Interim Report
Soil

SITE ASSESSMENT DURING UNDERGROUND STORAGE TANK REMOVAL ARCO SERVICE STATION NO. 4400 RENTON, WASHINGTON

PROJECT NO. WA152.1A

August 26, 1991

Prepared for

ARCO PRODUCTS COMPANY
1055 West Seventh Street
Los Angeles, California 90017-0570

Prepared by

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Environmental Services
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SITE ASSESSMENT DURING
UNDERGROUND STORAGE TANK REMOVAL
ARCO SERVICE STATION NO. 4400
RENTON, WASHINGTON

August 26, 1991

Geraghty & Miller, Inc. is submitting this report to ARCO Products Company for work performed at ARCO Service Station No. 4400 in Renton, Washington. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets the highest standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact of the individuals listed below.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Dion Valdez

Dion Valdez
Scientist III/Project Manager

Kurt S. Anderson
Project Scientist/Office Division Manager,
Hydrocarbon Services

Susan Keith

Susan J. Keith
Principal Scientist and Associate/
Project Officer

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SITE ASSESSMENT DURING UNDERGROUND STORAGE TANK REMOVAL ARCO SERVICE STATION NO. 4400 RENTON, WASHINGTON

INTRODUCTION

At the request of ARCO Products Company, Geraghty & Miller, Inc. conducted a site assessment and collected soil samples during removal of five underground storage tanks (USTs) at ARCO Service Station No. 4400 in Renton, Washington. The scope of work for the project was developed based on discussions with ARCO and on results of a previous investigation (Sweet-Edwards/EMCON 1990).

The environmental services provided by Geraghty & Miller were designed to complete the following tasks:

- Prepare a health and safety plan to ensure the safety of on-site personnel (Appendix A).
- Prepare a UST closure plan to comply with requirements specified by the City of Renton (Appendix B).
- Field screen soil samples with a photoionization detector (PID) to aid in selecting sample locations and to monitor air quality for health and safety purposes.
- Collect soil samples from within the excavation and from stockpiled excavated soils, and submit the samples to a laboratory for analysis.
- Define the distribution of residual hydrocarbons in the soils within the UST excavation.

Prior to tank removal activities, a UST Closure Plan (Appendix B) was prepared and submitted to the City of Renton to comply with requirements of the Determination of Nonsignificance -- Mitigation Measures issued by the City (City of Renton 1991) and with requirements contained in the City's Underground Storage Tank Secondary Containment Ordinance (City of Renton undated). The Plan describes general procedures implemented by Geraghty & Miller and by ARCO's tank removal contractor relating to health and safety, mitigation of construction-related environmental impacts, tank decommissioning, soil sampling, and preliminary plans for remediation of excavated soils, if necessary. Activities conducted by Geraghty & Miller were performed in accordance with the UST Closure Plan.

Field activities were initiated on June 11, 1991. This report summarizes the field methods, presents analytical laboratory data, and describes the subsurface conditions within the UST excavation.

SITE DESCRIPTION

ARCO Service Station No. 4400 is located on the northeast corner of the intersection of Northeast 12th Street and Northeast Sunset Boulevard in Renton, Washington (Figure 1). The site is bounded to the south by Northeast 12th Street, to the northwest by Northeast Sunset Boulevard, to the north by an auto parts shop, and to the east by a medical clinic. The site is occupied by an abandoned combination service station and convenience store with two pump islands, each covered by a canopy. The entire site was covered with asphalt and concrete pavement prior to tank removal. Approximately one-eighth of the pavement was removed in the northern portion of the lot during UST removal (Figure 2).

METHODOLOGY

Site assessment and soil sampling activities were conducted to characterize the condition of soils in the UST excavation, and air quality was monitored during tank removal activities for health and safety purposes. Mr. Colin Wagoner, an engineer with Geraghty & Miller, monitored air quality during excavation, collected soil samples, and documented field conditions during tank excavation. Mr. Wagoner is registered in the state of Washington to conduct site assessments during UST removal. A completed Underground Storage Tank Site Check/Site Assessment Checklist form certified by Mr. Wagoner is attached as Appendix C.

AIR QUALITY MONITORING

Air quality was monitored with a TIP II™ PID equipped with a 10.6 eV bulb. The PID was calibrated daily with a gas mixture consisting of 100 parts per million (ppm) isobutylene in air. The PID, used primarily for health and safety purposes, was also utilized qualitatively for screening soil samples in the field.

EXCAVATION AND UST REMOVAL

Joe Hall Construction Company of Tacoma, Washington performed the tank excavation, removal, and decommissioning services under contract with ARCO. Five steel tanks were removed from the site: one 10,000-gallon tank, two 6,000-gallon tanks, and two 4,000-gallon tanks. Prior to excavation, piping to the tanks was disconnected, the contents of the tanks were pumped out, and the interior atmosphere of each tank was made inert with dry ice. Upon removal, the tanks were brushed clean on the outside and transported to Fife Sand & Gravel in Fife, Washington under the supervision of Joe Hall Construction.

Geraghty & Miller conducted a limited inspection of the condition of the USTs upon their removal. This examination included visual inspection of the exterior surface for obvious signs of rust, pitting, seam failure, or leakage.

Excavated soils were stockpiled on the east side of the station pending results of laboratory analyses of the soil samples. Hay bales were placed around the outer perimeter of the stockpile to contain the soil and prevent runoff. Reinforced plastic sheeting was placed over the stockpile at the completion of excavation to minimize entry of rainwater, to prevent dust from blowing from the pile, and to minimize volatilization of hydrocarbons to the atmosphere.

Upon receipt of laboratory results indicating acceptable soil quality, the stockpiled material was backfilled into the excavation. Additional soils were imported to completely fill the excavation, and surfaces removed during excavation were repaved with asphalt. Temporary fencing placed around the site perimeter during tank removal activities was left in place to restrict access to the inactive service station structures.

SOIL SAMPLING

Samples of soils in the excavation were collected in 2-inch by 6-inch brass sample tubes from the bucket of a backhoe. The ends of the sample tubes were covered with aluminum foil, capped with plastic covers, and sealed with self-adhesive silicone tape. The sealed sample tubes were labeled and placed in a cooler with ice. Sample identification numbers were assigned to reflect the location and depth of sample collection. All reusable sampling equipment was decontaminated before each use by washing with a laboratory-grade detergent and rinsing with distilled water.

A total of ten samples were collected from the tank and product piping excavation: five samples from the base of the tank pit below each tank; two samples from the sidewalls of the tank pit 3 to 4 feet below land surface (bls); one sample from

near each of the two pump islands; and one sample from the product piping trench. In addition, five discrete samples were collected from the stockpiled soils.

The soil samples were submitted to Columbia Analytical Services of Bothell, Washington for analysis. All samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Method 8020 and for total petroleum hydrocarbons in the gasoline range (TPH-G) using modified EPA method 8015. The samples from the excavation were analyzed for lead using EPA method 7421. The analytical report is provided in Appendix D, and the laboratory results are summarized in Table 1.

