one mile southwest, downgradient of the subject site.	The site is undergoing independent remedial action due to contamination by halogenated organic compounds, petroleum products, and non-halogenated solvents. It is an RCRIS-LQG with a 16 low priority violations. This site is also discussed in Section 4.1.3 of this report.
Duwamish River Slip 4 Slip 4 Duwamish River Seattle, Washington	One-half to one mile west, downgradient of the subject site.	The site has confirmed contamination by base/neutral/acid organics, PCBs, and PAHs. It is awaiting a Site Hazard Assessment.
Long Painting Company 8025 - 10th Avenue South Seattle, Washington	One to two miles west-southwest, downgradient of the subject site.	The site is an RCRIS-LQG with 17 violations of record. An Interim Cleanup Report was received in 1999, regarding cleanup of metals contamination of surface water and soils. Contamination by metals and cyanide, other non-priority metals, petroleum products, and non-halogenated solvents is suspected but not confirmed.
Boeing North Field JP4 Tanks Ellis Avenue/East Marginal Seattle, Washington	One to two miles west-northwest, downgradient of the subject site.	The site has confirmed contamination by petroleum products (Jet Petroleum No. 4), and is awaiting a Site Hazard Assessment.
Boeing North Field 7370 East Marginal Way South Seattle, Washington	One to two miles west-northwest, downgradient of the subject site.	The site is undergoing Independent Remedial Action due to contamination by halogenated organic compounds, metals and cyanide, PCBs, corrosive wastes, conventional inorganic contaminants, petroleum products, and non-halogenated solvents.
BP Service Station 03167 6056 Martin Luther King Seattle, Washington	One to two miles north-northeast, crossgradient of the subject site.	The site is undergoing Independent Remedial Action due to contamination by petroleum products.
North Coast Chemicals 6300 - 17th Avenue South Seattle, Washington	One to two miles north-northwest, crossgradient of the subject site.	An Interim Cleanup Report has been received regarding this site, which has confirmed contamination by halogenated organic compounds and petroleum products due to a UST. This site is also on the WA ICR for these conditions.

Name/Address	Location	Ecology Notes
Martir Property Cloverdale/Empire Way Seattle, Washington	One to two miles east-southeast, potentially upgradient.	Metals and cyanide and corrosive wastes are suspected to be present. The site is awaiting a Site Hazard Assessment.
Interstate Coatings 754 South Chicago Seattle, Washington	One to two miles west, downgradient of the subject site.	Contamination by metals and cyanide, and petroleum products is confirmed. It is on the WA ICR for PCS. The site is awaiting remedial action.
Seattle Air National Guard 6736 Ellis Avenue South Seattle, Washington	One to two miles west, downgradient of the subject site.	The site has confirmed contamination by radioactive wastes, metals and cyanide, and petroleum products.

Considering the local geohydrologic conditions and the locations of the CSCSL sites, we believe the potential for significant contamination at the NEWCO Facility site by off-site CSCSL sites is low to minimal.

4.2.2 Landfills

Section 7. 2.1.1 of the ASTM standards requires a review of state landfill sites within a one-half mile radius of the subject site. EDR conducted a review of available records for a three-fourth mile radius of the subject site. No landfills are listed within the designated search radius.

4.2.3 Underground Storage Tank (UST) List

Section 7.2.1.1 of the ASTM standards requires a review of state UST lists for underground storage tanks listed on the subject site or adjoining properties. EDR conducted a records search for listed UST sites within a one-half mile radius of the subject site.

Nine UST listings appeared on the EDR search within a one-half mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
Seattle Air Corporation 8535 Perimeter Road South Seattle, Washington	Former tenant of the northern building on the subject site.	One UST containing motor oil was removed. There was confirmed PCS. A Cleanup Report was received in 1996. This site also discussed in Sections 3.8, and 4.2.4 and 4.2.5.
BFI Federal Express Station 7607 Perimeter Road Seattle, Washington	Less than one-eighth mile north-northwest, crossgradient of the subject site.	One UST was removed from the site in 1990. PCS was present, as well as groundwater contamination. The site was reported to be cleaned up in 1995.
Flightcraft, Inc. 8285 Perimeter Road South Seattle, Washington	Less than one-eighth mile north-northwest, crossgradient of the subject site.	Seven USTs were removed or closed on this site. Contents included kerosene, gasoline, aviation fuel, and waste oil. A Final Cleanup Report was received in May 1999.

KCSlip4 43214

SEA409744

Name/Address	Location	Ecology Notes
Nordstrom, Inc. 7979 Perimeter Road South Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	Three USTs are operational on the site.
AeroCopters, Inc. 8013 Perimeter Road South Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	One UST is operational on the site.
Aviation Methods, Inc. 7675 Perimeter Road South Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	Two USTs are operational on the site.
King County Airport PO Box 80245 Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	One UST was removed from the site.
ATBM Air Traffic Control Tower Boeing Field Seattle, Washington	One-fourth to one-half mile west-southwest, downgradient of the subject site.	One UST was removed from the site.
Galvin Flying Center 7001 Perimeter Road Seattle, Washington	One-half to one mile north-northwest, crossgradient of the subject site.	This site is on the orphan list under UST. A Final Cleanup Report regarding PCS from a UST was received in 1999.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by off-site UST sites is low.

4.2.4 Leaking Underground Storage Tank (LUST) List

Section 7.2.1.1 of the ASTM standards requires a review of State LUST lists for possible contaminated sites within a one-half mile radius of the subject site. EDR conducted a records search for listed LUST sites within a three-fourth mile radius of the subject site.

Eight LUST sites were identified in the EDR search within a three-fourth mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
Seattle Air Corporation 8535 Perimeter Road South Seattle, Washington	Former tenant of the northern building on the subject site.	Site was reported to have PCS due to a UST. A Cleanup Report was received in 1996. This site is also discussed in Sections 3.8, 4.2.3, and 4.2.5 of this report.
BFI Federal Express Station 7607 Perimeter Road Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	One leaking UST was reported, which had contaminated soil and groundwater. The site soil and groundwater was reported cleaned up in 1995. This site is also discussed in Section 4.2.3 of this report.

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SEA409745

Name/Address	Location	Ecology Notes
Victor Oishi DBA, Vic's Union 7100 Beacon Avenue South Seattle, Washington	One-fourth to one-half mile north-northeast, crossgradient of the subject site.	Three USTs were removed, PCS was found and the site was cleaned up. It was reported as cleaned up in 1995.
Firestone Retread Plant No. 12734 9220 East Marginal Way South Seattle, Washington	One-fourth to one-half mile west-southwest, downgradient of the subject site.	One UST was removed from the site. It contained heating fuel, which had leaked. The site was reported to be cleaned up in 1995.
Earle M. Jorgensen Company 8531 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Three USTs were removed from the site. PCS was found, and the site was reported to be cleaned up in 1999.
Galvin Flying Center 7001 Perimeter Road Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	This site is on the orphan list under UST, and discussed in Section 4.2.3. and 4.2.5 of this report. A Final Cleanup Report regarding PCS from a UST was received in 1999.
Boeing Plant II aka: Plant 2 7755 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Six USTs were removed, eight are exempt, and three are operational. There has been a series of releases from various USTs and cleanups at this site. The USTs contained petroleum products and undefined "hazardous substances." This site is discussed further in Sections 4.1.3 and 4.2.5 of this report.
Thompson Site aka: Boeing Isaacson Thompson 8701 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	Three USTs were on the site, two are exempt, and one was removed. All three contained petroleum products. The site was reported cleaned up in June 2000.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by off-site LUST sites is low.

4.2.5 Washington Independent Cleanup Reports (ICR)

Section 7.2.1.1 of the ASTM standards requires a review of state lists for hazardous waste incidents or actions on the subject site or adjoining properties. EDR conducted a records search for listed cleanup sites within a three-fourth mile radius of the subject site. These are remedial action reports Ecology has received from either the owner or operator of the sites. The actions have been conducted without department oversight or approval and are not under an order or decree.

Ten ICR listings appeared on the EDR search within a three-fourth mile radius of the subject site. These sites are:

Name/Address	Location	Ecology Notes
Seattle Air Corporation 8535 Perimeter Road South Seattle, Washington	Former tenant of the northern building on the subject site.	The site was reported to have PCS due to a UST. A Final Cleanup Report was received in 1996. This site is also discussed in Sections 3.8, 4.2.3, and 4.2.4 of this report.

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SEA409746

Name/Address	Location	Ecology Notes
Flightcraft, Inc. 8285 Perimeter Road South Seattle, Washington	Less than one-eighth mile north-northwest, crossgradient of the subject site.	Seven USTs were removed or closed on this site. Contents included kerosene, gasoline, aviation fuel, and waste oil. A Final Cleanup Report was received in May 1999.
BFI Federal Express Station 7607 Perimeter Road Seattle, Washington	One-eighth to one-fourth mile north-northwest, crossgradient of the subject site.	One UST containing unleaded gasoline was removed from the site. It was reported cleaned up in 1995.
UNOCAL 7100 Beacon Avenue South Seattle, Washington	One-fourth to one-half mile north-northeast, crossgradient of the subject site.	PCS detected due to a tank, Final Cleanup Report received 1990.
Boeing Electronic Manufacturing 7355 Perimeter Road South Seattle, Washington	One-fourth to one-half mile north-northwest, crossgradient of the subject site.	This site is listed due to solvents found in the groundwater. An Interim Cleanup Report was received in 1998.
Isaacson Property 8625 East Marginal Way Seattle, Washington	One-fourth to one-half mile west, downgradient of the subject site.	The site was contaminated by metals and cyanide. An independent cleanup was undertaken. Final Cleanup Report was received in April 2000.
Jorgensen Forge Corporation 8531 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	This site is an RCRIS-LQG, with low-priority violations. Contamination by PCBs and non-halogenated solvents is confirmed. Groundwater and soil is also contaminated by petroleum products from a UST. It is undergoing an independent cleanup for the metals and solvents. A final cleanup report was received in September 1999, regarding the UST. This site is also discussed in Section 4.2.1 of this report.
American Avionics (also listed as 7023) 7031 Perimeter Road South Seattle, Washington	One-half to one mile north-northwest, crossgradient of the subject site.	Suspected contamination of soil by petroleum products and non-halogenated solvents. Source not stated. Undergoing independent cleanup. Interim cleanup report received. This site is also discussed in Section 4.2.1 of this report.
Galvin's Flying Service 7001 Perimeter Road Seattle, Washington	One-half to one mile north-northwest, crossgradient of the subject site.	This site is on the orphan list under UST, and discussed in Sections 4.2.3 and 4.2.4 of this report. A Final Cleanup Report regarding PCSs from a UST was received in 1999.
Boeing Plant 2 7755 East Marginal Way South Seattle, Washington	One-half to one mile west, downgradient of the subject site.	The site is undergoing an Independent Remedial Action due to confirmed contamination by halogenated organic compounds, metals and cyanide, PCBs, petroleum products, non-halogenated solvents, and polynuclear aromatic hydrocarbons (PAHs). PCSs are due to LUSTs, as discussed in Sections 4.1.3 and 4.2.3 of this report.

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SEA409747

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by off-site WA ICR sites is minimal.

4.2.6 Former Manufactured Gas (Coal Gas) Sites:

The Coal Gas database is a proprietary service provided by EDR. A review of this database shows one Coal Gas site within one and one-fourth mile of the subject site:

Name/Address	Location	Site Description
Seattle Lighting Company 6300 Block Swift Avenue Seattle, Washington	One to two miles north-northwest, crossgradient of the subject site.	In 1929, Seattle Lighting Company had a facility located just east of 18th Avenue South, south of Swift Avenue and west of 19th Avenue South.

Considering the local geohydrologic conditions, we believe the potential for significant contamination at the NEWCO Facility site by off-site Coal Gas sites is minimal.

5.0 OTHER HAZARDS

5.1 PCBs and Transformers

Polychlorinated biphenyls (PCBs) are associated with electrical transformer fluids and older fluorescent light ballasts. The use of PCBs in transformer fluids was discontinued after 1977, and their use in fluorescent light ballasts was discontinued in 1979. Based on the age of the buildings, PCB-containing fluorescent lights may be present. Fluorescent light ballasts that are not clearly labeled as being non-PCB should be disposed of in accordance with appropriate regulations during routine maintenance or at the time the buildings are removed.

5.2 Asbestos

Asbestos is a fibrous mineral that was incorporated into a wide variety of construction materials prior to 1979. Asbestos-containing materials (ACMs) include insulating pipe wrap, floor tile, acoustical ceiling texturing, and wallboard. Based on the age of the buildings, ACMs may be present. Prior to demolition or remodeling, an appropriate ACM survey should be conducted.

5.3 Radon

Radon is a naturally occurring gas that is produced by the radioactive decay of radium in rocks. In buildings, the risk of radon exposure is generally associated with poorly-ventilated basements constructed on or within radium-rich soils and/or rocks. According to the *Special Report: Radon in Washington*, 1994, prepared by the State of Washington Department of Health, the King County area has a low risk of radon being present above 4.0 pico curies per liter (pCi/L).

