FINAL
REMEDIAL INVESTIGATION REPORT
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON

Contract No. C0089007

Document Control Number WZ4080.3.2

February 1992

Prepared By:

ECOLOGY AND ENVIRONMENT, INC.
999 3rd Avenue
Suite 1500
Seattle, Washington 98104

Prepared For:

WASHINGTON STATE DEPARTMENT OF ECOLOGY
Toxics Cleanup Program

ARDEN'S COUNTRY STORE
REMEDIAL INVESTIGATION REPORT
TABLE OF CONTENTS

TABLE OF CONTENTS - CONT.

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. INTRODUCTION

Ecology and Environment, Inc., (E & E) under Contract No. C0089007, Work Assignment No. 17, to the Washington State Department of Ecology (Ecology), performed a remedial investigation (RI) at the Arden's Country Store (Arden's) site, as defined in the Scope of Work and commensurate with some of the requirements (i.e., no risk assessment) of the Washington State Model Toxics Control Act (MTCA) Cleanup Regulation Chapter 173-340 WAC.

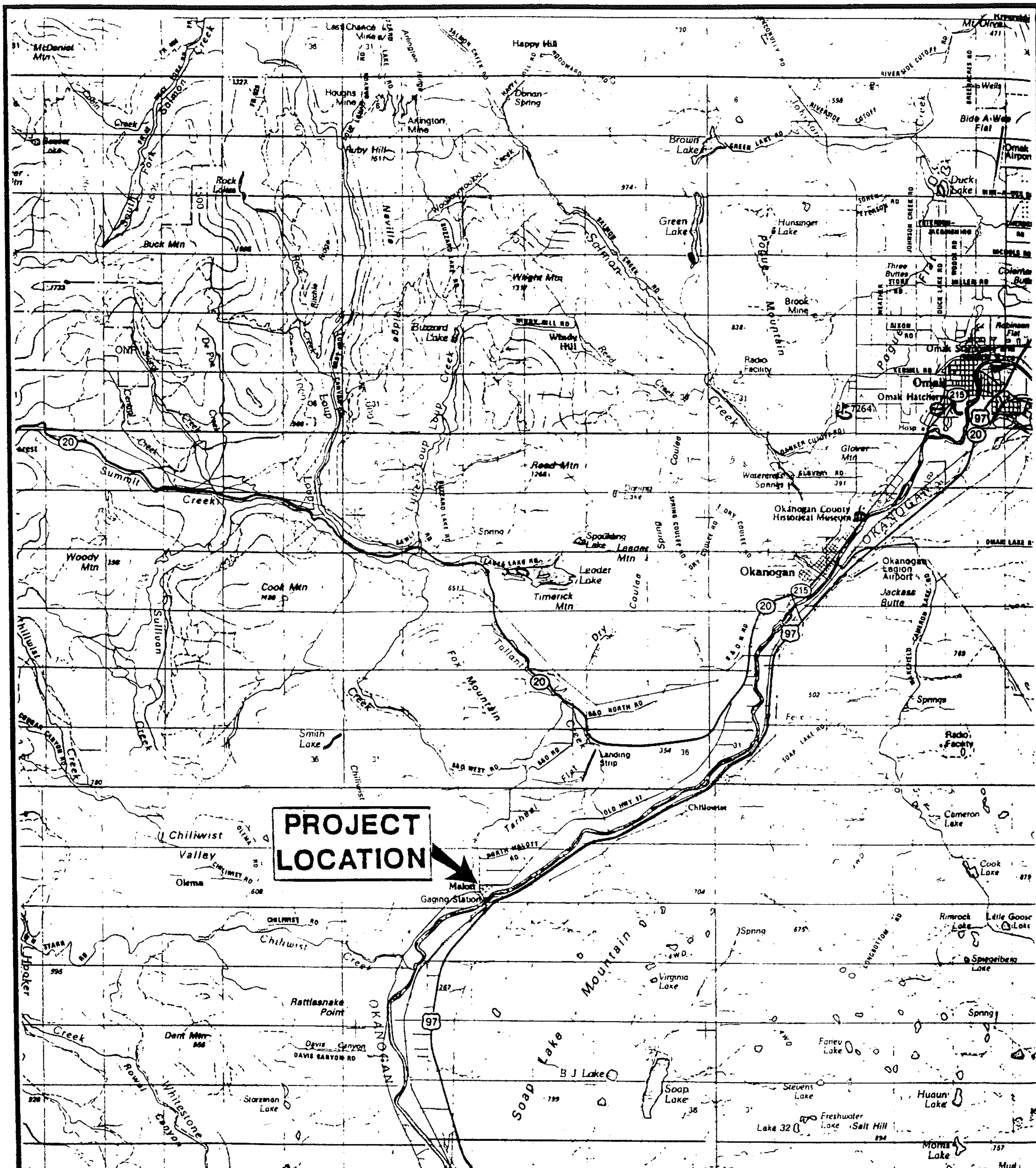
1.1 ENVIRONMENTAL CONCERNS

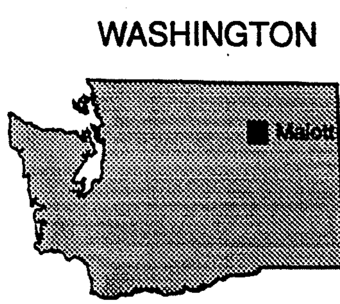
Under authority of MTCA, Ecology selected Arden's as a site requiring investigation due to the potential threat to human health and the environment caused by the release of gasoline/diesel petroleum compounds and solvents from leaking underground storage tanks (LUSTs). The release created an ancillary subterranean organic vapor plume which infiltrated the basement at the store and resulted in short-term evacuation for occupants.

The RI was performed to assess the condition of the site and to prepare for the evaluation of remedial action alternatives. RI data also can be utilized during remedial design and implementation of a remedial action to remove existing contaminants, and eliminate or minimize threats to human health and the environment.

1.2 SITE LOCATION AND DESCRIPTION

The Arden's study area is located in the Town of Malott, Okanogan County, Washington (Figure 1-1). Malott is a small farming community situated approximately 120 miles west-northwest of Spokane, Washington. The coordinates for the site are NW1/4 of SW1/4, section 9, Township 32 N., Range 25 E.