HYDROGEOLOGY

The ARCO site is at an elevation of approximately 360 feet above sea level and is located approximately 1.2 miles east of Lake Washington in Renton, Washington. May Creek, which drains into Lake Washington, is located approximately 1/3 of a mile to the northeast of the site. Based on topography, surface runoff appears to flow toward the west from the site. Topographic relief across the site is approximately 2 feet.

The site is underlain primarily by fill materials. The fill materials consist of orange-brown, medium-grained, slightly moist sand with a trace of silt and gravel. The fill was exposed on all four sidewalls and in the base of the excavation. The fill was loose with a tendency to slough into the excavation.

Ground water was not encountered during tank removal activities or during previous soil boring activities continued to a maximum depth of 44 feet bls (Sweet-Edwards/EMCON 1990).

TANK CONDITION

None of the tanks exhibited obvious signs of leakage. All inspected seams appeared intact although some rust spots were observed. Wall thickness and uniformity, where accessible for examination, appeared normal.

SOIL QUALITY

A total of 15 soil samples were collected during tank removal activities and were submitted for laboratory analysis. The date of collection, approximate depth of collection, and analytical results are summarized in Table 1; sample locations are indicated on Figure 2.

Ten soil samples were collected from the tank and piping excavations and submitted for laboratory analysis of BTEX, TPH-G, and total lead. Two of the samples contained TPH-G at concentrations above the State of Washington Model Toxics Control Act (MTCA) Method A cleanup level (Samples 4KA-12 and 4KB-12); one of these (Sample 4KB-12) also exceeded the MTCA Method A cleanup level for total xylenes. Both of these samples were collected from beneath tanks located in the southern portion of the UST excavation (Figure 2). Analysis of other samples collected from the tank and piping excavations indicated hydrocarbon constituents were not present or were present at concentrations below MTCA Method A cleanup levels. Detected concentrations of total lead were below the MTCA Method A soil cleanup level.

Five discrete samples were collected from excavated soils stockpiled during tank removal activities and were analyzed for BTEX and TPH-G. One of the samples (Sample SPSW-2) contained xylenes and TPH-G at concentrations well below MTCA Method A cleanup levels; analysis of other soil samples from the stockpile indicated no

detectable hydrocarbons. The stockpiled soils were returned to the UST excavation following tank removal.

SUMMARY AND CONCLUSIONS

Five USTs were removed from the subsurface and transported off-site by Joe Hall Construction. Geraghty & Miller conducted a site assessment and collected soil samples during UST removal.

Laboratory analytical results from the sampled soils indicate that residual hydrocarbons are present in the subsurface. Two samples collected from beneath tanks at the southern end of the tank excavation contained hydrocarbon constituents at concentrations above MTCA Method A cleanup levels.

Ground water was not encountered during UST removal activities.

REFERENCES

City of Renton, Washington. 1991. Determination of Nonsignificance -- Mitigation Measures, ARCO AM/PM Underground Fuel Storage Tanks, ECF-012-01, April 11, 1991.

City of Renton, Washington. Undated. Underground Storage Tank Secondary Containment Ordinance, Chapter 2, Title VII of Ordinance No. 4260.

Department of Ecology, State of Washington. 1991. Model Toxics Control Act Cleanup Regulations, Chapter 173-340 WAC, February 28, 1991.

Sweet-Edwards/EMCON. 1990. Subsurface Investigation Report, ARCO Service Station No. 4400, Renton, Washington, March 1, 1990.

TABLE

Table 1. Summary of Laboratory Analytical Results for Soil Samples
Arco Service Station No. 4400
Renton, Washington
Project No. WA152.1A

Sample ID	Sample Depth (ft bls)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	TPH-G (mg/kg)	Total Lead (mg/kg)
10K-12	12	11-JUN-91	ND	ND	ND	ND	ND	3
6KA-12	12	11-JUN-91	ND	ND	ND	ND	ND	16
6KB-12	12	11-JUN-91	ND	ND	ND	ND	ND	39
4KA-12	12	12-JUN-91	ND	ND	ND	0.5	193 •	ND
4KB-12	12	12-JUN-91	ND	ND	ND	21.5	1480 •	40
SW-1	3	11-JUN-91	ND	ND	ND	ND	ND	ND
SW-2	4	12-JUN-91	ND	ND	ND	ND	ND	9
TRENCH-1	2.5	12-JUN-91	ND	ND	ND	ND	ND	ND
NPUMP-2	1.5	12-JUN-91	ND	ND	ND	ND	7 •	9
SPUMP-2	2	12-JUN-91	ND	ND	ND	ND	ND	13
SPSE-1	--	12-JUN-91	ND	ND	ND	ND	ND	NA
SPSW-2	--	12-JUN-91	ND	ND	ND	0.2	10	NA
SPC-3	--	12-JUN-91	ND	ND	ND	ND	ND	NA
SPNE-4	--	12-JUN-91	ND	ND	ND	ND	ND	NA
SPNW-5	--	12-JUN-91	ND	ND	ND	ND	ND	NA
Method Reporting Level			0.05	0.1	0.1	0.1	5	NA
MTCA Method A Cleanup Level			0.5	40	20	20	100	250

ft bls Feet below land surface
mg/kg Milligrams per kilogram
TPH-G Total petroleum hydrocarbons as gasoline
• Detected mixture characterized by laboratory as mineral spirits
NA Not analyzed
ND Not detected at or above the method reporting limit
-- Not applicable
MTCA Washington Model Toxics Control Act
Analyses performed by Columbia Analytical Services of Bothell, Washington using the following USEPA methods:
BTEX Method 8020
TPH-G Modified Method 8015
Lead Method 7420