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SEA409748

The Geocheck section of the EDR report summarizes radon measurements from the National Radon Database, developed by the EPA. The database lists two tested sites within the 98108 zip code. The measured radon levels at the test sites were well below the EPA 4.0 pCi/L action level.

We have performed radon measurements in the Puget Sound region and found no levels exceeding the EPA 4.0 pCi/L action level. Based on NCRP research , the EPA data presented in the EDR report and our experience in the area, we believe that the potential for radon gas in excess of the EPA action level is low. If requested, we can measure radon levels at the site.

5.4 On-Site Tanks

No USTs are reported on the site. One UST was removed from the area west of Building 8535 in 1996. No additional USTs are suspected on the site.

5.5 On-Site Wells

No wells have been observed or are suspected on the site, other than those put in place during our investigations.

5.6 Lead-Based Paint

From the turn of the century through the 1940s, paint manufacturers used lead as a primary ingredient in many oil-based interior and exterior paints. Usage gradually decreased through the 1950s and 1960s, as largely lead-free latex paints became more popular. Lead-based paints were banned from residential use in 1978. Currently, paints may not have greater than 0.06 percent lead by weight (600 parts per million [ppm]). Based on the age of the buildings, lead-based paint may be present. The lead-based paint should not be disturbed unless adequate precautions are taken.

6.0 SUMMARY

Our review of municipal records, regulatory agency documents, and other information revealed a recognized environmental condition (REC) associated with the property. This is the waste oil UST removed from 8535 Perimeter Road South in 1996.

6.1 Current Site Use

At the time of our study, the NEWCO Facility site was a flight maintenance/repair/services center. There is a risk of contamination from the on-site fueling and deicing services. In our opinion, based on our review of current on-site management of these materials, the potential for significant contamination from current site use is low.

KCSlip4 43219

SEA409749

6.2 Historical Site Use

Our review of the historical aerial photographs and historical tax records indicates that the site has historically been undeveloped land. In our opinion, the potential for contamination at the subject site from past site uses is moderate to low. The Flightcraft, Inc. tank removal appears to have eliminated the presence of petroleum in the soils associated with that tank. We performed groundwater testing concurrently with this report, and found slightly elevated levels of vinyl chloride in the groundwater. Vinyl chloride is a degradation product of trichloroethylene, a common degreasing agent.

6.3 Potential Off-Site Sources

Our reconnaissance of the neighboring developments and topography in the site vicinity indicates potential sources of groundwater and/or soil contamination within the ASTM recommended search radii from the subject site. However, based on the information we reviewed, we believe the potential for significant contamination at the subject site from off-site sources is low.

7.0 CONCLUSION

Our study found one REC associated with the property. This is the waste oil UST removed in 1996 from 8555 Perimeter Road South. At the time the UST was removed, a confirmed release of hydrocarbons was reported. Subsequent remedial measures removed the contaminated soils; however, no groundwater testing was performed.

Concurrent with this study, we constructed and sampled three monitoring wells on the site. The groundwater has slightly elevated levels of vinyl chloride. Vinyl chloride is a degradation product of trichloroethylene (TCE) and indicates that the environment that exists beneath the site is conducive to natural degradation processes. Based on the levels of vinyl chloride encountered, it is our opinion that intrinsic remediation allowing natural degradation to continue is feasible at this site. We recommend that quarterly sampling be performed for two years to verify that the levels encountered are representative of the site conditions. Following two years of monitoring, the site can be re-evaluated. Based on the lack of beneficial uses of the groundwater in the vicinity of the site and the presence of an impermeable cap over the site, a risk-based cleanup utilizing natural degradation of the vinyl chloride is an appropriate option for the site.

8.0 LIMITATIONS

We conducted limited testing for this report. The findings, conclusions, and recommendations presented in this report are based on our documented site observations, review of historical and regulatory information, and review of the referenced aerial photographs. Other information related to past site uses or current site conditions may exist.

If the existing site uses change or if further information on the site becomes available, Terra Associates, Inc. should review the changes, as they may affect our conclusions.

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SEA409750

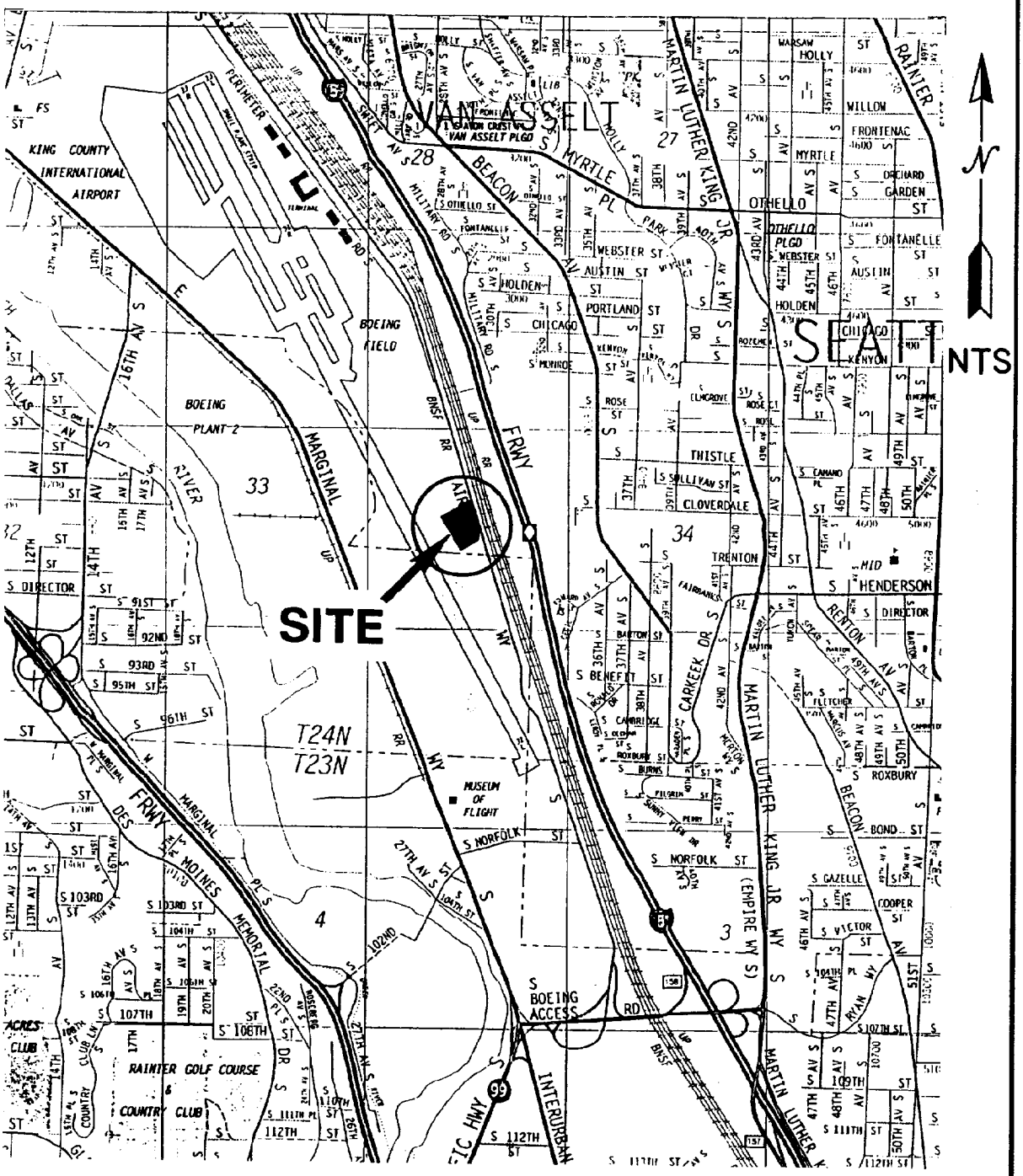
We prepared our conclusions and recommendations in accordance with generally accepted professional engineering practices. We make no other warranty, either expressed or implied. This report is the property of Terra Associates, Inc. and is intended for specific application to the NEWCO Facility project. This report is for the exclusive use of the Reid-Middleton & Associates and their authorized representatives.

9.0 REFERENCES

- Cole Publications, Seattle, Washington, various dates, *Cole Directory for Greater Seattle and Vicinities*.
- Environmental Data Resources, Inc., January 3, 2001, *The EDR-Radius Map Report, King County International Airport Site.*
- Galster, R.W., and Laprade, W.T., 1991 *Geology of Seattle, Washington, United States of America* in Bulletin of the Association of Engineering Geologists, Vo. XXVIII, No. 3, 1991, pp. 235-302.
- Hughes, Geoffrey, Washington State Department of Health, June 1994 *Special Report: Radon in Washington.*
- Kroll Map Company, Inc., undated, *Atlas of Seattle, No. 79E.*
- Seattle Tank Service, Inc., August 26, 1996, *Site Remediation and Clean-Up Report for Leaking Underground Waste Oil Tank Located at: 8535 Perimeter Road South, Seattle, Washington.*
- Waldron, H.H., Liesch, B.A., Mullineaux, D.R., and Crandell, D.R., 1962 *Preliminary Geologic Map of Seattle and Vicinity,* United States Geologic Survey (USGS) Miscellaneous Investigation Series Map I-354.
- Walker and Associates Aerial Photography and Mapping, 12652 Interurban Avenue South, Seattle, Washington 98168.
- Washington State Regional Archives, Puget Sound Regional Branch, 3000 Landerholm Circle SE, MS N100, Bellevue, Washington 98007.

KCSlip4 43221

SEA409751

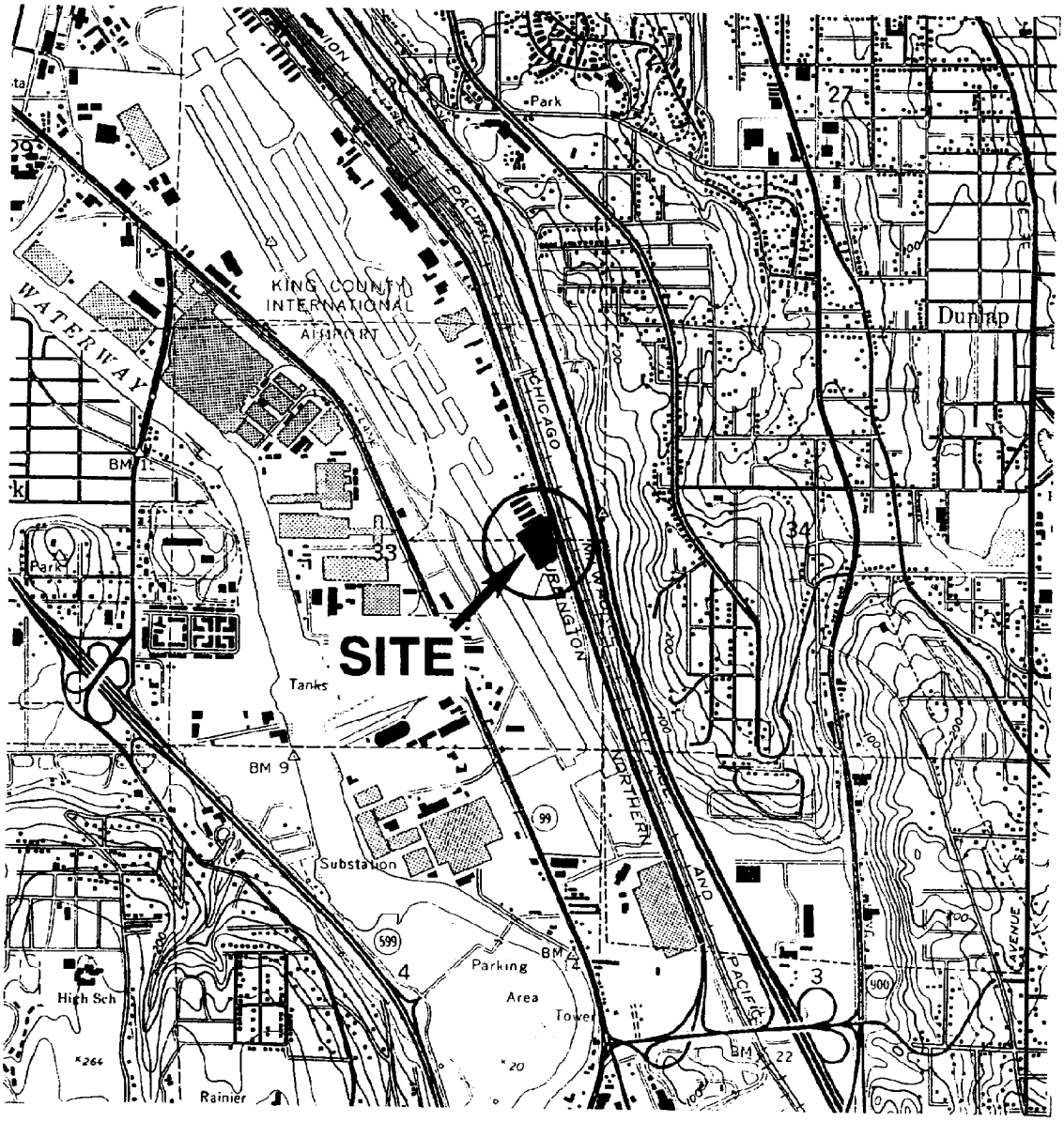


REFERENCE: THE THOMAS GUIDE, METROPOLITAN PUGET SOUND, PAGE 625, 2000 EDITION.