BASE MAP REFERENCE:
DeLorme Mapping Company
1988

SCALE 1:150,000

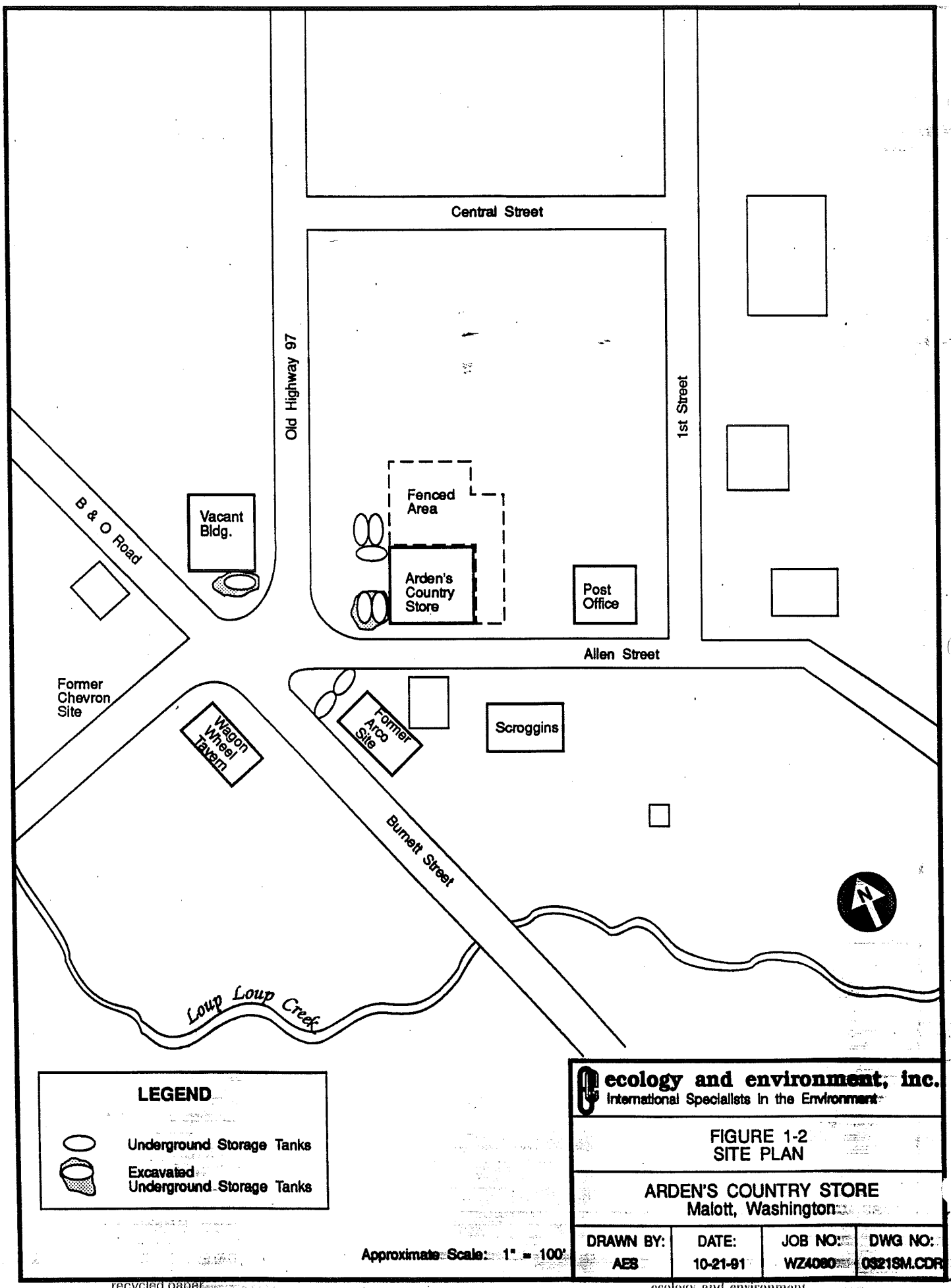
recycled paper

ecology and environment, inc.
International Specialists in the Environment

FIGURE 1-1
LOCATION MAP

ARDEN'S COUNTRY STORE
Malott, Washington

DRAWN BY:	DATE:	JOB NO:	DWG NO:
AES	10-20-91	WZ4080	0323LM.CDR


Central Street
Old Highway 97
1st Street
B & O Road
Vacant Bldg.
Fenced Area
Arden's Country Store
Post Office
Allen Street
Former Chevron Site
Wagon Wheel Tavern
Former Arco Site
Scroggins
Burnett Street
Loup Loup Creek
N
LEGEND
Underground Storage Tanks
Excavated Underground Storage Tanks
Approximate Scale: 1" = 100'
ecology and environment, inc.
International Specialists in the Environment
FIGURE 1-2
SITE PLAN
ARDEN'S COUNTRY STORE
Malott, Washington
DRAWN BY: AES
DATE: 10-21-91
JOB NO: WZ4060
DWG NO: 0321SM.CDR

The study area consists of several properties near the intersection of Old Highway 97, Allen Street, B & O Road and Burnett Street. A site plan is provided in Figure 1-2.

Four properties, situated adjacent to the intersection, have a total of eight suspected contamination sources. Potential contaminant sources investigated during the RI include the following areas:

Source Area 1: West end of the Arden's Country Store property where two underground storage tanks (USTs), were located formerly.