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FIGURES

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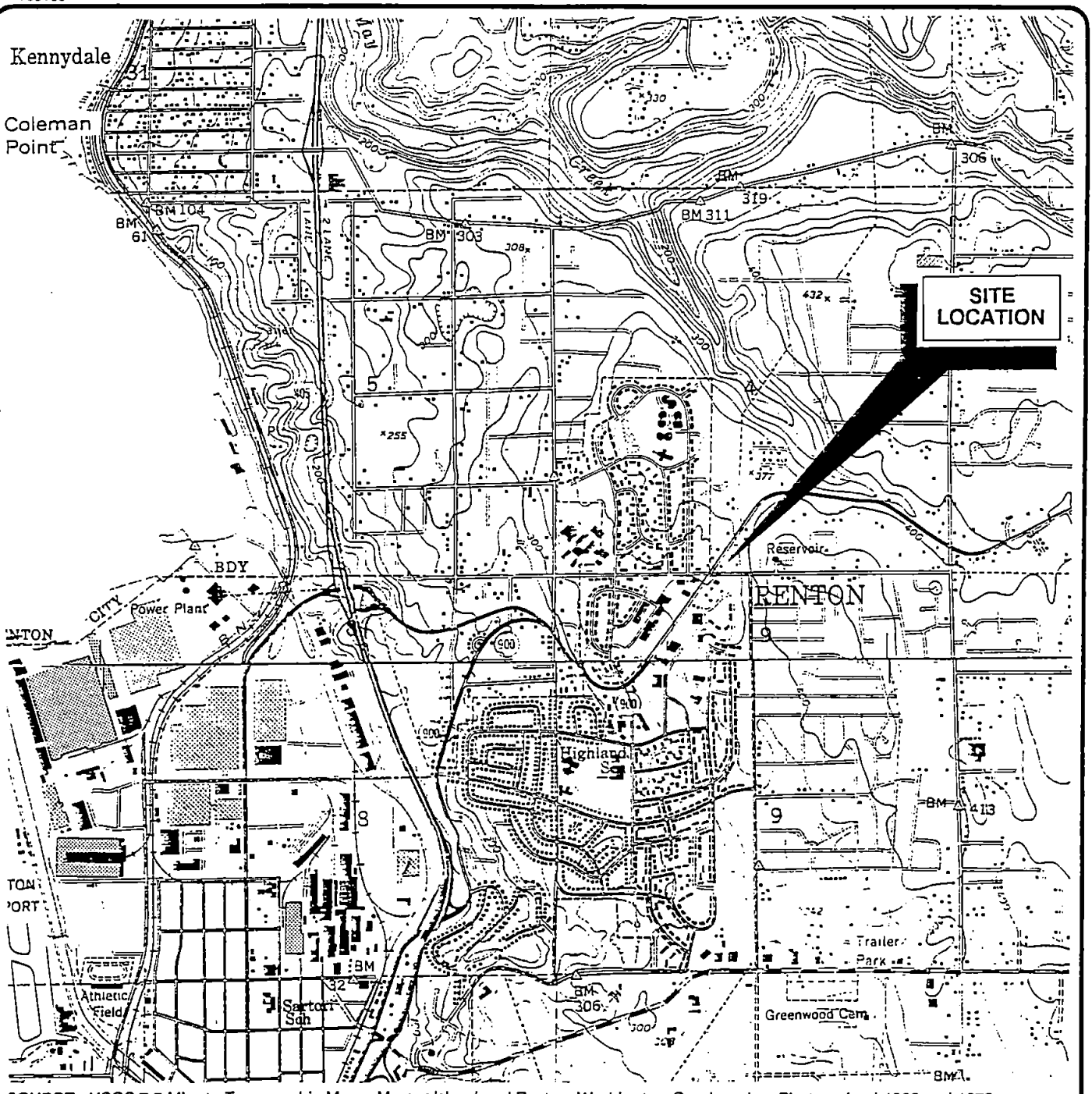

SOURCE: USGS 7.5 Minute Topographic Maps, Mercer Island and Renton, Washington Quadrangles, Photorevised 1968 and 1973.

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GERAGHTY & MILLER, INC.
Environmental Services

SITE LOCATION MAP

ARCO Products Company
Service Station #4400
3123 NE Sunset Boulevard
Renton, Washington

FIGURE
1

163135

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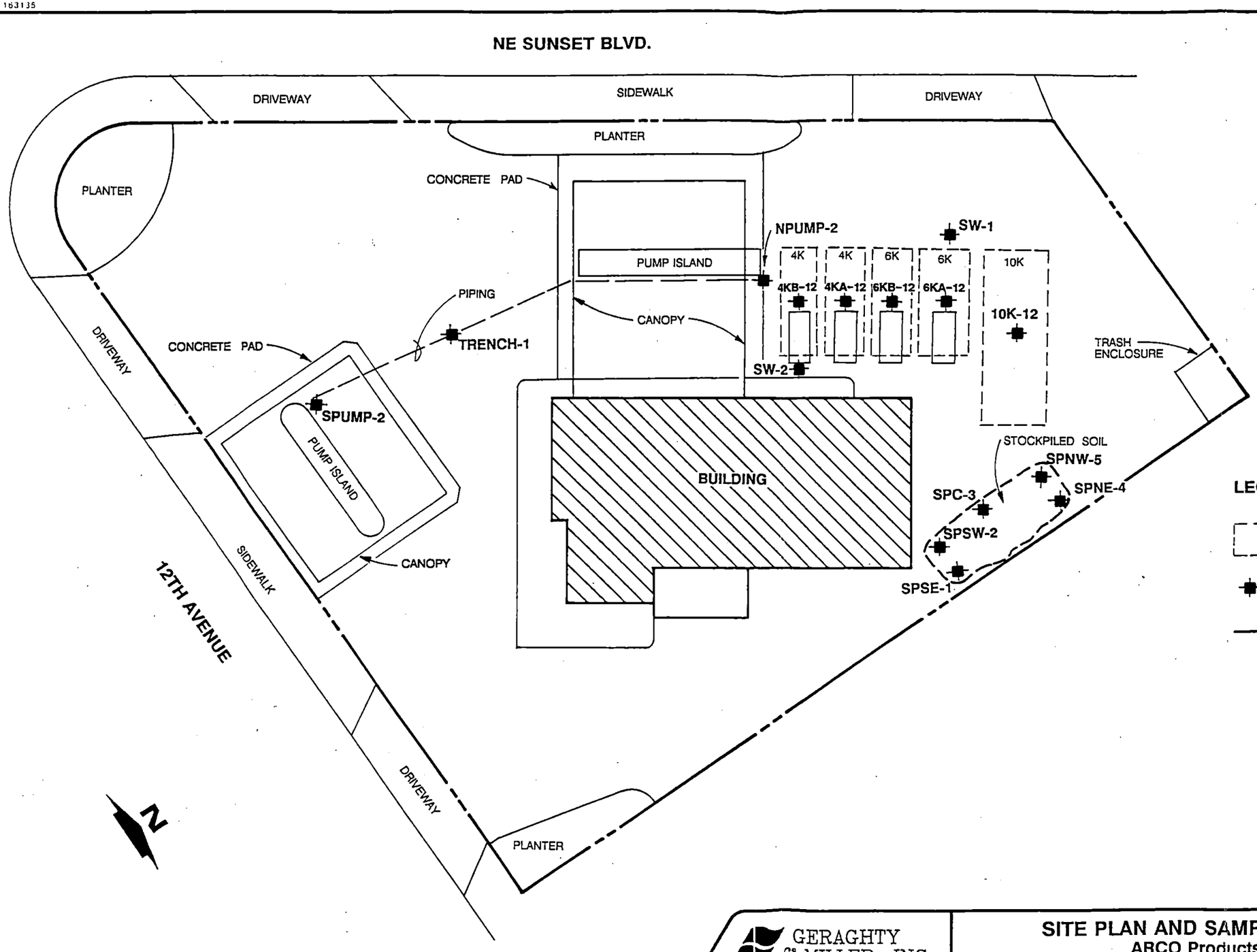
DRAWING: | FILE NO.: | PRJCT NO.: WA152.1A | DWG DATE: JULY 1991



LEGEND

- 10K — Approximate Tank Location and Tank Capacity In Gallons
- 10K-12 — Soil Sample Location and Identification
- Property Boundary

GERAGHTY & MILLER, INC.
Environmental Services

SITE PLAN AND SAMPLE LOCATION MAP

ARCO Products Company
Service Station #4400
3123 NE Sunset Boulevard
Renton, Washington

FIGURE
2

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH & SAFETY PLAN
FOR
HYDROCARBON ASSESSMENT

Prepared for:

Prepared by:
GERAGHTY & MILLER, INC.
Environmental Services

PROJECT NUMBER: WA152.1A

PROJECT NAME: ARCO 4400 UST REMOVAL

SITE DESCRIPTION

Date(s) of Activity: JUNE 10-14, 1991

Location of Activity: 3123 NE SUNSET BLVD., RENTON, WASHINGTON

Media Affected by Contamination:
Sediment___ Soil X Air X Surface Water___ Ground Water___

Topography:
Flat X Sloped___ Percentage Grade___%

Site Accessibility:
Major Highway___ Two-Lane Road X Dirt Road___

PROJECT DESCRIPTION

Sampling
- Ground Water ___
- Air ___
- Soil X
- Sediment ___
- Surface Water ___

Geophysical
- Investigation ___
- Air Monitoring ___
- Site Visit ___
- Drilling ___
- Surveying ___
- Well Installation ___

TELEPHONE NUMBERS

CLIENT CONTACT: ROY THUN 213-486-1293

PRIME CONTRACTOR: Geraghty & Miller, Inc. 206-869-6321

G&M HEALTH & SAFETY COORDINATOR: ANNELIESE RIPLEY 206-869-6321

ON-SITE HEALTH & SAFETY COORDINATOR: JIM STRUTHERS 206-869-6321

PHYSICAL HAZARDS:

	YES	NO
Overhead Power Lines	X	—
Buried Conduits	X	—
Uneven Ground	—	X
Slippery Conditions	X	—
Rain	—	X
Intense Light	—	X
Pinch Points on Rig	X	—
Traffic	X	—
Waterways	—	X
Insects	—	X
Ice	—	X
High Temperatures	—	X
Low Temperatures	—	X
Explosive Conditions	X	—
Trenches	X	—
_____	—	—

CHEMICAL HAZARDS:

COMPONENT	LOCATION	MEDIA	PEL/TLV TWA*	STEL**
Gasoline	All site	S,W,A	330 ppm	500 ppm
Benzene	All site	S,W,A	1 ppm	5 ppm
Toluene	All site	S,W,A	100 ppm	150 ppm
Xylene	All site	S,W,A	100 ppm	150 ppm
Ethylbenzene	All site	S,W,A	100 ppm	125 ppm

S = soil
W = water
A = air

* Values from the American Conference of Governmental Industrial Hygienists (TLV) or the Occupational Safety and Health Administration (PEL) whichever is most stringent. The Threshold Limit Value (TLV) is the time-weighted average (TWA) concentration for a forty-hour work week, to which all workers may be repeatedly exposed without adverse effect. The PEL is the OSHA permissible exposure limit, and is also a TWA.

** The Short-Term Exposure Limit (STEL) is the concentration at which workers can be continuously exposed for a short period of time. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than four times in an eight-hour period. There should be at least one hour between each 15 minute exposure at the STEL.

REQUIRED HEALTH AND SAFETY PROCEDURES: There is a potential for exposure to fire, explosion, heavy equipment, public vehicular traffic, and hydrocarbons at this site, due to the nature of the work. Appropriate personal protective equipment will be worn by all site workers at all times. Underground utility lines will be identified and marked prior to drilling or excavating. Heavy equipment will only be operated by authorized and qualified persons. A safe distance, as determined by the on-site safety coordinator, will be maintained between the work area and public areas. Barricades and/or flagging will be used to isolate workers from public vehicular traffic.

No smoking will be allowed on site except in designated areas. Explosion proof or intrinsically safe equipment must be used in potentially explosive areas. At least two 10-pound class ABC fire extinguishers and one first-aid kit will be placed in a safe area just outside the work zone. Access to the work area will be restricted to personnel trained in accordance with OSHA 29 CFR 1910.120.

REQUIRED PERSONAL PROTECTIVE EQUIPMENT: The following protective equipment is required for site workers engaged in well installation, sampling, testing and associated activities:

1. Hard hat
2. Safety glasses
3. Protective nitrile gloves worn over surgical gloves (when sampling)
4. Boots (steel toes preferred)
5. Sleeved shirts and pants, or coveralls. Tyvek™, poly-coated Tyvek™, or equivalent disposable coveralls will be worn when skin exposure to fluids or contaminated materials is likely.
6. Air-purifying respirator (APR) with organic vapor cartridges (see below for guidelines).
7. Hearing protection (optional)

AIR MONITORING:

Methods and Action Levels: Prior to beginning field activities, up-wind monitoring will be conducted to determine a baseline (ambient) air quality value. A flame ionization detector (FID) or a (PID) will be used to take air monitoring readings in the breathing zone when drilling, sampling, or hydrologic testing is being performed. When breathing zone readings indicate that a workers is being exposed to a sustained level (more than 5 minutes duration) of 5 ppm (the STEL for benzene) above the ambient air level, benzene detector tubes will be used to determine if benzene is present at concentrations greater than 5 ppm. If not, work will proceed with benzene detector tubes used every half hour to ensure that benzene levels do not exceed 5 ppm. Workers may work up to levels of 100 ppm (the action levels for toluene, xylene, and ethylbenzene) before donning air-purifying respirators (APR's) equipped with organic vapor cartridges if benzene is not present. If benzene is present at concentrations that exceed 5 ppm, APR's with organic vapor cartridges will be donned by all workers in the work area. At sustained levels of 50 ppm benzene, personnel will exit the work area until benzene levels decrease.

An explosimeter will be used to determine the percentage of the lower explosive limit (LEL) that has been attained at the site. Whenever 20% of the LEL is attained, operations will cease until levels decrease.

Frequency: The FID or PID readings will be taken in the breathing zone and at the borehole at least every half hour. Ambient readings will be taken once per day. Daily or more frequent readings will

also be recorded near emission sources (rig exhaust, pump discharge, etc.). The explosimeter will be used to take readings every half hour. Monitoring frequencies as listed are minimum intervals. More frequent readings may be taken at the discretion of any site worker.

Recordkeeping: All readings will be recorded in the appropriate Daily Log Book for the project. Daily calibrations of all monitoring instruments will also be documented.

CONTINGENCY PLANS: If the vapor levels in the general work area are found to meet or exceed any of the action levels, then work will be discontinued and the work site evacuated as directed by the G&M Site Safety Coordinator. The work area periphery will be monitored by the site safety coordinator and work will resume when the vapor levels drop below the action level. If vapor levels continue to meet or exceed action levels, work will cease and the work location will be secured and evacuated. Work shall not continue until the HASP is appropriately revised to meet the new conditions.

Should persistent safety hazards, accident, or fire occur, appropriate immediate action will be taken (e.g., extinguishing the fire, administering first-aid or CPR). Emergency personnel will first be notified, followed by the G&M Health and Safety Coordinator.

HEAT STRESS MONITORING: At anytime that the ambient temperature exceeds 95°, or at the discretion of the G&M Site Safety Coordinator, heat stress monitoring will be conducted. If not air conditioned facilities or shaded areas are located nearby, temperature and pulse will be recorded in the Health & Safety Log Book. Rest periods will be determined by the Site Safety Coordinator. A supply of cold liquids will be kept on-site.