TERRA ASSOCIATES Geotechnical Consultants	VICINITY MAP NEWCO FACILITY SEATTLE, WASHINGTON		
	Proj.No. 4837-1	Date FEB. 2001	Figure 1

KCSlip4 43222

SEA409752



APPROXIMATE SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 1/2 0 1 MILE

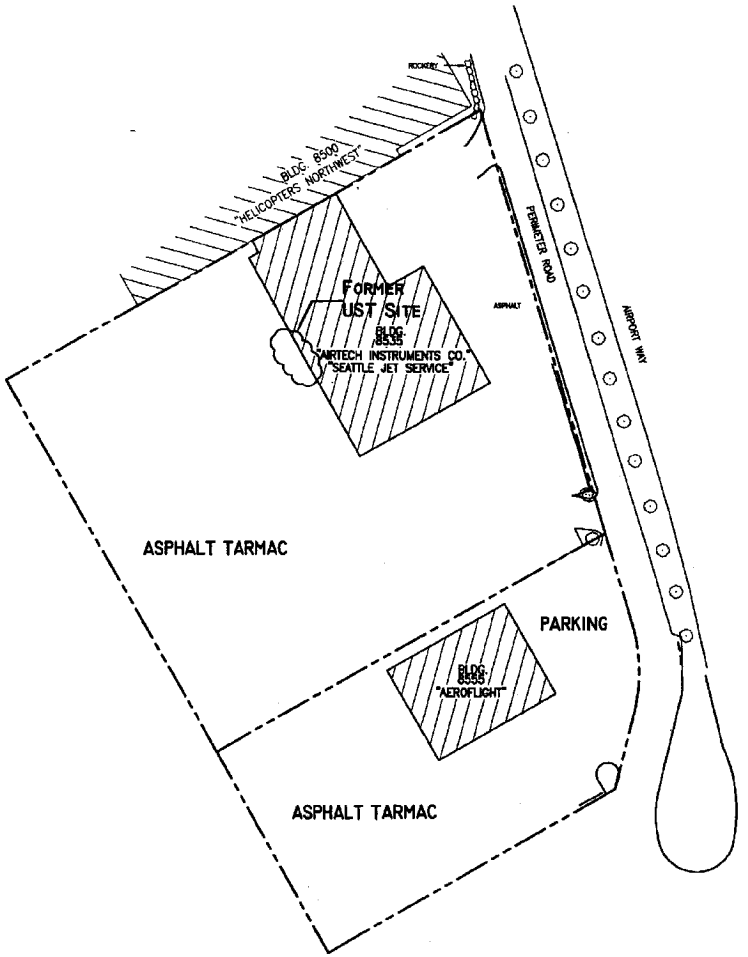
CONTOUR INTERVAL AT SITE: 25 FEET

REFERENCE:
USGS QUADRANGLE, SEATTLE (SOUTH), WASHINGTON, DATED 1949 (PHOTOREVISED 1968 AND 1973).

TERRA ASSOCIATES Geotechnical Consultants	TOPOGRAPHIC VICINITY MAP NEWCO FACILITY SEATTLE, WASHINGTON		
	Proj.No. 4837-1	Date FEB. 2001	Figure 2

KCSlip4 43223

SEA409753



NOT TO SCALE

NOTE:
THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. THIS SITE PLAN IS FOR REFERENCE PURPOSES ONLY AND IT SHOULD NOT BE USED FOR CONSTRUCTION OR DESIGN PURPOSES.

TERRA ASSOCIATES
Geotechnical Consultants

EXPLORATION LOCATION PLAN
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj.No. 4837-1	Date FEB. 2001	Figure 3

KCSlip4 43224

SEA409754

APPENDIX A

CITY DIRECTORY SUMMARY

CITY DIRECTORY
NEWCO FACILITY

Directory: Cole City Directory

1985		
8500	Eagle Aircraft Servicing	
	Raisbeck Engineering, Inc.	Aircraft parts, wholesale and retail
	Raisbeck Western	
8535	Flight Tech, Inc.	
	Washington Avionics	
	Cox Aircraft	
	Standard Aero International	
8555	Competition Aircraft	
	Club One Flight Group	
1980		
8500	Hayes Products, Inc.	Electrode repair
	Hayes Technical	Manufacturer representative.
8535	Seattle Air Charter	
	G&H Aircraft Center	Repairs (?)
8555	Puget Sound Flight Center	Flight Training
1975		
8500	The Aerospace Corporation	
	Boeing Employee Flying	Flying Club
1970		
8500	Radaire, Inc.	Aircraft Manufacturer
	General Aviation	Aircraft sales and insurance
1964		
	None in range.	
1960		
	Perimeter Road not listed, all listings are on Airport Way	
1955, 1949, 1940		
	None in range.	

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SEA409756

APPENDIX B

TENANT INTERVIEWS

TERRA ASSOCIATES, INC.
TENANT INTERVIEW FORM

Project No. *T-4837-1*

Date *1/24/01*

Interview by *PLR*

Property Name

Tenant Name *Aeroflight, Inc.*

Tenant Address/Space Number *8555 Perimeter Road South*

Seattle, Washington 98108

Tenant Representative *Tom Noble, Line Service Manager*

Title

Others Present	**Affiliation**
David Eggers	*Operations Manager*

Nature of Tenant's Activity On-Site:

SIC CODE:

Fixed Base Operations Aircraft – rental, instruction, cargo, refueling, maintenance.

They run four tanker trucks, but the fuel is from a tank farm off-site.

Space Use:

% Office Use	*25*
% Dry Storage	
% Production	*75*

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SEA409758

Chemical Compounds Used On-Site:

Compound Name	Storage Container (volume/type)	Use
Propylene glycol, deicing fluid in original containers (2-55 gal HDPE), aircraft deicing.		
Isopropyl Alcohol in original metal 55-gallon drum (1), used for deicing.		
ZEP solvent in original metal 30-gallon drum (1), used for parts cleaning.		
MEK – in original 1-gallon containers (3), used for removing adhesive from "boots" on planes.		
Paint thinner in original 1-gallon containers (?) used for touchup of aircraft paint.		
Oil and lubricants for aircraft repair and maintenance.		
Prist (diethylglycol) in 55-gallon drum (1).		

MSDS for each compound-- **Yes** No

Spill Control Plan? **Yes** *For fuel trucks* **No** _____

Disposition of Chemicals/Compounds:

Compound	Disposal Method (Include TSD)
MEK – consumed in use, active gallons stored on-site.	
Paint Thinner – consumed in use, active gallons stored in shop flammable materials locker.	
Waste Oil – burned in heater to warm shop area.	

Quantity of Wastes Per Month *<200 lbs.*

EPA Generator? **Yes** _____ **No** *X*

If yes, ID No. _____

Metro Discharge Permits? **Yes** *X* **No** *They have the standard non-hazardous industrial permit.*

If yes, Discharge Permit No. *Could not be located.*

Worker Training/Safety Notices (Describe)

Hearing and eye protection only.

Fire Department Inspection Schedule *Annual visits*

Violations? **Yes** _____ **No** *X*

If yes, describe _____

PSAPCA Permit? **Yes** _____ **No** *X*

If yes, Permit No. _____

Description of Production Area

Floor Drains?	**Yes**		**No**	*X*
Flammable Material Lockers?	**Yes**	*X*	**No**	
Spray Painting On-Site?	**Yes**	*X*	**No**	

If yes, describe *Touch up painting with "rattle cans" only.*

Are Vehicles Washed/Rinsed On-Site? **Yes** *X* **No**

If yes, describe location of wash pad and disposal of wash water: *Tarmac outside shop,*

Water goes to sewer on-site.

Is Steam Cleaning Done On-Site? **Yes** **No** *X*

If yes, describe location of washing pad and disposal of water:

Housekeeping *Moderately neat. Minimal spills and stains.*

Other Comments: *Waste oil tanks are within a containment vault. Hydraulic hoists are mounted above the floor. No subsurface hydraulic jacks are present.*

TERRA ASSOCIATES, INC.
TENANT INTERVIEW FORM

Project No. *T-4837-1*

Date *1/24/01*

Interview by *PLR*

Property Name

Tenant Name *Airtech Instrument Company, Inc.*

Tenant Address/Space Number *8535 Perimeter Road South*

Seattle, Washington 98108

Tenant Representative *Marke A. Schwartz*

Title *President*

Others Present **Affiliation**

Nature of Tenant's Activity On-Site:

SIC CODE:

Retail sales and repair of aircraft, marine, and industrial instruments.

Space Use:

% Office Use	*40*
% Dry Storage	
% Production	*60*

KCSlip4 43231

SEA409761

Chemical Compounds Used On-Site:

Compound Name	Storage Container (volume/type)	Use
Aerosol paint in original spray cans for touchups of instrument cases.		
Petro naptha solvent for degreasing small parts, in original containers (5-gallon).		
Use approximately 5-gallons per year.		

MSDS for each compound-- **Yes** No

Spill Control Plan? **Yes** _____ **No** *X*

If yes attach copy

Disposition of Chemicals/Compounds:

Compound	Disposal Method (Include TSD)
Petro naptha – recycled to previous container.	

Quantity of Wastes Per Month *<200 lbs.*

EPA Generator? **Yes** _____ **No** *X*

If yes, ID No. _____

Metro Discharge Permits? **Yes** _____ **No** *X*

If yes, Discharge Permit No. _____

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Worker Training/Safety Notices (Describe)

None observed

Fire Department Inspection Schedule *Annual visits*

Violations? **Yes** _____ **No** *X*

If yes, describe _____

PSAPCA Permit? **Yes** _____ **No** *X*

If yes, Permit No. _____

Description of Production Area

Floor Drains? **Yes** _____ **No** *X*

Flammable Material Lockers? **Yes** *X* **No** _____

Spray Painting On-Site? **Yes** *X* **No** _____

If yes, describe *Small spray cans used occasionally.*

Are Vehicles Washed/Rinsed On-Site? **Yes** _____ **No** *X*

If yes, describe location of wash pad and disposal of wash water: _____

Is Steam Cleaning Done On-Site? **Yes** _____ **No** *X*

If yes, describe location of washing pad and disposal of water: _____

Housekeeping *Neat.*

Other Comments: *Slight solvent odor in shop area. No subsurface hydraulic jacks are present.*

TERRA ASSOCIATES, INC.
TENANT INTERVIEW FORM

Project No. *T-4837-1*

Date *1/24/01*

Interview by *PLR*

Property Name

Tenant Name *Seattle Jet Services*

Tenant Address/Space Number *8535 Perimeter Road South, Suite 4*

Seattle, Washington 98108

Tenant Representative *Gene Boggio*

Title *Chief Financial Officer*

Others Present **Affiliation**

Nature of Tenant's Activity On-Site:

SIC CODE:

Repair and maintain rotary and fix wing aircraft, charter flight services, cargo.

Space Use:

% Office Use	*15*
% Dry Storage	
% Production	*85*

Chemical Compounds Used On-Site:

Compound Name	Storage Container (volume/type)	Use
ZEP solvent/detergent, in original 30-gallon container, used for parts cleaning.		
Batteries, (NiCd) in locked storeroom.		
Paint, spray cans in storeroom.		
Lubricating oils.		
Fuel and deicing is supplied by Aeroflight, Inc.		

MSDS for each compound-- **Yes** No

Spill Control Plan? **Yes** *X* **No** _____

Disposition of Chemicals/Compounds:

Compound	Disposal Method (Include TSD)
ZEP waste is recycled by commercial service.	
Batteries are picked up by commercial service.	
Oil – same as above.	
Paint cans—general refuse.	

Quantity of Wastes Per Month *<200 lbs.*

EPA Generator? **Yes** _____ **No** *X*

If yes, ID No. _____

Metro Discharge Permits? **Yes** _____ **No** *X*

If yes, Discharge Permit No. _____

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Worker Training/Safety Notices (Describe)

None observed

Fire Department Inspection Schedule *Annual visits*

Violations? **Yes** _____ **No** *X*

If yes, describe _____

PSAPCA Permit? **Yes** _____ **No** *X*

If yes, Permit No. _____

Description of Production Area

Floor Drains? **Yes** _____ **No** *X*

Flammable Material Lockers? **Yes** *X* **No** _____

Spray Painting On-Site? **Yes** *X* **No** _____

If yes, describe *Small aerosol cans of paint.*

Are Vehicles Washed/Rinsed On-Site? **Yes** *X* **No** _____

If yes, describe location of wash pad and disposal of wash water:

Tarmac, storm sewer.