The two tanks were removed during a 1988 investigation conducted by the Okanogan Fire District 3, Ecology, and Olympus Environmental, Inc. to determine the source(s) of explosive vapors detected in the Arden's Country Store basement. Each of the tanks was estimated to have held a volume of approximately 550 gallons. The excavated tanks are referred to as the East Tank and the West Tank. The East tank is estimated to have been inactive for approximately 20 years; the West Tank was inactive for 4 years. The former contents of the tanks are unknown; however, a "solvent-type" odor was noted emanating from the East Tank by Ecology personnel (1988).

A quantity of approximately 3 gallons of product was pumped out of the East Tank prior to its removal. The product was stored in a 55-gallon drum on Arden Brazil's property. There were no visible holes in the East Tank upon its removal, and no water was detected in the tank prior to removal. The product was tested for EPA 602 compounds. Analytical results revealed constituents similar to gasoline, in addition to solvents.

Approximately 10 gallons of product, which was believed to be gasoline, was pumped out the West Tank and into a separate 55-gallon drum. No water was detected in the West Tank prior to its removal; however, a 1/8-inch diameter hole was observed approximately halfway up the south end of the tank upon its excavation and removal. During the site visit, Mr. Brazil stated that contents pumped from the East and West tanks were added to the other USTs on his property. Arden Brazil's property was previously owned by Pedro Carranza.

Source Area 2: North end of Mr. Brazil's property where three in-service USTs are located.

The USTs, described below, are used to dispense fuel for the store's gasoline pumps.

UST No.	Size (gal.)	Age (yrs.)	Contents
1	2,000	6-7	Unleaded Gasoline
2	4,000	6-7	Regular Gasoline
3	2,000	6-7	Super-Unleaded Gasoline

According to Ecology records, the three tanks were integrity tested by Appleland Pump and Equipment in March, 1988. The unleaded and super-unleaded tanks were determined to be tight. The tank containing regular gasoline was found to leak at a rate of 0.1138 gallon/hour.

Source Area 3: USTs located on the Allen Street side of the former Malott Garage property and former site of an Arco gasoline station.

The USTs are identified as T1 and T2 in Ecology files. Tank T1 was determined to contain 1.25 inches of water. No water was detected in tank T2. The locations of piping associated with the two tanks are unknown.

Source Area 4: La Esquina Pool Hall building area, former Malott Garage Arco station.

Previous refueling and automotive servicing activities at the Malott Garage complex may have contributed to groundwater contamination through floor drains or sumps.

According to telephone conversations between Dan Locke and Mr. Brazil on September 9, 1988, the leasee of the site used the property over several years for the repair of automobiles, and discharged solvents down a floor drain to a septic tank.

Source Area 5: Open dump south of the former Malott Garage property.

A dump site was operated on the south side of this property. Junked cars and refuse were dumped at the site.

Source Area 6: Former Chevron station site.

A Chevron station formerly operated at the parcel bound on the south by Old Highway 97 and on the east by B & O Road. The site owner(s), years of operation, practices, presence and/or location of tanks and piping, number of former tanks, and type of fuels dispensed are unknown. No physical evidence of the former Chevron station was discovered.

Source Area 7: Vacant building with abandoned UST.

This parcel of land is bound on the west by B & O Road and on the east by Old Highway 97. The property was owned by Mr. Scroggins, until it was transferred to a Mr. Serles.

An abandoned UST was located on the south end of the building. This tank is referred to by Olympus Environmental, Inc. as Tank T-3. According to Olympus, Tank T-3 has an approximate diameter of 40 inches, and has been inactive for approximately 20 years. According to Olympus Environmental, Inc., Tank T-3 contained 1.1 inch of water when tested with an oil/water finding paste. The UST was removed by Mr. Serles in June 1990. The former uses of the building are unknown.