DECONTAMINATION PROCEDURES: G&M personnel will be responsible for decontaminating any sampling or personal protective equipment, such as respirators, outside of the work area. Care will be taken to ensure that contaminated materials are not released to clean areas.

EMERGENCY CONTACTS AND PROCEDURES: Skin or eye contact with hydrocarbons should be immediately treated by washing the contacted area with soap and water and providing appropriate medical attention, if necessary. Should any situation or unplanned occurrence require outside or support services, the appropriate contact from the following list should be made.

Agency	Telephone Number	
	General	Emergency
FIRE AND RESCUE:		911
POLICE:	235-2600	911
HOSPITAL:	228-3450	228-3450

UNDERGROUND UTILITIES: UTILITY CHECK 800-424-5555

G&M HEALTH & SAFETY COORDINATOR: ANNELIESE RIPLEY

ROUTE TO HOSPITAL: (Verbal and Map)

TO VALLEY GENERAL HOSPITAL FROM SITE:
GO SOUTH ON SUNSET BOULEVARD APPROXIMATELY 3 MILES TO I-405
TAKE I-405 SOUTH APPROXIMATELY 4 MILES TO KENT-AUBURN RT. 1
EXIT: TAKE RT. 167 SOUTH APPROXIMATELY 3 MILES TO E. VALLEY
ROAD EXIT. FOLLOW SIGNS. HOSPITAL IS JUST EAST OF RT. 167

MEDICAL SURVEILLANCE AND TRAINING: All G&M personnel are covered by corporate medical surveillance and training programs that comply with the OSHA 29 CFR 1910.120 and Geraghty & Miller policy requirements. The client and all subcontractors are responsible for the training and medical surveillance of their own personnel.

SPECIAL PROCEDURES AND PRECAUTIONS: The HASP is a dynamic document and will be updated as conditions change. It is designed to protect G&M personnel. This HASP does not provide override, but may be considered a supplement to a more stringent HASP prepared by the client. Subcontractors are required to submit to the G&M project manager a HASP applicable to their prescribed activities.

SIGNED:

G&M PROJECT MANAGER

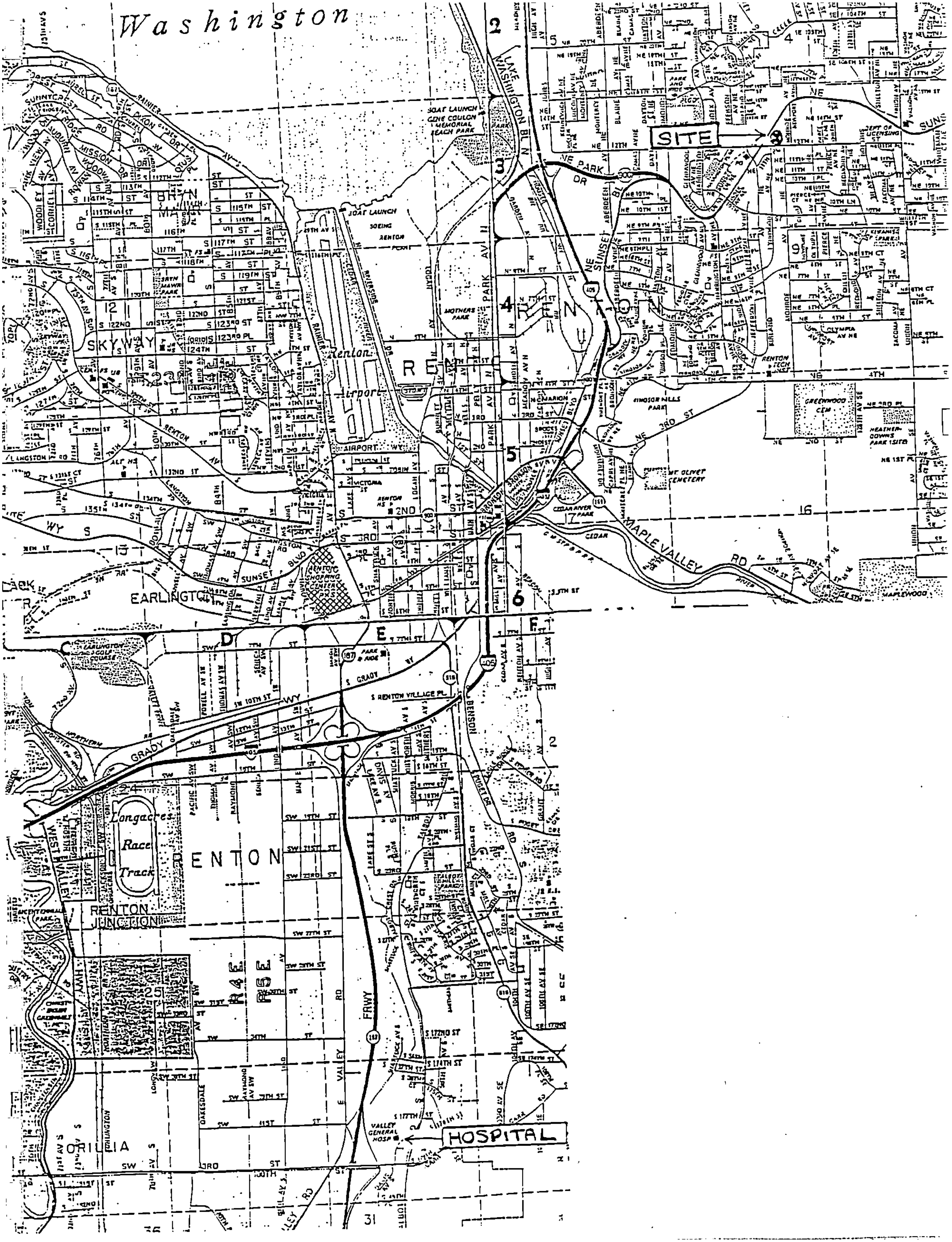
Don Valdez — June 10, 1991
Date

G&M OFFICE SAFETY MANAGER

Caroline A Ripley — June 10, 1991
Date

G&M ON-SITE SAFETY COORDINATOR

Colin Mayor — June 10, 1991
Date


Washington
SITE
HOSPITAL
VALLEY GENERAL HOSP
LAKE WASHINGTON BL N
BOAT LAUNCH GENE COULON MEMORIAL BEACH PARK
NE PARK DR
SUNSET BL
PARK AV N
Renton Airport
BOEING RENTON PLANT
MOTHERS PARK
SKYWAY
BRYN MAWR
SUNNYCREST
EARLINGTON
EARLINGTON GOLF COURSE
RENTON SHOPPING CENTER
AIRPORT WY
MAPLE VALLEY RD
CEDAR RIVER PARK
MT OLIVET CEMETERY
GREENWOOD CEM
WINDSOR HILLS PARK
RENTON TECH INST
GRADY WY
Longacres Race Track
RENTON
RENTON JUNCTION
WEST VALLEY HWY
FRWY
ORILLIA

APPENDIX B

UST CLOSURE PLAN

GERAGHTY
& MILLER, INC.
Environmental Services

Ground Water *Engineering* *Hydrocarbon* *Remediation* *Education*

June 4, 1991

Ms. Mary Savela
Planning Department
City of Renton
200 Mill Avenue South
Renton, Washington 98055

RE: UST Closure Plan, ARCO Service Station No. 4400
3123 NE Sunset Boulevard, Renton, Washington, Project No. WA1521A

Dear Ms. Savela:

Enclosed please find a UST Closure Plan prepared on behalf of ARCO Products Company in connection with tank removal activities at the above-referenced site. We are submitting this plan to comply with mitigation measures specified in the Determination of Non-Significance issued by the City on April 11, 1991 and to comply with the City's Underground Storage Tank Secondary Containment Ordinance (Chapter 2, Title VII of Ordinance No. 4260).