Is Steam Cleaning Done On-Site? **Yes** _____ **No** *X*

If yes, describe location of washing pad and disposal of water: _____

Housekeeping *Above average. Some minor stains. Second floor is offices and storage.*

No subsurface hydraulic jacks are present.

APPENDIX C

WASTE OIL UST REMOVAL REPORT

LUST #510248
Seattle Air Corp.

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

RECEIVED
AUG 26 1996
DEPT. OF ECOLOGY

UST site# 4476411

ENTERED
8-25-99
SEK

SITE CLEAN-UP AND SITE REMEDIATION

REPORT FOR:

LEAKING UNDERGROUND WASTE OIL TANK

LOCATED AT:

8535 PERIMETER ROAD SOUTH
SEATTLE, WASHINGTON

DEPARTMENT OF ECOLOGY
NWRO/TCP TANKS UNIT

INTERIM CLEANUP REPORT ☐
SITE CHARACTERIZATON ☒
FINAL CLEANUP REPORT ☒
OTHER _____
AFFECTED MEDIA: SOIL
OTHER _____ GW
INSPECTOR (INIT.) SEK DATE 4-20-99

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

SITE REMEDIATION AND CLEAN-UP REPORT FOR LEAKING UNDERGROUND WASTE OIL TANK LOCATED AT:

8535 Perimeter Road South, Seattle, Washington

EXECUTIVE SUMMARY:

Seattle Tank Service, Inc. was contracted to excavate and remove an existing 500 gallon unused underground waste oil tank at the above referenced property.

The subject tank was removed on July 16, 1996. Once removed, holes were visible in the subject tank and soil contamination was suspected. The owner was consulted, and because of the location of the tank site (in front of an active airport hanger) the owner decided to remediate the site based on the physical evidence of contamination in the soil and the holes observed in the tank at the time of the tank removal. Seattle Tank Service, Inc. was then contracted by the owner of the subject property to excavate and remove the contaminated soil from the subject site and dispose of the soil at Rabanco Disposal Company's Third and Lander Street transfer station.

Excavation operations commenced on August 12, 1996 and continued until all physical evidence of contamination was absent from the subject site. Soil samples were collected from the trench bottom and all four (4) trench walls and submitted to the laboratory for analysis (see attached soil sample laboratory analysis report dated August 12, 1996). As shown, all soil sample laboratory analysis show T.P.H. levels below the 200 p.p.m. as required under the Washington Model Toxic Control Act. A total of 7.01 tons of contaminated soil was excavated, transported and disposed of at Rabanco's Third and Lander Street transfer station.

Back-fill, mechanical compaction and asphalt replacement commenced on August 14, 1996 and were completed on August 15, 1996.

SITE DESCRIPTION:

SITE NAME: **Seattle Air Corporation**

ADDRESS: **8535 Perimeter Road South**
Seattle, WA 98108

MAILING ADDRESS: Same

DIRECTION OF GROUNDWATER FLOW AND DEPTH TO GROUNDWATER:

The subject site is located at Boeing Field International, in unincorporated King County of Seattle, Washington (see attached vicinity map). There is no natural downgrade at this site. Some water seepage was encountered at approximately nine (9) feet during excavation operations, however, the depth to the water table could not be determined.

SITE SOIL TYPES AND SOIL SAMPLING:

The subject site soil types were visually classified as a silty, sandy soil with gravel from zero to approximately three (3) feet, then a silty sandy soil with pockets of sandy clay to a total trench depth of approximately ten (10) feet.

Soil sampling was accomplished by collecting grab samples on all four (4) trench walls at approximately eight (8) feet and the trench bottom at approximately ten (10) feet. The soil was placed in glass containers provided by American Analytical Services and the samples were then delivered to the laboratory for analysis (see attached soil sample laboratory analysis dated August 12, 1996).

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SEA409770

SITE HISTORY / LAND USE:

Property Owners: Seattle Air Corporation

The subject tank serviced an airport facility and the subject 500 gallon tank was used to store waste oil. Because of the commercial use of the subject property, the required permit was obtained, from Unincorporated King County Land and Development, prior to removal of the subject tank and an inspector from King County Building and Land Development was on site for the tank removal (see attached inspection report).

ON-SITE TREATMENT, STORAGE AND DISPOSAL RELATED TO THE INDEPENDENT REMEDIAL ACTION:

As previously stated, Seattle Tank Service, Inc. excavated a total of 7.01 tons of contaminated soil from the site. The soil was transported and disposed of at Rabanco Disposal Company's Third and Lander Street transfer station.

REGULATORY RECORDS / PERMITS:

Because the subject tank was used as a waste oil tank a "30 Day Notice of Intent to Close" was filed with the Washington State Department of Ecology and the required permit was obtained from Unincorporated King County prior to removal of the subject tank and a copy of this report will be sent to the Washington State Department of Ecology.

NATURE AND EXTENT OF CONTAMINATION AND MEDIA AFFECTED:

The subject site is located on an airfield and the subject tank was used for waste oil. As previously stated, water seepage was noted from the trench walls during excavation operations, however, the depth to water table could not be determined. Based on this data, the trench bottom water and the soil surrounding the subject tank were the affected media, however, not enough water collected in the trench bottom for pump-out operations.

KCSlip4 43241

SEA409771

SELECTION OF CLEAN-UP STANDARDS:

Because of limited space at the subject site (see attached site plan) excavation, transport and disposal of the contaminated soil was selected as the cleanup method.

LIMITATIONS:

The services provided are in accordance with generally accepted practices. Variation in soil and soil tests may occur in both the horizontal and vertical directions between any test locations. Because of these potential variations, no warranty or guarantee, either expressed or implied, is made by Seattle Tank Service, Inc. in respect to all soils or groundwater quality at the site. We are not responsible for the independent conclusions, opinions or recommendations made by others based on data gathered during this investigation and presented in this report.

If you have any questions, please feel free to call our office at (206) 938-2280.

Thank you,

James D. Ulery
President
Seattle Tank Service, Inc.
August 22, 1996

KCSlip4 43242

SEA409772

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

FINAL SOIL SAMPLE ANALYSIS

ACCOMPLISHED BY

SEATTLE TANK SERVICE, INC.

ON

AUGUST 12, 1996

Client:	Seattle Tank	Samples submitted:	8/12/96
Project:	8535 Perimeter Rd. S.	Date of Analysis:	8/12/96
Project#:		File ID:	08-044
Matrix:	Soil	Analysis:	WTPH-D + Ex
		Units:	mg/Kg(ppm)

RESULTS

Lab ID	Client ID	Diesel (ppm)	Motor Oil (ppm)	Surrogate Recovery BFB
08-044-1	East Wall	<50	<100	144%
08-044-2	West Wall	<50	<100	126%
08-044-3	North Wall	<50	<100	129%
08-044-4	South Wall	<50	<100	135%
08-044-5	Trench Bottom	<50	<100	126%

Quality Assurance

08/12/96 mb	Method Blank	<50	<100	128%

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

VICINITY MAP FOR

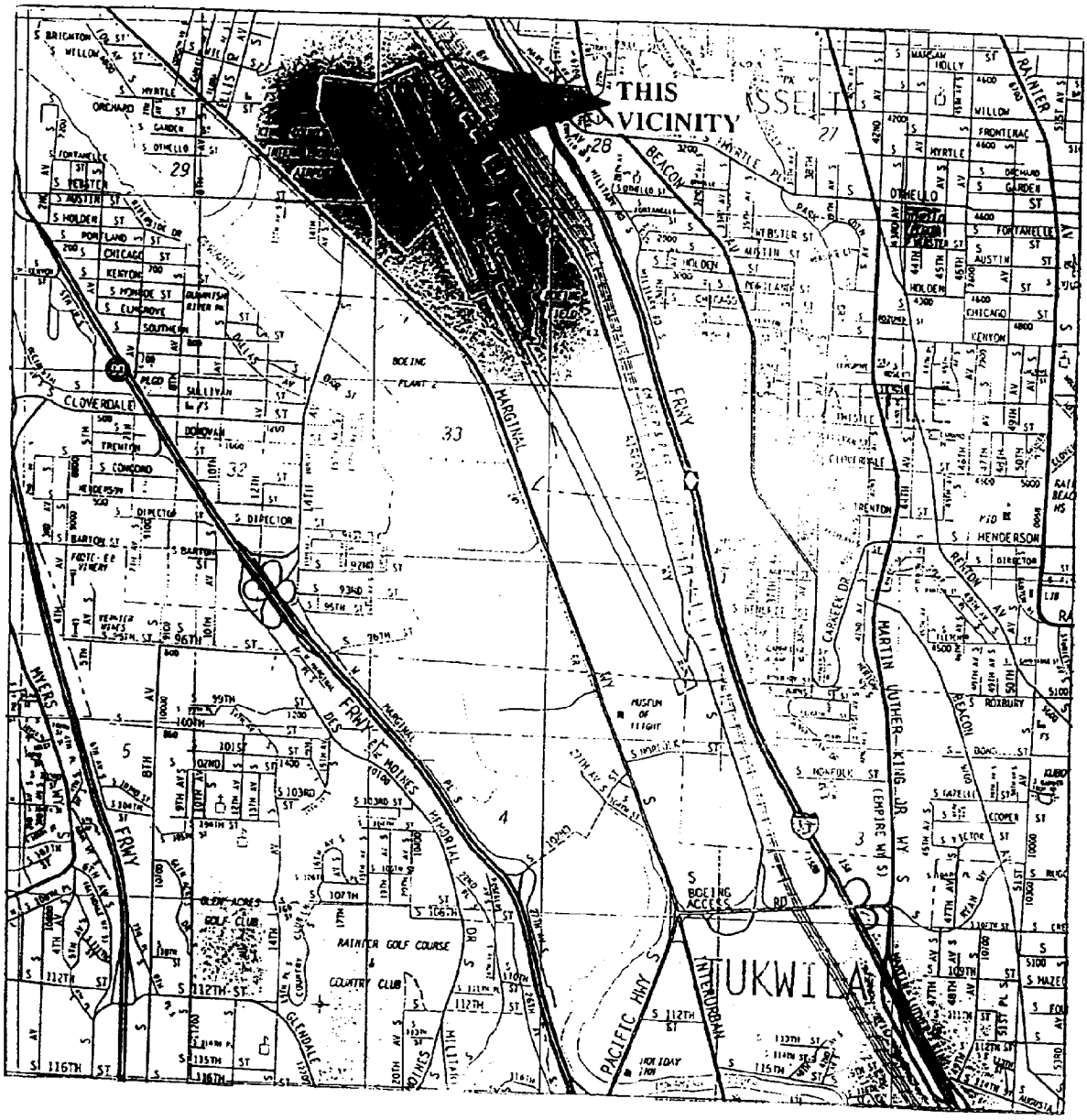
SITE CLEAN-UP AND SITE REMEDIATION

LOCATED:

8535 PERIMETER ROAD SOUTH
SEATTLE, WASHINGTON

SEATTLE TANK SERVICE INC.