Source Area 8: Scroggins Property.

Mr. Scroggins property, located on Allen Street, south of Arden's, was the former site of automotive and autobody repairs, and painting operations. During the site visit, Mr. Scroggins stated that excess paint and waste oil was discharged directly to the ground. Automotive repair/painting operations were discontinued approximately 4 years ago.

1.3 SITE HISTORY AND SUMMARY OF PREVIOUS INVESTIGATIONS

In March 1988, Ecology and the Okanogan Fire District No. 3 conducted an emergency response at Arden's Country Store to investigate and mitigate explosive vapors, with a solvent-type odor, in the Arden's Country Store basement. The emergency action involved:

- Removal of the vapors (measured at 75% of lower explosive level [LEL]) in the basement by ventilation;
- Sealing of a shallow dug well shaft located in the basement, which served as a conduit for the soil vapors and placement of a cap at the wellhead; and
- Removal of two abandoned USTs (Source Area 1) believed to be the sources of the vapors.

During removal of the tanks, stained, odorous, sandy soil was removed to a depth of approximately 10 feet below the pavement surface. The stained sandy soils overlie a clay layer which begins at approximately 10 feet below ground surface (bgs). The thickness of the clay layer is unknown. The stained soils were moist at a depth of approximately 8 feet (Olympus 1988).

Soil samples were collected on March 11, 1988, by Olympus Environmental, Inc., and analyzed for EPA 602 volatile aromatic compounds (VOCs). The chemical analyses indicated that soils in the area of the East Tank had high concentrations of toluene and xylenes. The highest contaminant concentrations were detected in the sample collected 4 feet below the north end of the East Tank: toluene (1,410 µg/kg); ethylbenzene (452 µg/kg); meta- and para-xylene (5,013 µg/kg); and orthoxylene (4,542 µg/kg). Benzene was not detected in the soil sample.

In addition to work performed at Arden's Country Store, Olympus Environmental, Inc. collected samples from the two abandoned USTs (Source Area 3) located across Allen Street from Arden's Country Store, and from an abandoned UST located across Old Highway 97 from Arden's (Source Area 7). It appeared that all of the tanks sampled had been used for gasoline storage.

On July 1, 1988, Ecology sent a notification letter to Mr. Brazil to inform him that he had been named as a potentially liable person

(PLP) for the soil and groundwater contamination discovered on his property during the emergency response and tank removal. The letter requested that Mr. Brazil submit a plan of action to conduct a RI and a feasibility study (FS) at the site.

Hart-Crowser was authorized by Mr. Price, legal counsel for Mr. Brazil, to collect a groundwater sample from the shallow dug well in the basement of Arden's Country Store. The well was sampled by Hart-Crowser on March 15, 1989, and the sample was shipped to Analytical Technologies in Renton, Washington (Tulo 1989). The groundwater sample was analyzed for EPA 602 compounds and exhibited concentrations of benzene (4,000 µg/L); ethylbenzene (70 µg/L); toluene (170 µg/L); meta- and para-xylene (280 µg/L); and ortho-xylene (41 µg/L).

Groundwater samples were collected from water supply wells on March 7, 1990 by Okanogan Health District staff, and analyzed for EPA 602 compounds by Laucks Testing Laboratories, Inc., in Seattle. The following contaminants were detected at the noted concentrations in the Arden's Country Store basement well water samples (Owens 1990).

Compound	Concentration (µg/L)	Standard Detection Limit (µg/L)
Benzene	8,600	1
Toluene	2,500	1
Ethylbenzene	200	1
Total Xylenes	2,300	1

These compounds were not detected in the other wells samples during this sampling round.

1.4 PURPOSE AND OBJECTIVE OF THE RI

Under MTCA, Ecology has the authority to perform an RI/FS to assure the collection, development, and evaluation of sufficient site information to enable the selection of appropriate cleanup actions that will assure the protection of human health and the environment. The scope of each RI/FS is dependent on the specific information needs of the

facility and cleanup action operations under study, but must be sufficient to enable the selection of a cleanup action as defined under WAC 173-340-360.