Described in the plan are general procedures that will be implemented by Geraghty & Miller and ARCO's tank removal contractor relating to health and safety, mitigation of construction-related impacts, tank decommissioning, and soil sampling. This plan also addresses preliminary plans for soil remediation if impacted soils are excavated during tank removal.

Tank removal activities are scheduled to commence on Monday, June 10, 1991. If you have any comments or questions regarding the enclosed, please contact the undersigned before that date.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Dion Valdez
Environmental Scientist/
Project Manager

Susan J. Keith
Project Scientist and Associate/
Project Officer

DV:slp
CC: Roy Thun, ARCO Products Company
Jim R. Robertson, City of Renton Fire Prevention Bureau

048ARC32:USTCLOS.LTR

14655 Bel-Red Road, Suite 202 • Bellevue, Washington 98007 • (206) 644-7226 • FAX (206) 644-7223

UST SYSTEM CLOSURE PLAN
ARCO SERVICE STATION #4400
3123 NE SUNSET BOULEVARD, RENTON, WASHINGTON

INTRODUCTION

This plan is submitted on behalf of ARCO Products Company in compliance with requirements of the City of Renton Determination of Non-significance Mitigation Measures issued on April 11, 1991 regarding removal of underground storage tanks (USTs) at the above-referenced site. This plan is also intended to comply with closure requirements specified in the City of Renton Underground Storage Tank Secondary Containment Ordinance. The procedures described below will be implemented during UST removal activities to ensure the health and safety of on-site workers and the public, determine whether a release has occurred, and initiate remediation of contaminated soils, if encountered.

HEALTH AND SAFETY

Health and safety procedures are specified in a health and safety plan prepared for this project. The health and safety plan specifies that certain safety equipment will be on-site, including at least two Class ABC fire extinguishers.

Air quality monitoring will be conducted at specified intervals during tank removal activities using a photoionization detector (PID), oxygen meter, and explosimeter. Action levels for each instrument are specified in the health and safety plan. If an instrument indicates that an action level has been reached or exceeded, specific health and safety actions will be taken including compound-specific air sampling, donning of respirators, ceasing operations, or evacuating the work zone, as appropriate.

A 6-foot high chain link fence has been placed around the site perimeter to restrict access and provide for public safety during tank removal activities and during soil remediation activities, if any.

MITIGATION OF CONSTRUCTION-RELATED IMPACTS

The following measures will be implemented in order to mitigate construction-related impacts:

- Stockpiled soils will be placed on and covered with geotextile material and straw bales will be placed around soils stockpiles to control erosion.

- A light water spray will be used periodically to reduce dust from disturbed soils, if necessary.

- Loading of trucks will begin no earlier than 8:30 a.m. and will end no later than 3:30 p.m.

- Catch basins will be covered with typar and straw bales will be placed around each catch basin to prevent entry of sediment.

TANK DECOMMISSIONING

- All tank contents and tank rinsing materials will be removed and handled in an environmentally safe manner and properly disposed of through the services of an environmental and hazardous waste services company.

- Tanks will be purged of potentially flammable vapors using dry ice and will be tested with an explosimeter to confirm non-explosive conditions prior to tank excavation.

- Following removal, tanks will be destroyed and scrapped. A letter will be provided to the City of Renton Fire Department by the tank removal contractor documenting the date and location of destruction and delivery of scrap.

SOILS TESTING

Soil samples will be collected in accordance with Washington Department of Ecology (Ecology) Guidance for Site Checks and Site Assessments for Underground Storage Tanks (Ecology 1991). At a minimum, soil samples will be collected from the locations indicated below:

- One sample from beneath each tank (5 samples)
- Two samples from the sidewalls of the excavation (2 samples)
- One sample from each dispensing island where the piping enters the island (2 samples)
- One sample from below the piping system for every 50 linear feet of piping (2 samples)
- Five samples from excavated soils to be stockpiled on-site (5 samples)

Samples will be analyzed for the following gasoline constituents: benzene, toluene ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); and total lead.

SOIL REMEDIATION

A detailed soil remediation plan will be developed based on data collected during tank removal activities, including sampling and analysis of soils. Described below are the general remedial actions that are anticipated at this time, based on existing data and experience at this site. If impacted soils are encountered during tank removal activities, the following procedures will be implemented to isolate impacted soils and initiate soil remediation. These procedures may be revised as necessary according to conditions encountered, and any significant revisions will be submitted to the City of Renton.

Potentially impacted soils will be identified during UST removal by field analysis using the PID and will be segregated from non-impacted soils excavated from the UST pit. Potentially impacted soils will be stockpiled on-site on geotextile material and with a geotextile cover to prevent exposure to air and precipitation. The anticipated method of remediation is venting, possibly with biological enhancement. Remediation activities will be conducted in accordance with applicable regulations and permits.

A site assessment will be conducted, if necessary, to fully delineate the extent of impacted soils, if any, that are not excavated during UST removal.

APPENDIX C

UNDERGROUND STORAGE TANK SITE CHECK/ SITE ASSESSMENT CHECKLIST

UNDERGROUND STORAGE TANK
Site Check/Site Assessment Checklist

The purpose of this form is to certify the proper investigation of an UST site for the presence of a release. These activities shall be conducted in accordance with Chapter 173.360 WAC. A description of the various situations requiring a site check or site assessment is provided in the guidance document for UST site checks and site assessments.

This Site Check/Site Assessment Checklist shall be completed and signed by a person registered with the Department of Ecology to perform site assessments.

Two copies of the results of the site check or site assessment should be included with this checklist according to the reporting requirements in the guidance document for UST site checks and site assessments.

For further information about completing this form, please contact the Department of Ecology UST Program.

The completed checklist should be mailed to the following address:

Underground Storage Tank Section
Department of Ecology
Mail Stop PV-11
Olympia, WA 98504-8711

1. UST SYSTEM OWNER AND LOCATION

UST Owner/Operator: ARCO Products Company

Owners Address: 1055 West Seventh Street (Street) P.O. Box

Los Angeles (City) CA (State) 90051-0570 (ZIP-Code)

Telephone: (213) 486-1293

Site ID Number (on invoice or available from Ecology if tank is registered): 008764

Site/Business Name: ARCO Service Station 4400

Site Address: 3123 NE Sunset Boulevard (Street) King (County)

Renton (City) WA (State) 98055 (ZIP-Code)

2. SITE CHECK/SITE ASSESSMENT CONDUCTED BY:

Registered Person: Colin Wagoner c/o Geraghty & Miller, Inc.