6322 FAUNTLEROY WAY S.W. SEATTLE WA 98136 (206) 938 2280



VICINITY MAP

Scale as Shown

KCSlip4 43246

SEA409776

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

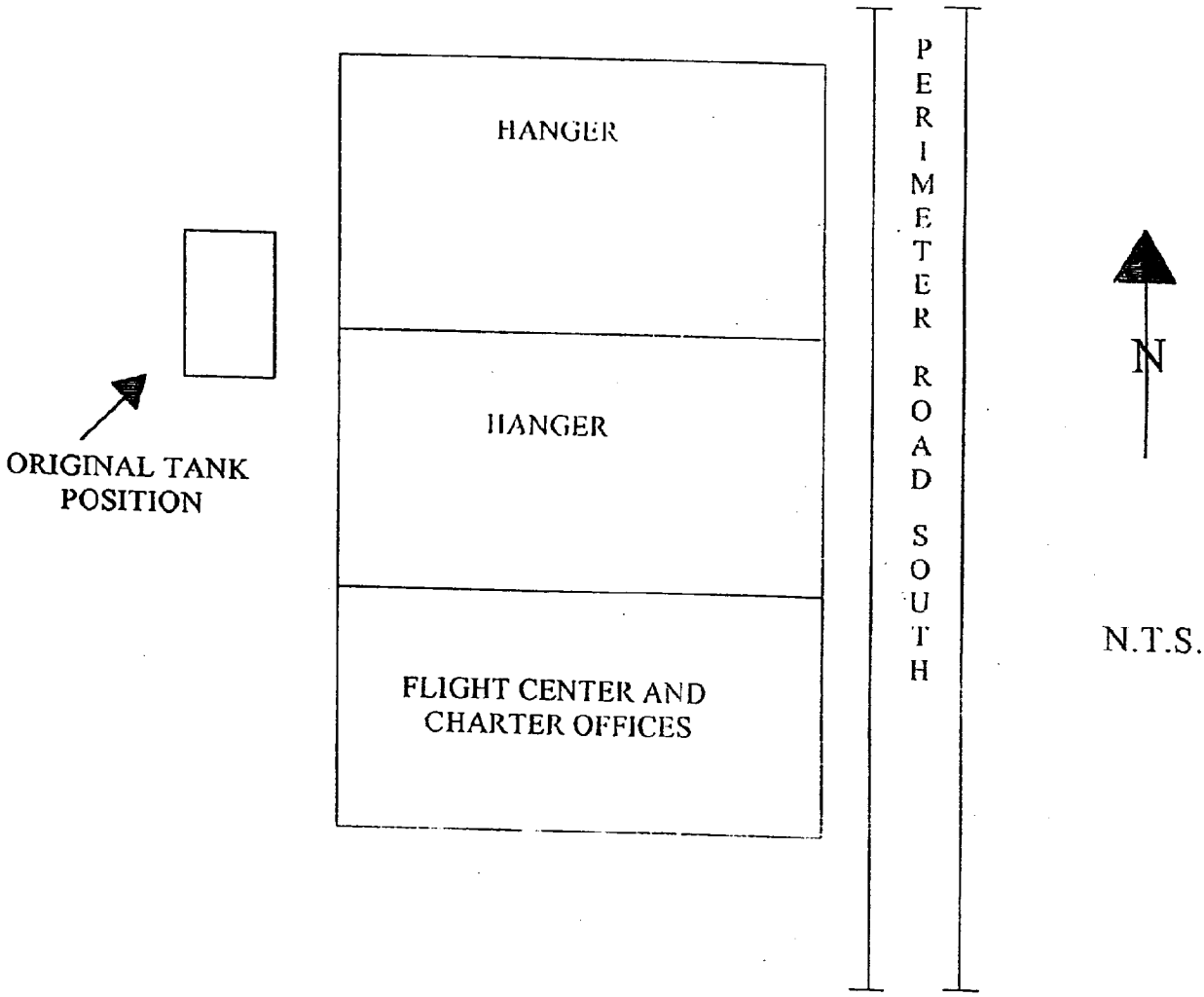
SITE PLAN FOR

SITE CLEAN-UP AND SITE REMEDIATION

LOCATED:

8535 PERIMETER ROAD SOUTH
SEATTLE, WASHINGTON

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280



SITE PLAN

8535 PERIMETER ROAD SOUTH
SEATTLE, WASHINGTON

SEATTLE TANK SERVICE INC.
6322 FAUNTLEROY WAY S.W., SEATTLE, WA 98136 (206) 938-2280

KING COUNTY DEPARTMENT OF DEVELOPMENT AND ENVIRONMENTAL SERVICES

PERMIT REQUIREMENTS

AND

WASHINGTON STATE DEPARTMENT OF ECOLOGY

"30 DAY NOTICE OF INTENT TO CLOSE"

King County
Department of Development
and Environmental Services
3600 - 136th Place Southeast
Bellevue, Washington 98006-1400

Activity No: B96A2278
Project No : *9610322
Page : 1 of 1
Date Issued: 07/11/96
EXPIRES : 07/11/97

ISSUED

* CONSTRUCTION PERMIT *

Permit Type : FLAMMABLE LIQUIDS STORAGE TANK
Title : REMOVE 300G U/G WASTE OIL TANK
Description : SEATTLE AIR CORP - BOEING FIELD
Occup'y/Type: BOEING Class: 036
Type Code: FIRETANK
Valuation:

Location : 8535 PERIMETER RD S
Parcel : 282404-9007 STR: ,SE,28-24-04 Zone: IG2U/8*
Lot : Plat: Block:

Applicant : SEATTLE AIR CORP
Appl.Address: C/O AGENT Phone: 767-6575

CONTRACTOR : SEATTLE TANK SERVICE INC Lic. C SEATTTS072M9 206 938 2280
6322 FAUNTLEROY WY SW
SEATTLE WA 98136

ER INFORMATION:

Fire District:	BOEING	
Remove Existing Tank?	Y	(Y/N)
Replace Existing Tank?		(Y/N)
Install New Tank?		(Y/N)

COMMENTS AND CONDITIONS

1. This permit is subject to all corrections indicated on the associated plan and attached conditions and must be posted on the job site at all times in a visible and readily accessible location.
2. Work may proceed only at the direction of the field inspector. Prior to starting any work you must schedule a pre-construction conference. Major work may require TWO days notice to schedule the conference. Inspections may be requested at any time by calling 296-6615. To schedule an appointment with the Building or Fire inspector, call 296-6615 between 7:30 A.M. and 9:00 A.M. Requests received in the morning may not be processed in time for an inspection that day.
4. Please note the expiration date on this permit located in the upper right corner. A permit may be renewed only if a request to do so is received at least 30 days prior to the expiration date.

KCSlip4 43250

SEA409780

Mon 7-29
1:00 P

King County
Department of Development
and Environmental Services
3600 - 136th Place Southeast
Bellevue, Washington 98006-1400
(206) 296-6615

PERMIT #: B96A2278 TYPE CONST. OCC.
ADDRESS: 8535 Perimeter Rd So
PROJECT NAME: Sewell Air Corp
DATE OF REQUEST: 7-26-96 DATE OF INSP: 7-29-96
TYPE OF INSPECTION: Tank - Fill
CONTACT NAME: Sewell Tank PHONE #:
COMMENTS:

APPROVALS:

CORRECTIONS:

500 gal waste oil tank
some signs of contamination
Follow DOE guidelines for cleanup
Recommend contacting Airport Engineer

NOTES:

Rev. 3/92

KCSlip4 43251

SEA409781

UNDERGROUND STORAGE TANK
30 DAY NOTICE

ECOLOGY

See back of form for instructions

Please ✓ the appropriate box: ☐ Intent to Install ☒ Intent to Close ☐ Both

NR

NW FOR OFFICE USE ONLY CS

Site ID #:

Owner ID #:

Once validated by Ecology, this form serves as your temporary permit for the tanks listed below.

Site Information

Site ID Number
(Available from Ecology if the tanks are registered)

Site/Business Name Ted Garlatz Jr / Seattle Air Corp

Site Address 8535 Perimeter Rd S (Street)

City/State Seattle, WA

Zip Code 98101 Telephone ( )

IFC # 78336

Owner Information
(This form will be returned to this address)

UST Owner/Operator Ted Garlatz Jr.

Mailing Address 8535 Perimeter Rd S (Street)

P.O. Box

City/State Seattle, WA

Zip Code 98101 Telephone ( )

Tank Installation Company (If known). Fill out this section ONLY if tanks are being installed.

Service Company

Contact Name

Address (Street)

P.O. Box

City State Zip Code Telephone ( )

MAY 29 1995

Tank Permanent Closure Company (If known). Fill out this section ONLY if tanks are being closed.

Service Company Seattle Tank Service

Contact Name James Viery or Jennifer

Address Street 6322 Fauntleroy Way SW

P.O. Box

City Seattle State WA Zip Code 98136 Telephone (206) 9382280

Tank Closure Information
Fill out this section ONLY if tanks are being closed.

Tank ID	Projected Closure Date	Tank Capacity	Substance Stored	Date Tank Last Used	Is There Product in the Tank (Yes/No)	If No, Date Tank Was Pumped
	?	300	Motor Oil	?	Yes	

Tank Installation Information
Fill out this section ONLY if tanks are being installed.

Tank ID	Approx. Install Date

To receive this document in an alternative format, contact the TOXICS CLEANUP PROGRAM at 1-800-826-7716 (VOICE) OR (360) 407-6005 (TDD).

ECY 020-95 (Rev. 6/95)

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SEA409782

APPENDIX D

LEVEL II ENVIRONMENTAL ASSESSMENT

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

February 22, 2001
Project No. T-4837-1

Mr. Ken Andersen
Reid-Middleton & Associates
728 – 134th Street SW
Everett, Washington 98204

Subject: Level II Environmental Assessment
NEWCO Facility
8535 Perimeter Road South
Seattle, Washington

Dear Mr. Andersen,

This report summarizes our Level II Environmental Assessment of the subject property. In 1996, a waste oil underground storage tank (UST) was removed from the site. During the removal of the UST, visual evidence of a release of hydrocarbons was apparent. Subsequently, the contaminated soils were removed from the site. Sidewall samples obtained from the UST remedial excavation indicated that the affected soils were removed. The remedial excavation extended to the groundwater; however, no groundwater samples were obtained to determine if groundwater impacts were present.

On February 1, 2001, we installed three groundwater monitoring wells at the site to assess current site conditions. Analysis of the groundwater samples obtained from these wells showed minor amounts of trichloroethylene (TCE) and related compounds in the groundwater. Of these, only vinyl chloride was present at levels above Washington State Model Toxics (MTCA) cleanup criteria.

As discussed in this report, additional sampling and monitoring is recommended to verify the existing data and to document future changes in levels of contaminants encountered.

This report discusses our study in more detail.

12525 Willows Road, Suite 101, Kirkland, Washington 98034
Phone (425) 821-7777 • Fax (425) 821-4334 • terra@terra-associates.com

SCOPE OF WORK

Our scope of work consisted of the following:

- Drilling three test borings on the site.
- Constructing monitoring wells in each of the test borings.
- Screening soil samples for petroleum hydrocarbons.
- Sampling groundwater from the borings.
- Subcontracting analytical testing of groundwater samples for appropriate constituents.
- Review of our concurrent Geotechnical Report for the subject site.

SITE CONDITIONS

Surface

The site is located at 8535 Perimeter Road South in Seattle. The location of the site and vicinity is shown on Figure 1. The site layout is shown on Figure 2.

The site is bordered by aircraft storage hangars to the north, Perimeter Road South to the east, an aircraft parking apron to the south, and Boeing Field to the west.

The former waste oil UST was present along the western side of the building at 8535 Perimeter Road South.

Subsurface

Approximately 2.5 feet of medium dense fill soils overlying six inches of topsoil were encountered immediately below the asphalt. This was underlain by one to four feet of very soft to medium stiff, clayey silt and silty clay. Below these surficial soils, sand with varying amounts of silt were encountered to depths of 33 to 40 feet. In the geotechnical test boring located at the northeast edge of the site, approximately six feet of medium stiff to very stiff sandy silt was encountered below the sand.

More detailed descriptions of the subsurface conditions encountered within the monitoring well borings are presented in Appendix A. The boring locations are shown on Figure 2.

Groundwater

Groundwater was measured at approximately 6.5 feet below the surface in the monitoring wells at the time of this study. We expect that shallow groundwater seepage zones will fluctuate seasonally.

KCSlip4 43255

SEA409785

LABORATORY TESTING

Groundwater samples were analyzed for the following analytes:

- Total Petroleum Hydrocarbons (TPHs) in the gasoline to diesel range, using Ecology methodology.
- Polycyclic aromatic hydrocarbons (PAHs) using EPA methodology.
- Total and dissolved metals, using EPA methodology.
- Volatile organic compounds, using EPA methodology.

The following tables summarize test results and indicate current and proposed Model Toxics Control Act Method A cleanup values.

Table 1
Analytical Test Results
Gasoline-Range Hydrocarbons
Groundwater

Well Number	Date	TPH-Gasoline	TPH-Diesel Range	TPH Oil Range
MW-1	2/5/01	100U	250U	500U
MW-2	2/5/01	100U	250U	500U
MW-3	2/5/01	100U	250U	500U
MTCA	--	1,000	1,000	1,000
MTCA		*800*	*500*	*500*

Notes: All units are parts per billion (ppb), micrograms per liter (µg/l).
MTCA values are Method A, values shown in italics are proposed Method A values.
U modifier indicates the compound was not detected at the stated practical quantitation limit.

Table 2
Analytical Test Results
Volatile Organic Compounds
Groundwater

Exploration	MW-1	MW-2	MW-3	MTCA A	MTCA B
Date	2/5/01	2/5/01	2/5/501		
Vinyl Chloride	0.20U	0.34	1.3	0.2	0.02
(cis) 1, 2 – Dichloroethene	2.5	6.8	12	NE	80
Trichloroethene	0.27	0.46	0.54	5.0	3.98

Notes: All units are parts per billion (ppb), micrograms per liter (µg/l).
MTCA values are Method A (proposed values are unchanged from existing values).
NE indicates that no cleanup value for the given method is established.
MTCA values for Method B are current residential values.
U modifier indicates that the compound was not detected at the stated practical quantitation limit.
Shaded cells exceed the Method A cleanup values listed.