The following objectives for the RI at the Arden's site were identified:

- Determine the lateral extent of soil and groundwater contamination;
- Determine the concentrations of contaminants within residential wells used for drinking water;
- Characterize the vertical extent of soil contamination;
- Characterize soil lithological, stratigraphic conditions, and hydrogeologic characteristics;
- Characterize groundwater contamination in the upper and lower aquifer;
- Evaluate potential contaminant migration pathways;
- Compare contamination concentrations to drinking water standards and MTCA cleanup levels; and
- Collect baseline site data relevant to FS.

The specific activities designed to achieve the objectives were detailed in a RI Work Plan composed of a Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPjP), and Site Safety Plan (E & E 1991). The field sampling activities conducted for the RI included the chemical analysis of soil-gas, soil, and groundwater samples. The data were collected to define plume distribution and to provide baseline information appropriate to FS planning. Two field events consisting of the following field tasks were performed during the RI.

Field Event 1:	Utilities survey, terrain conductivity survey, soil-gas survey, and residential well sampling.
Field Event 2:	Installation of five monitoring wells within the upper aquifer, subsurface soil sample collection, groundwater sample collection and monitoring well survey.

A third field event, which involved investigating the lower aquifer and installing two deeper monitoring wells, was not performed per Ecology's direction based on the results of the residential well sampling. Further discussion of the field events will be provided in subsequent sections.

2. SITE FEATURES AND CONDITIONS

The significant Arden's site features and conditions considered during the RI were site geology, hydrology, physiography and drainage, water use, and land use.

2.1 SITE GEOLOGY AND HYDROLOGY

The site is located near the Okanogan River, and is situated within a valley with sediments of glaciofluvial, glaciolacustrine, and alluvial origin. The valley is situated between the North Cascade foothills in the west and the Okanogan Highlands in the east. Groundwater is found in a valley-fill aquifer system, which typically is comprised of interbedded and interfingered gravel, sand, silt, and clay units (Walters 1974).

Examination of local drillers logs indicates that two or more groundwater-bearing zones occur in the site vicinity. The upper groundwater bearing zone is encountered in local water wells at depths between 3 and 45 feet. This zone consists of sand and gravel layers (with shallow cobbles near the river) which are interfingered with clay-sandy clay. Static water levels in residential wells screened within the upper aquifer appear to be approximately equivalent to the depths at which the shallow groundwater was encountered during drilling.

The upper aquifer is underlain by a thick gray silty-clay which extends to depths of 80 to 128 feet bgs near the river, according to local residential well logs. Whether the gray silty clay layers are of the same unit has not been confirmed, but the silty clay layer encountered beneath the site may be a thinner interfingered unit within the upper aquifer. The thicker gray silty clay unit is a confining layer, or aquitard, which separates the upper aquifer from the underlying lower aquifer. The thicker gray silty clay observed in residential well logs

(Appendix A) appears to be thickest near the river (111 feet in Tverberg well) and decreases out to thickness of 70 feet in upland areas.

The lower aquifer, as described in residential well logs, consists of sand and gravel and appears to occur between depths of 80 and 160 feet bgs. Static water levels for wells screened in this zone typically occur at shallower depths than the depths at which groundwater was encountered during drilling. The static water levels in the lower aquifer suggest confined groundwater conditions.

Another thick clay unit, identified in residential well logs, extends between depths of 145 and 210 feet bgs. A water-bearing, silty gravel unit lies beneath this lower clay unit to a depth of 220 feet or greater.