Address: 8330 154th Avenue NE (Street) P.O. Box

Redmond (City) WA (State) 98052 (ZIP-Code)

Telephone: (206) 869-6321

3. TANK INFORMATION

1. Tank ID Number (as registered with Ecology): see attached list 2. Year installed: _____

3. Tank capacity in gallons: _____ 4. Last substance stored: _____

4. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

_____ Investigate suspected release due to on-site environmental contamination

_____ Investigate suspected release due to off-site environmental contamination

_____ Extend temporary closure of UST system for more than 12 months

_____ UST system undergoing change-in-service

_____ UST system permanently closed-in-place

X UST system permanently closed with tank removed

_____ Required by Ecology or delegated agency for UST system closed before December 22, 1988

_____ Other (describe): _____

5. CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

	Yes	No
1. Has the site check/site assessment been conducted according to applicable procedures specified in the UST site check/site assessment guidance issued by the Department of Ecology?	CW	
2. Has a release from the UST system been confirmed? *NOTE: Owners/operators must report all confirmed releases to the Department of Ecology or delegated agency within 24 hours.*	CW	
3. Are the results of the site check/site assessment enclosed with this checklist? *NOTE: Two copies of the site check/site assessment results must be submitted to the Department of Ecology according to the reporting requirements specified in the UST site check/site assessment guidance.*	CW	

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

August 1, 1991
Date

Signature of Person Registered with Ecology

6. OWNER'S SIGNATURE

8-16-91
Date

Signature of Tank Owner or Authorized Representative

TANK INFORMATION

ARCO SERVICE STATION NO. 4400
3123 NE SUNSET BOULEVARD
RENTON, WASHINGTON

Tank ID	Year Installed	Tank Capacity (Gallons)	Last Substance Stored
1	1973	6,000	Leaded gasoline
2	1978	10,000	Leaded gasoline
3	1972	4,000	Leaded gasoline
4	1973	4,000	Leaded gasoline
5	1973	6,000	Leaded gasoline

Note: Tank ID numbers, year installed, and last substance stored are listed as registered with Ecology and reported in the Washington UST list dated January 31, 1991. Other information is listed as determined during UST closure.

G:\4400\TANKINFO.TBL

APPENDIX D

LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

Columbia Analytical Services inc.

June 25, 1991

Dion Valdez
Geraghty and Miller, Inc.
14655 Bel-Red Road
Bellevue, WA 98007

Re: **ARCO #4400 - Renton Project**

Dear Dion:

Enclosed are the results of the rush samples submitted to our lab on June 12, 1991. Preliminary results were telephoned on June 12, 1991 for BTEX and TPH-G. For your reference, our service request number for this work is B913184.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin Elliott

Colin B. Elliott
Senior Project Chemist

CBE/das

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/12/91
Project:	ARCO #4400 - Renton	**Date Analyzed:**	06/18/91
Sample Matrix:	Soil	**Work Order #:**	B913184

Total Lead
EPA Method 7420
mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
10K-12	K3184-1	3	3
6KA-12	K3184-2	3	16
SW-1	K3184-3	3	ND
6KB-12	K3184-4	3	39
Method Blank	K3184-MB	3	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 6/25/91

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/12/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/12/91
Sample Matrix:	Soil	**Work Order #:**	B913184

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		10K-12	6KA-12	SW-1
Lab Code:		B3184-1	B3184-2	B3184-3
Date Analyzed:		06/12/91	06/12/91	06/12/91
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 6/25/91

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/12/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/12/91
Sample Matrix:	Soil	**Work Order #:**	B913184

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		6KB-12	Method Blank
Lab Code:		B3184-4	B3184-MB
Date Analyzed:		06/12/91	06/12/91
Analyte	**MRL**		
Benzene	0.05	ND	ND
Toluene	0.1	ND	ND
Ethylbenzene	0.1	ND	ND
Total Xylenes	0.1	ND	ND
TPH as Gasoline	5	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 6/25/91

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1C

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/12/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/12/91
Sample Matrix:	Soil	**Date Analyzed:**	06/12/91
		Work Order #:	B913184

QA/QC Report
Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
10K-12	B3184-1	104
6KA-12	B3184-2	80.8
SW-1	B3184-3	94.0
6KB-12	B3184-4	101
Method Blank	B3184-MB	87.4
	CAS Acceptance Criteria	50-130

TPH Total Petroleum Hydrocarbons

Approved by Ann Elliott Date 6/25/91

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No.

Chain of Custody

ARCO Facility no. 4460 | City (Facility) RENTON, WA | Project manager (Consultant) DION VALDEZ | Laboratory name Columbia

ARCO engineer Roy Thun | Telephone no. (ARCO) (213) 486-1293 | Telephone no. (Consultant) (206) 869-6321 | Fax no. (Consultant) (206) 869-6369 | Contract number

Consultant name Geraghty & Miller Inc | Address (Consultant) 8330 154th Ave NE Redmond 98052

Method of shipment: Courier

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☒ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☒		
DK-12			X			X		6/11/91	1:20	X		X								X		
6KA-12			X			X		6/11/91	2:40	X		X								X		
SW-1			X			X		6/11/91	3:40	X		X								X		
6KB-12			X			X		6/11/91	3:50	X		X								X		

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number: 891-3184

Turnaround time
Priority Rush 1 Business Day: BTEX + TPH-G ☒
Rush 2 Business Days ☐
Expedited 5 Business Days ☐
Standard 10 Business Days: Lead ☒

Condition of sample:

Temperature received:

Relinquished by sampler: D. Valdez	Date 6/12/91	Time 9 am	Received by: Stan Spurgeon	1120	6-12-91
Relinquished by: Stan Spurgeon	Date 6/12/91	Time 1200	Received by		
Relinquished by	Date	Time	Received by laboratory: Lance Jaslin	Date 6/14/91	Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

Columbia Analytical Services inc.

June 26, 1991

Dion Valdez
Geraghty and Miller, Inc.
14655 Bel-Red Road
Bellevue, WA 98007

Re: **ARCO #4400 - Renton/Task Order #4400-91-1**

Dear Dion:

Enclosed are the results of the samples submitted to our lab on June 13, 1991. For your reference, our service request number for this work is B913231.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin Elliott

Colin B. Elliott
Senior Project Chemist

CBE/so

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone: 206/577-7222 • Fax: 206/636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/13/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/13/91
Sample Matrix:	Soil	**Work Order #:**	B913231

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		4KA-12	SW-2	Trench-1
Lab Code:		B3231-1	B3231-2	B3231-3
Date Analyzed:		06/13/91	06/13/91	06/13/91
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	0.5	ND	ND
TPH as Gasoline	5	*193	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* The mixture detected is believed to be mineral spirits.

Approved by Colin Elliott Date 6/26/91

00001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/13/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/13/91
Sample Matrix:	Soil	**Work Order #:**	B913231

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		4KB-12	N Pump-2	S Pump-2
Lab Code:		B3231-4	B3231-5	B3231-6
Date Analyzed:		06/13/91	06/13/91	06/13/91
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	21.5	ND	ND
TPH as Gasoline	5	*1,480	*7	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* The mixture detected is believed to be mineral spirits.