KCSlip4 43256

SEA409786

Table 3
Total Metals Analysis
Groundwater Samples

Sample Location	Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
MW-1	2/5/01	3.3U	56U	4.4U	11U	1.4	0.50U	5.6U	11U
MW-2	2/5/01	3.3U	56U	4.4U	11U	1.1U	0.50U	5.6U	11U
MW-3	2/5/01	3.3U	56U	4.4U	11U	1.1U	0.50U	5.6U	11U
MTCA Method A		5	--	5	50	5	2	--	--

Notes: All units in parts per billion (ppb).
U modifier indicates that the compound was not detected at the stated practical quantitation limit (PQL).

Table 4
Dissolved Metals Analysis
Groundwater Samples

Sample Location	Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
MW-1	2/5/01	3.0U	50U	4.0U	10	1.0U	0.50U	5.0U	10U
MW-2	2/5/01	3.0U	50U	4.0U	10U	1.0U	0.50U	5.0U	10U
MW-3	2/5/01	3.0U	50U	4.0U	12	1.0U	0.50U	5.0U	10U
MTCA Method A		5	--	5	50	5	2	--	--

Notes: All units in parts per billion (ppb).
U modifier indicates that the compound was not detected at the stated PQL.

The groundwater samples were tested for carcinogenic PAHs by EPA Method 8270C using Selective Ion Monitoring Scan (SIMS). For brevity, the results are not summarized in the test of this report. However, details of these and all other test results are presented in the attached Appendix B. None of the target compounds were present within normal PQLs. The PQLs are protective of human health.

In addition, field readings of groundwater samples were taken for temperature, conductivity, and pH levels. Table A-1 in Appendix A summarizes the results of the groundwater parameter measurements.

CONCLUSIONS AND RECOMMENDATIONS

The results of our groundwater testing indicate that there are slightly elevated levels of trichloroethylene (TCE) related compounds in the groundwater. The presumed source of the TCE is the waste oil UST removed in 1996.

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SEA409787

TCE degrades in several stages through (cis) 1,2 dichloroethene and vinyl chloride; both of the latter compounds were detected, as well as TCE. The rate of the degradation is dependent upon the amount of oxygen and organic carbon present in the groundwater. With decreased oxygen and increased organic carbon, degradation will occur at a faster rate. It is apparent that conditions exist that will allow for the degradation of TCE. Provided there are no further inputs of fresh TCE, the TCE and related compounds that are present will continue to decrease by natural means over time. Ongoing monitoring will be needed to verify the levels of TCE and related compounds in the groundwater. We recommend that the monitoring wells be sampled quarterly for a period of two years to confirm this conclusion.

LIMITATIONS

This report is the property of Terra Associates, Inc. and was prepared in accordance with generally accepted geo-environmental engineering practices and within the limitations of time and budget. Analytical testing of the samples was based on our understanding of past land uses. In the event that additional information regarding site history or current site uses is found, the information should be brought to our attention, as it may affect our conclusions.

This report is intended for specific application to the NEWCO Facility project and for the exclusive use of NEWCO, Reid-Middleton & Associates, and their authorized representatives. No other warranty, expressed or implied, is made. This report does not constitute a regulatory audit of the site and facility. We cannot warrant that other professionals or regulators will reach the same conclusions we have presented in this report. Nothing in this report should be construed as being legal counsel.

The analyses and recommendations presented in this report are based on data obtained from the borings advanced on-site. Subsurface conditions may vary and seasonal variations in groundwater may occur. If TCE levels rise, or other contaminants are detected during the monitoring, additional site exploration may be needed to document the site conditions and possible extent of the affected area.

We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

Charles R. Lie

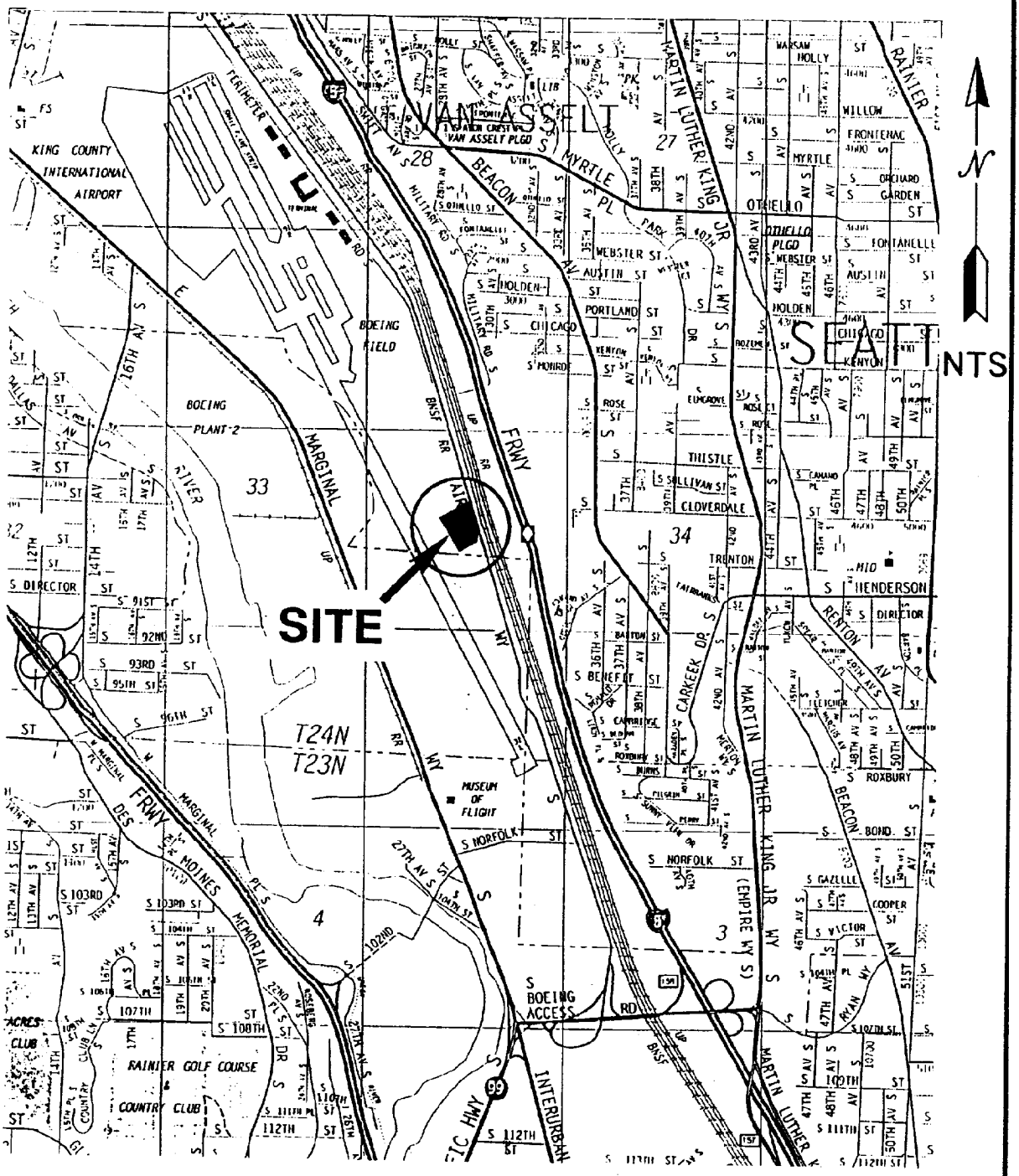
Charles R. Lie
Project Geologist

Anil Butail, P.E.
Principal

Encl: Figure 1 – Vicinity Map
Figure 2 – Exploration Location Plan
Appendix A – Subsurface Exploration
Appendix B – Analytical Testing

KCSlip4 43258

SEA409788



REFERENCE: THE THOMAS GUIDE, METROPOLITAN PUGET SOUND, PAGE 625, 2000 EDITION.

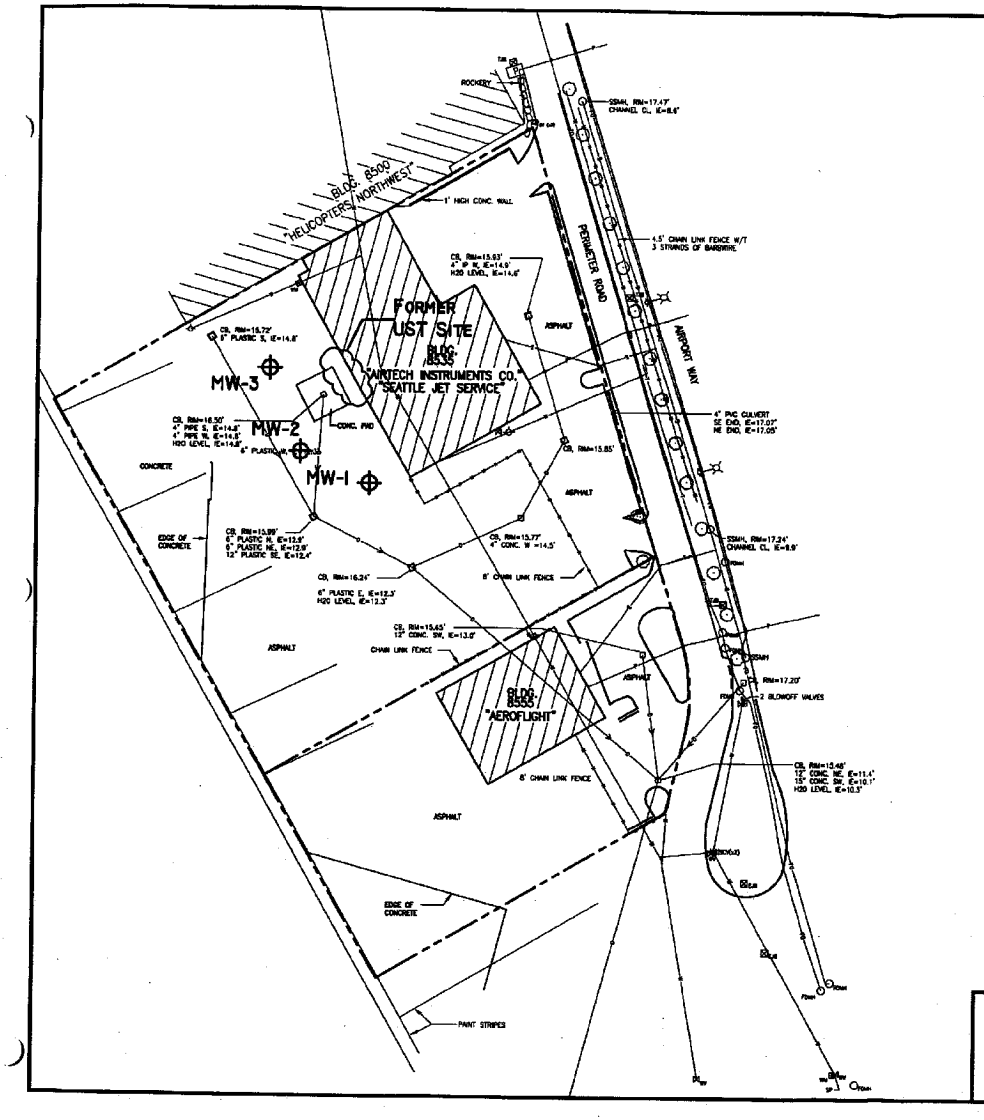
TERRA ASSOCIATES
Geotechnical Consultants

VICINITY MAP
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj.No. 4837-1	Date FEB. 2001	Figure 1

KCSlip4 43259

SEA409789



APPROXIMATE SCALE

80 0 80 160 feet

LEGEND:

⊕ MONITORING WELL

REFERENCE:

SITE PLAN PREPARED BY REID-MIDDLETON, FILE NO. 26-00-011, SHEET C-1, DATED MAY 2000.

TERRA ASSOCIATES
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EXPLORATION LOCATION PLAN
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj.No. 4837-1	Date FEB. 2001	Figure 2

KCSlip4 43260

SEA409790

APPENDIX A
Subsurface Exploration

NEWCO Facility
Seattle, Washington

To explore subsurface conditions at the NEWCO Facility site, three test borings were drilled using a drill rig equipped with four-inch hollow stem augers. Prior to and between drilling each boring, the drilling tools were cleaned to minimize the potential for cross-contamination. Wash fluids and drill cuttings were stored on-site in labeled drums. Monitoring wells were constructed in each boring to allow direct measurements and sampling of the groundwater.

A representative of our firm continuously monitored the drilling and kept a detailed log of each test boring. Penetration tests using a 140-pound hammer and a 3-inch outside diameter sample tube were performed at selected intervals. Samples recovered during drilling were logged by our representative and were placed into laboratory-prepared glassware. All samples were refrigerated pending delivery to OnSite Environmental, Inc., in Redmond. We followed chain of custody protocols for all samples.

Soil samples were field screened for volatile organics using the head space technique. For this technique, a subsample of each recovered sample was placed into a sealed plastic bag and allowed to reach the ambient temperature. A photo-ionization device was used to measure the accumulated volatile organic vapors in the bag. A portion of the headspace samples was then placed in a jar with water to check for sheen. No sheen was observed in any of the samples. The results of these screening methods are presented in Table A-1.

All of the borings were provided with a two-inch monitoring well constructed of PVC materials. The well screens consisted of factory-prepared 0.010-inch slots. The slotted segments of each well were backfilled with 10/20 silica sand and placed as the augers were withdrawn. The filter media extended to at least one foot above the screen interval. Bentonite chips were then used to backfill the annulus up to one foot below grade. A tamper-resistant flush monument cover was placed on each boring. Each well was developed by our subcontractor using a bailer. Approximately 40 gallons was removed from each well during the surging and development.

At the time of sampling, each well was purged of at least five casing volumes using a submersible pump prior to sampling. The dissolved metals sample was obtained using a pump and in-line filter. Samples for volatile organic analysis were obtained with a disposable bailer.

All water samples were placed into laboratory-prepared glassware and delivered to OnSite Environmental, Inc., for analysis. Chain of custody protocols were followed. All samples were kept chilled pending delivery to the laboratory.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS More than 50% material larger than No. 200 sieve size	GRAVELS More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines.
			SP	Poorly-graded sands or gravelly sands, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS More than 50% material smaller than No. 200 sieve size	SILTS AND CLAYS Liquid limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, (lean clay).
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

SAND or GRAVEL

Density	Standard Penetration Resistance in Blows/Foot
Very loose	0-4
Loose	4-10
Medium dense	10-30
Dense	30-50
Very dense	>50

SILT or CLAY

Consistency	Standard Penetration Resistance in Blows/Foot
Very soft	0-2
Soft	2-4
Medium stiff	4-8
Stiff	8-16
Very stiff	16-32
Hard	>32

- I — 2" OUTSIDE DIAMETER SPLIT SPOON SAMPLER
- II — 2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
- ▼ — WATER LEVEL (DATE)
- Tr — TORVANE READINGS, tsf
- Pp — PENETROMETER READING, tsf
- DD — DRY DENSITY, pounds per cubic foot
- LL — LIQUID LIMIT, percent
- PI — PLASTIC INDEX
- N — STANDARD PENETRATION, blows per foot

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UNIFIED SOIL CLASSIFICATION SYSTEM
NEWCO FACILTY
SEATTLE, WASHINGTON

Proj. No. T-4837-1	Date FEB 2001	Figure A-1

KCSlip4 43262

SEA409792

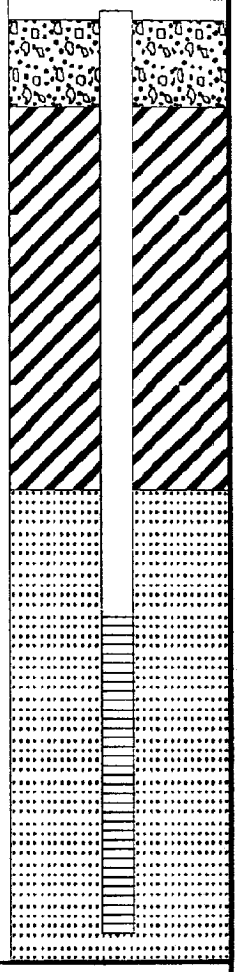
Boring No. MW-1

Logged by: MS

Date: 2/1/01

Approximate Elev. 16'

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)	Well as Built
Asphalt						
FILL: orange-brown fine to medium sand, damp. (SP)	Loose					
Gray clayey SILT, trace of fine sand, moist. (ML)	Medium Stiff	5		7		
Increase in fine sand and wet at 9 feet.	Very Stiff				▼	
Brownish-gray fine to medium SAND, trace of silt, wet. (SP)	Dense	10		36		
Becomes dark gray with red specs at 14 feet.	Dense	15		39		



Boring terminated at 15.5 feet.
Groundwater encountered at 9 feet.
Monitoring well installed as shown.

TERRA ASSOCIATES
Geotechnical Consultants

BORING LOG
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj. No. T-4837-1	Date FEB 2001	Figure A-2

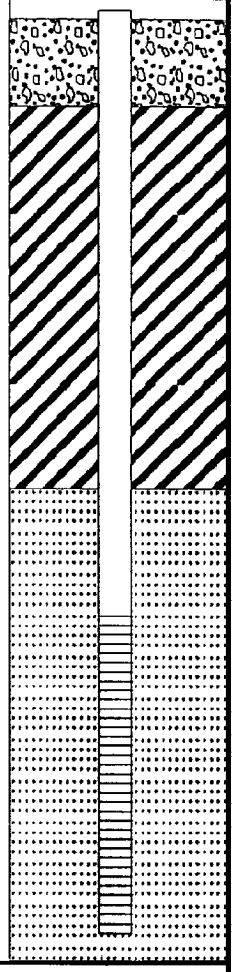
Boring No. MW-2

Logged by: MS

Date: 2/1/01

Approximate Elev. 16'

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)	Well as Built
Asphalt						
FILL: orange-brown fine to medium sand, damp. (SM)	Loose					
TOPSOIL: dark grayish-brown clayey silt, trace of fine sand, decomposing organics, moist. (ML)	Very Soft	5		4		
Gray clayey SILT, trace of fine sand, moist. (ML)	Soft					
Grayish-brown to gray fine to medium SAND, trace of silt, wet. (SP)	Dense				▼	
1-inch thick lens of tan laminated silt at 10 feet.		10		35		
Becomes dark gray with red specs at 14 feet.						
1-inch thick lens of tan laminated silt at 15 feet.	Medium Dense	15		22		



Boring terminated at 15.5 feet.
Groundwater encountered at 9 feet.
Monitoring well installed as shown.

TERRA ASSOCIATES
Geotechnical Consultants

BORING LOG
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj. No. T-4837-1	Date FEB 2001	Figure A-3

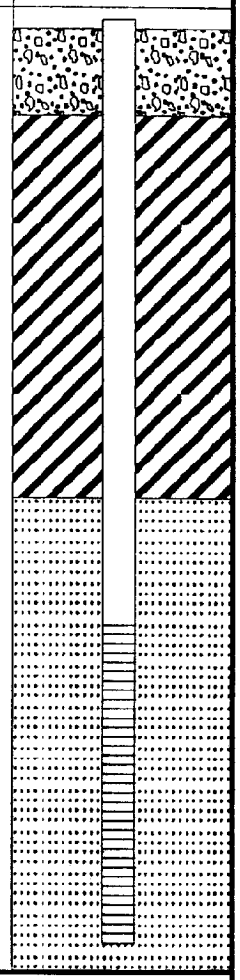
Boring No. MW-3

Logged by: MS

Date: 2/1/01

Approximate Elev. 16'

Soil Description	Consistency/ Relative Density	Depth (ft.)	Sample	(N) Blows/ ft.	Moisture Content (%)	Well as Built
Asphalt						
FILL: orange-brown fine to medium sand, damp. (SP)	Loose					
TOPSOIL: dark grayish-brown clayey silt, trace of fine sand, decomposing organics, moist. (ML)	Stiff	5		10		
Gray clayey SILT, trace of fine sand, trace of burnt woody organics, moist. (ML)	Stiff					
	Very Stiff				▼	
1-inch thick lens of tan laminated silt at 10 feet.		10		25		
Grayish-brown to gray fine to medium SAND, trace of silt, trace of wood fragments, wet. (SP)	Medium Dense					
Becomes dark gray with red specs and a trace of shell fragments at 14 feet. (SP)		15		24		



Boring terminated at 15.5 feet.
Groundwater encountered at 9 feet.
Monitoring well installed as shown.

TERRA ASSOCIATES
Geotechnical Consultants

BORING LOG
NEWCO FACILITY
SEATTLE, WASHINGTON

Proj. No. T-4837-1	Date FEB 2001	Figure A-4

KCSlip4 43265

SEA409795

Table A-1
Soil Headspace and Sheen
NEWCO Facility
Seattle, Washington

Well Number	Date	Sample Depth (feet)	Headspace Reading (ppm)	Sheen Observation
MW-1	2/1/01	4	0.0	None
MW-1	2/1/01	9	0.0	None
MW-1	2/1/01	14	0.0	None
MW-2	2/1/01	4	0.0	None
MW-2	2/1/01	9	1.6	None
MW-2	2/1/01	14	3.1	None
MW-3	2/1/01	4	4.3	None
MW-3	2/1/01	9	2.8	None
MW-3	2/1/01	14	2.9	None

Notes: Headspace - A representative portion of each sample was placed in a plastic bag, sealed, and allowed to warm to surface temperature. Headspace was checked on-site with an Organic Vapor Meter.
Sheen - A representative portion of each sample was placed in a clean jar with water, agitated, and the surface of the water was observed for sheen.

Table A-2
Field Parameters
Groundwater

Well Number	Date	Temperature (C°)	Conductivity	pH
MW-1	2/5/01	13.9	301	6.72
MW-2	2/5/01	13.5	332	6.95
MW-3	2/5/01	13.3	419	6.83

Notes: Units for conductivity are microhms per centimeter.

Table A-3
Static Water level Measurements

Monitoring Well Number	Date	Depth to Groundwater
MW-1	2/5/01	6.64
MW-2	2/5/01	6.74
MW-3	2/5/01	6.57

Notes: Depths to water are in feet.
The depths are measured to the top of the PVC casing.

APPENDIX B
ANALYTICAL TESTING

NEWCO Facility
Seattle, Washington

All water samples were placed into laboratory-prepared glassware. Each sample was given a unique sample identification. All samples were kept refrigerated pending delivery to OnSite Environmental, Inc. in Redmond, Washington. Chain of custody protocols were followed for all samples. OnSite Environmental, Inc. has accreditation from the Department of Ecology for all of the testing performed during this project.

The time of sampling and the time of delivery are clearly marked on the chain of custody forms. All testing was performed within the designated holding times.

At the laboratory, standard quality control procedures were followed. The procedures consisted of sample blanks, duplicates, and matrix spikes. All testing was within normal standards.

Based on our review of the laboratory data, it is our opinion that the results are acceptable for current use. No formal data validation was performed.

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

RECEIVED
FEB

February 8, 2001

Chuck Lie
Terra Associates, Inc.
12525 Willows Road, Suite 101
Kirkland, WA 98034

Re: Analytical Data for Project 4837-1
Laboratory Reference No. 0102-024

Dear Chuck:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 2001.
The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Badmeister
Project Manager

Enclosures

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881 • Fax (425) 885-4603

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Gx/BTEX

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Client ID:	**MW-1**			**MW-2**		
Lab ID:	02-024-01			02-024-02		
	Result	Flags	PQL	**Result**	Flags	PQL
Benzene	**ND**		1.0	**ND**		1.0
Toluene	**ND**		1.0	**ND**		1.0
Ethyl Benzene	**ND**		1.0	**ND**		1.0
m,p-Xylene	**ND**		1.0	**ND**		1.0
o-Xylene	**ND**		1.0	**ND**		1.0
TPH-Gas	**ND**		100	**ND**		100
Surrogate Recovery:						
Fluorobenzene	103%			104%		

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Gx/BTEX

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Client ID: **MW-3**
Lab ID: 02-024-03

	Result	Flags	PQL
Benzene	**ND**		1.0
Toluene	**ND**		1.0
Ethyl Benzene	**ND**		1.0
m,p-Xylene	**ND**		1.0
o-Xylene	**ND**		1.0
TPH-Gas	**ND**		100

Surrogate Recovery:
Fluorobenzene 104%

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0206W2

	Result	Flags	PQL
Benzene	**ND**		1.0
Toluene	**ND**		1.0
Ethyl Benzene	**ND**		1.0
m,p-Xylene	**ND**		1.0
o-Xylene	**ND**		1.0
TPH-Gas	**ND**		100

Surrogate Recovery:
Fluorobenzene 104%

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Gx/BTEX
DUPLICATE QUALITY CONTROL

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Lab ID:	02-024-01 **Original**	02-024-01 **Duplicate**	**RPD**	**Flags**
Benzene	**ND**	**ND**	NA	
Toluene	**ND**	**ND**	NA	
Ethyl Benzene	**ND**	**ND**	NA	
m,p-Xylene	**ND**	**ND**	NA	
o-Xylene	**ND**	**ND**	NA	
TPH-Gas	**ND**	**ND**	NA	
Surrogate Recovery:				
Fluorobenzene	103%	109%		

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Gx/BTEX
MS/MSD QUALITY CONTROL