Approved by Colin Elliott Date 6/26/91

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/13/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/13/91
Sample Matrix:	Soil	**Work Order #:**	B913231

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		SPSE-1	SPSW-2	SPC-3
Lab Code:		B3231-7	B3231-8	B3231-9
Date Analyzed:		06/13/91	06/13/91	06/13/91
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	0.2	ND
TPH as Gasoline	5	ND	10	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 6/26/91

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geraghty and Miller, Inc.
Project: ARCO #4400 - Renton
Sample Matrix: Soil

Date Received: 06/13/91
Date Extracted: 06/13/91
Work Order #: B913231

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		SPNE-4	SPNW-5	Method Blank
Lab Code:		B3231-10	B3231-11	B3231-MB
Date Analyzed:		06/13/91	06/13/91	06/13/91
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 6/26/91

00004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/13/91
Project:	ARCO #4400 - Renton	**Date Analyzed:**	06/18/91
Sample Matrix:	Soil	**Work Order #:**	B913231

Total Lead
EPA Method 7420
mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
4KA-12	K3231-1	3	ND
SW-2	K3231-2	3	9
Trench-1	K3231-3	3	ND
4KB-12	K3231-4	3	40
N Pump-2	K3231-5	3	9
S Pump-2	K3231-6	3	13
Method Blank	K3231-MB	3	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by John Elliott Date 6/26/91

00005

APPENDIX A

LABORATORY QC RESULTS

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COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geraghty and Miller, Inc.	**Date Received:**	06/13/91
Project:	ARCO #4400 - Renton	**Date Extracted:**	06/13/91
Sample Matrix:	Soil	**Date Analyzed:**	06/13/91
		Work Order #:	B913231

QA/QC Report
Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Modified 8015

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
4KA-12	B3231-1	110
SW-2	B3231-2	121
Trench-1	B3231-3	120
4KAB-12	B3231-4	*149
N Pump-2	B3231-5	117
S Pump-2	B3231-6	113
SPSE-1	B3231-7	110
SPSW-1	B3231-8	115
SPC-3	B3231-9	114
SPNE-4	B3231-10	111
SPNW-5	B3231-11	115
SPNW-5	B3231-11MS	116
SPNW-5	B3231-11DMS	116
Method Blank	B3231-MB	90.2
	CAS Acceptance Criteria	50-130

TPH Total Petroleum Hydrocarbons
* Outside acceptance limits because of matrix interferences. The gas chromatogram showed non-target components that interfered with the analyses. The sample was not reanalyzed.

Approved by Glenn Elliott Date 6/26/91

00007

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geraghty and Miller, Inc.
Project: ARCO #4400 - Renton
Sample Matrix: Soil

Date Received: 06/13/91
Date Extracted: 06/13/91
Date Analyzed: 06/13/91
Work Order #: B913231

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary
BTEX
EPA Methods 5030/8020
mg/Kg (ppm)
Dry Weight Basis

Sample Name: SPNW-5
Lab Code: B3231-11

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria	Relative Percent Difference
Benzene	0.86	0.84	ND	0.72	0.73	83.7	86.9	39-150	3.8
Toluene	0.86	0.84	ND	0.75	0.78	87.2	92.9	46-148	6.3
Ethylbenzene	0.86	0.84	ND	0.76	0.78	88.4	92.9	32-160	5.0

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 6/26/91

00008

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geraghty and Miller, Inc.
Project: ARCO #4400 - Renton
Sample Matrix: Soil

Date Received: 06/13/91
Date Analyzed: 06/18/91
Work Order #: B913231

QA/QC Report
Duplicate Summary
Total Lead
EPA Method 7420
mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
4KA-12	K3231-1	3	ND	ND	ND	--

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 6/26/91

00009

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geraghty and Miller, Inc.
Project: ARCO #4400 - Renton
Sample Matrix: Soil

Date Received: 06/13/91
Date Analyzed: 06/18/91
Work Order #: B913231

QA/QC Report
Matrix Spike Summary
Total Lead
EPA Method 7420
mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
4KA-12	K3231-1	3	56	ND	54	96	75-125

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 6/26/91

00010

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 4400-91-1

ARCO Facility no. 44xx	City (Facility) Renton WA	Project manager (Consultant) Dion Valdez	Laboratory name Columbia
ARCO engineer Ray Thun	Telephone no. (ARCO)	Telephone no. (Consultant) 867-6321	Fax no. (Consultant) 867-6363
Consultant name Geraghty & Miller	Address (Consultant)		Contract number

Method of shipment: Courier

Special detection Limit/reporting

Special QA/QC

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☒ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☒
4KH-12			X			X		6/12/91	9:10AM	X		X								X
SW-2			X			X		6/12/91	9:40AM	X		X								X
Trench-1			X			X		6/12/91	10:20AM	X		X								X
4KG 12			X			X		6/12/91	10:30	X		X								X
NPump-2			X			X		6/12/91	10:45	X		X								X
SPump-2			X			X		6/12/91	10 55	X		X								X
SPSE-1	*		X			X		6/12/91	12 1	X		X								
SPSW-2	*		X			X			12 52	X		X								
SPC-3	*		X			X			1 05	X		X								
SPNE-4			X			X			1 10	X		X								
SPNW-5			X			X			1 15	X		X								

Remarks: * Rush BTEX/TPH 2 business days

Lab number: 91-3231

Turnaround time

Priority Rush 1 Business Day	☐
Rush 2 Business Days	☒
Expedited 5 Business Days	☐
Standard 10 Business Days	☐

Condition of sample:

Temperature received:

Relinquished by sampler: Colin Hagan	Date 6/13/91	Time 7:40AM	Received by: Alan Spurgeon
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Anne Yackey — Date 6/14/91 — Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

GERAGHTY
& MILLER, INC.
Environmental Services

Ground Water *Engineering* *Hydrocarbon* *Remediation* *Education*

September 4, 1991

Mr. Roy Thun
PAC-1293
ARCO Products Company
Post Office Box 2570
Los Angeles, California 90051-0570

RE: Site Assessment During Underground Storage Tank Removal
ARCO Service Station No. 4400, Renton, Washington
Project No. WA152.1A

Dear Roy:

We are pleased to submit the final report for the site assessment conducted during the removal of the underground storage tanks at ARCO Service Station No. 4400 located on the northeast corner of the intersection of Northeast 12th Street and Northeast Sunset Boulevard in Renton, Washington.

We appreciate the opportunity to work with ARCO Products Company and look forward to a continuing relationship. Please do not hesitate to contact us if we can be of further assistance.

Sincerely,

GERAGHTY & MILLER, INC.

Dion Valdez
Environmental Scientist/Project Manager

Kurt S. Anderson
Office Division Manager, Hydrocarbon Services

Susan J. Keith
Principal Scientist and Associate/ Project Officer

jta
Enclosure
cc: Joe Hickey, Washington Department of Ecology
UST Section, Washington Department of Ecology (2 copies)
Jim R. Robertson, Renton Fire Prevention Bureau
Mary Savela, City of Renton, Washington

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8330 154th Avenue N.E. • Redmond, Washington 98052-3864 • (206) 869-6321 • FAX (206) 869-6369