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Spike Level: 50.0 ppb

Lab ID:	02-004-02 **MS**	Percent Recovery	02-004-02 **MSD**	Percent Recovery	**RPD**	**Flags**
Benzene	**58.3**	**117**	**56.5**	**113**	3.0	
Toluene	**55.5**	**111**	**53.7**	**107**	3.3	
Ethyl Benzene	**59.4**	**119**	**57.4**	**115**	3.4	
m,p-Xylene	**57.1**	**114**	**55.0**	**110**	3.7	
o-Xylene	**59.4**	**119**	**57.3**	**115**	3.5	

Surrogate Recovery:

Fluorobenzene	107%	106%

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Dx

Date Extracted:	2-6-01
Date Analyzed:	2-6-01

Matrix:	Water
Units:	mg/L (ppm)

Client ID:	MW-1	MW-2	MW-3
Lab ID:	02-024-01	02-024-02	02-024-03
Diesel Fuel:	ND	ND	ND
PQL:	0.25	0.25	0.25
Heavy Oil:	ND	ND	ND
PQL:	0.50	0.50	0.50
Surrogate Recovery:			
o-Terphenyl	70%	76%	90%

Flags:

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-6-01
Date Analyzed:	2-6-01

Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB0206W1

Diesel Fuel:	ND
PQL:	0.25

Heavy Oil:	ND
PQL:	0.50

Surrogate Recovery:

o-Terphenyl	130%

Flags:

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	2-6-01
Date Analyzed:	2-7-01
Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	02-018-02	02-018-02 DUP
Diesel Fuel:	0.612	0.422
PQL:	0.25	0.25
RPD:	37	
Surrogate Recovery:		
o-Terphenyl	82%	82%
Flags:	Y	Y

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted: 2-05-01
Date Analyzed: 2-05-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-01
Client ID: MW-1

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	2.5		0.20
2-Butanone	ND		5.0
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	0.27		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

VOLATILES by EPA 8260B
Page 2 of 2

Lab ID: 02-024-01
Client ID: MW-1

Compound	Results	Flags	PQL
Methyl Isobutyl Ketone	ND		1.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	74	71-133
Toluene-d8	86	80-151
4-Bromofluorobenzene	89	75-139

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

VOLATILES by EPA 8260B
Page 1 of 2

Date Extracted:	2-05-01
Date Analyzed:	2-05-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-024-02
Client ID:	**MW-2**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	0.34		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	6.8		0.20
2-Butanone	ND		5.0
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	0.46		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

VOLATILES by EPA 8260B
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Lab ID: 02-024-02
Client ID: MW-2

Compound	Results	Flags	PQL
Methyl Isobutyl Ketone	ND		1.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	75	71-133
Toluene-d8	91	80-151
4-Bromofluorobenzene	88	75-139

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
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Date Extracted:	2-05-01
Date Analyzed:	2-05-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-024-03
Client ID:	**MW-3**

Compound	**Results**	**Flags**	**PQL**
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	1.3		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	12		0.20
2-Butanone	ND		5.0
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	0.54		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20

Date of Report: February 8, 2001
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Lab ID: 02-024-03
Client ID: MW-3

Compound	Results	Flags	PQL
Methyl Isobutyl Ketone	ND		1.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	74	71-133
Toluene-d8	87	80-151
4-Bromofluorobenzene	85	75-139

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
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VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Date Extracted:	2-05-01
Date Analyzed:	2-05-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0205W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
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VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Lab ID: MB0205W1

Compound	Results	Flags	PQL
Methyl Isobutyl Ketone	ND		1.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	72	71-133
Toluene-d8	89	80-151
4-Bromofluorobenzene	82	75-139

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 2-05-01
Date Analyzed: 2-05-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0205W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	RPD	Flags
1,1-Dichloroethene	10.0	8.58	86	8.39	84	2.3	
Benzene	10.0	7.71	77	7.40	74	4.1	
Trichloroethene	10.0	10.7	107	11.2	112	4.1	
Toluene	10.0	9.11	91	9.24	92	1.4	
Chlorobenzene	10.0	9.58	96	9.82	98	2.5	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

PAH's by EPA 8270C and SIM

Date Extracted:	2-6-01
Date Analyzed:	2-6-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-024-01
Client ID:	**MW-1**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.50
2-Methylnaphthalene	ND		0.50
1-Methylnaphthalene	ND		0.50
Acenaphthylene	ND		0.50
Acenaphthene	ND		0.50
Fluorene	ND		0.50
Phenanthrene	ND		0.50
Anthracene	ND		0.50
Fluoranthene	ND		0.50
Pyrene	ND		0.50
Benzo[a]anthracene	ND		0.012
Chrysene	ND		0.012
Benzo[b]fluoranthene	ND		0.012
Benzo[k]fluoranthene	ND		0.012
Benzo[a]pyrene	ND		0.012
Indeno[1,2,3-cd]pyrene	ND		0.012
Dibenz[a,h]anthracene	ND		0.012
Benzo[g,h,i]perylene	ND		0.012

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	84	43 - 116
Terphenyl-d14	91	33 - 144

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

PAH's by EPA 8270C and SIM

Date Extracted:	2-6-01
Date Analyzed:	2-6-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-024-02
Client ID:	**MW-2**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.50
2-Methylnaphthalene	ND		0.50
1-Methylnaphthalene	ND		0.50
Acenaphthylene	ND		0.50
Acenaphthene	ND		0.50
Fluorene	ND		0.50
Phenanthrene	ND		0.50
Anthracene	ND		0.50
Fluoranthene	ND		0.50
Pyrene	ND		0.50
Benzo[a]anthracene	ND		0.012
Chrysene	ND		0.012
Benzo[b]fluoranthene	ND		0.012
Benzo[k]fluoranthene	ND		0.012
Benzo[a]pyrene	ND		0.012
Indeno[1,2,3-cd]pyrene	ND		0.012
Dibenz[a,h]anthracene	ND		0.012
Benzo[g,h,i]perylene	ND		0.012

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	67	35 - 114
2-Fluorobiphenyl	80	43 - 116
Terphenyl-d14	81	33 - 144

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

PAH's by EPA 8270C and SIM

Date Extracted:	2-6-01
Date Analyzed:	2-6-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-024-03
Client ID:	**MW-3**

Compound:	**Results**	**Flags**	**PQL**
Naphthalene	ND		0.50
2-Methylnaphthalene	ND		0.50
1-Methylnaphthalene	ND		0.50
Acenaphthylene	ND		0.50
Acenaphthene	ND		0.50
Fluorene	ND		0.50
Phenanthrene	ND		0.50
Anthracene	ND		0.50
Fluoranthene	ND		0.50
Pyrene	ND		0.50
Benzo[a]anthracene	ND		0.012
Chrysene	ND		0.012
Benzo[b]fluoranthene	ND		0.012
Benzo[k]fluoranthene	ND		0.012
Benzo[a]pyrene	ND		0.012
Indeno[1,2,3-cd]pyrene	ND		0.012
Dibenz[a,h]anthracene	ND		0.012
Benzo[g,h,i]perylene	ND		0.012

Surrogate :	**Percent Recovery**	**Control Limits**
Nitrobenzene-d5	72	35 - 114
2-Fluorobiphenyl	84	43 - 116
Terphenyl-d14	87	33 - 144

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

PAH's by EPA 8270C and SIM
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-6-01
Date Analyzed:	2-6-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0206W1

Compound:	Results	Flags	PQL
Naphthalene	ND		0.50
2-Methylnaphthalene	ND		0.50
1-Methylnaphthalene	ND		0.50
Acenaphthylene	ND		0.50
Acenaphthene	ND		0.50
Fluorene	ND		0.50
Phenanthrene	ND		0.50
Anthracene	ND		0.50
Fluoranthene	ND		0.50
Pyrene	ND		0.50
Benzo[a]anthracene	ND		0.012
Chrysene	ND		0.012
Benzo[b]fluoranthene	ND		0.012
Benzo[k]fluoranthene	ND		0.012
Benzo[a]pyrene	ND		0.012
Indeno[1,2,3-cd]pyrene	ND		0.012
Dibenz[a,h]anthracene	ND		0.012
Benzo[g,h,i]perylene	ND		0.012

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	71	35 - 114
2-Fluorobiphenyl	82	43 - 116
Terphenyl-d14	87	33 - 144

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

PAH's by EPA 8270C and SIM
MS/MSD QUALITY CONTROL

Date Extracted: 2-6-01
Date Analyzed: 2-6-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-022-09

Compound:	Spike Amount	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Acenaphthene	25.0	19.1	76	19.0	76	0.61	
Pyrene	25.0	19.7	79	21.0	84	5.9	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8/6010B/7470A

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-01
Client ID: MW-1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Barium	200.8	**ND**	56
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**1.4**	1.1
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.6
Silver	6010B	**ND**	11

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8/6010B/7470A

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-02
Client ID: MW-2

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Barium	200.8	**ND**	56
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.6
Silver	6010B	**ND**	11

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8/6010B/7470A

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03
Client ID: MW-3

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Barium	200.8	**ND**	56
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.6
Silver	6010B	**ND**	11

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0206W2&MB0207W1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Barium	200.8	**ND**	56
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Selenium	200.8	**ND**	5.6

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 6010B/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-6&7-01
Date Analyzed:	2-7-01
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0206W2&MB0207W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	.50
Silver	6010B	**ND**	11

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.3	
Barium	**ND**	**ND**	NA	56	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Selenium	**ND**	**ND**	NA	5.6	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 6010B/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	.50	
Silver	**ND**	**ND**	NA	11	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	**107**	97	**109**	99	2.3	
Barium	110	**118**	108	**118**	108	0	
Cadmium	110	**110**	100	**112**	102	2.0	
Chromium	110	**113**	103	**116**	105	1.9	
Lead	110	**119**	108	**122**	111	2.8	
Selenium	110	**101**	91	**104**	94	3.3	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Total Metals
EPA 6010B/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 2-6&7-01
Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	5.0	**5.35**	107	**5.73**	115	6.9	
Silver	1100	**1070**	97	**1080**	98	1.1	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-01
Client ID: MW-1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Barium	200.8	**ND**	50
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**10**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.0
Silver	6010B	**ND**	10

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-02
Client ID: MW-2

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Barium	200.8	**ND**	50
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.0
Silver	6010B	**ND**	10

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03
Client ID: MW-3

Analyte	Method	Result	PQL
Arsenic	200.8	ND	3.0
Barium	200.8	ND	50
Cadmium	200.8	ND	4.0
Chromium	200.8	12	10
Lead	200.8	ND	1.0
Mercury	7470A	ND	.50
Selenium	200.8	ND	5.0
Silver	6010B	ND	10

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0207D1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Barium	200.8	**ND**	50
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	.50
Selenium	200.8	**ND**	5.0
Silver	6010B	**ND**	10

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Barium	**ND**	**ND**	NA	50	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**12.2**	**12.3**	0.82	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	.50	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	

Date of Report: February 8, 2001
Samples Submitted: February 5, 2001
Lab Traveler: 02-024
Project: 4837-1

Dissolved Metals
EPA 200.8/6010B/7470A
MS/MSD QUALITY CONTROL

Date Analyzed: 2-7-01

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-024-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	200	**227**	114	**210**	105	7.8	
Barium	200	**208**	104	**197**	99	5.2	
Cadmium	200	**224**	112	**204**	102	9.6	
Chromium	200	**209**	98	**202**	95	3.4	
Lead	200	**218**	109	**213**	107	2.3	
Mercury	5.0	**4.66**	93	**5.05**	101	8.0	
Selenium	200	**250**	125	**209**	105	18	
Silver	500	**450**	90	**460**	92	2.2	

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Turnaround Request (in working days)
(Check One)
- ☐ Same Day
- ☐ 1 Day
- ☒ 2 Day
- ☐ 3 Day
- ☐ Standard (Hydrocarbon analyses: 5 days, All other analyses: 7 days)
- ☐ WEDNESDAY 2/7 (other)

Project Manager: DB

Laboratory No. [illegible]

Company: Terra Assoc.
Project No.: 4837-1
Project Name: Aeroflight
Project Manager: Chuck Lie

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C (SIMMS)	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	Priority Pollutant Metals (13)	TCLP Metals	VPH	EPH	Total metals	Dissolved metals			% Moisture
1	MW-1	2/5/01	1230	W	11		X	X	X			X									X	X			
2	MW-2	2/5/01	1330	W	11		X	X	X			X									X	X			
3	MW-3	2/5/01	1430	W	11		X	X	X			X									X	X			

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Patricia L. Red	2/5/01	[signature]	2/5/01
FIRM: Terra Assoc.	TIME: 1615	FIRM: OSE	TIME: 1615
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS: Dissolved metals have been field-filtered.

Chromatographs with final report ☐

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KCSlip4 43307

SEA409837

APPENDIX E

EDR REPORT

The EDR-Radius Map
with GeoCheck®

King County International Airport Site
8555 Perimeter Road South
Seattle, WA 98108

Inquiry Number: 580028.4s

January 03, 2001

Environmental Data Resources, Inc.

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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SEA409839

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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