2.2 SITE PHYSIOGRAPHY AND DRAINAGE

The site and surrounding areas lie at an approximate elevation of 820 feet mean sea level (msl) in the Okanogan River Valley. The site is situated on an alluvial terrace of the Okanogan River, approximately 0.15 miles northwest of the river. The Okanogan River is a major drainage which flows through the area in a southwestern direction and drains into the Columbia River at a point approximately 20 miles to the southwest. Loup Loup Creek, which drains a watershed in the North Cascade foothills, flows to the southwest of the site in a east-southeastern direction and discharges to the Okanogan River. Loup Loup Creek is an ephemeral stream, which is normally a dry creekbed during most of the season, except when sufficient precipitation recharges the watershed.

2.3 WATER USE

Public drinking water in the vicinity of the Arden's site is supplied by private water wells. The majority of the residential wells are installed within the upper aquifer. Of the residential wells sampled during the RI, only RW-1 (Arden Brazil/Post Office well) and RW-7 (Wagon Wheel Tavern well) were installed within the lower aquifer at depths greater than 100 feet bgs.

2.4 LAND USE

Malott is a small farming community primarily consisting of residential houses, small farms, and orchards.

3. RI ACTIVITIES AND RESULTS

The RI was organized into three field events. Field Event 1 consisted of the following tasks: utility survey, terrain conductivity survey, soil-gas survey, and residential well sampling. Field Event 2 consisted of the following tasks: drilling of five wells into the upper aquifer and collection of subsurface soil samples, total VOC headspace screening of soil samples, monitoring well installation and development, groundwater sampling, and static water level measurement. Field Event 3 which consisted of installing monitoring wells into the lower aquifer and groundwater sampling, was not performed due to the results of Field Event 1, as discussed in Section 3.3.

3.1 FIELD EVENT 1

Field Event 1 was performed from July 9 through July 12, 1991.

3.1.1 Underground Utility Survey

E & E provided location information to the Utilities Underground Location Center (UULC) prior to Field Event 1. The UULC contacted the affected utility companies to dispatch a locator to mark the locations of utility lines per the American Public Works Association Uniform Color Code. All underground utilities located were avoided during intrusive investigations such as the soil-gas survey and well drilling. The only utility location that affected the RI was buried telephone cables along the corner of Old Highway 97 and B & O Road near the vacant building. The planned location of monitoring well MW-A4 was moved to the west across B & O Road to avoid the underground cables.

3.1.2 Terrain Conductivity Survey

E & E personnel conducted a terrain conductivity survey of the Arden's site using a Geonics EM-31D conductivity meter to evaluate

subsurface conditions present at the site. The information gathered from the survey was used to evaluate subsurface features, particularly underground fuel tanks and piping, and to establish soil-gas sampling locations. Operational procedures for the conductivity survey are described in the Arden's Country Store RI QAPjP (E & E 1991).

For initial assembly and setup of the EM-31D, background areas were selected to calibrate and system-check the instrument in areas likely to be free of subsurface anomalies and to obtain background conductivity readings. The background area selected was the empty lot west of Old Highway 97 and north of Arden's Country Store.

Averaged results from five stations in the background area are shown in Table 3-1. The readings indicated that the area was composed of essentially undisturbed homogenous materials and that conductivities increased slightly with increasing investigative depth (relative coil orientation).

Table 3-1

**AVERAGED BACKGROUND TERRAIN CONDUCTIVITY MEASUREMENTS
ARDEN'S COUNTRY STORE SITE
July 1991**

(mmhos/m)

Measurement Location	Horizontal Coil Positions		Vertical Coil Positions	
	North-South	East-West	North-South	East-West
Empty Lot	2.6	2.9	3.6	3.2

A standard field conductivity reading consists of four individual reading positions per station. This is accomplished by rotating the transmitting and receiving coils of the EM-31D horizontally and vertically relative to the ground surface and then reorienting the transmitter/receiver boom 90 degrees to record a second series of horizontal and/or vertical position readings. The rotation position of the EM-31D defines the instrument's depth of exploration and allows

- o Diesel hydrocarbons per modified EPA Method 8015,
- o TRPH per modified EPA Method 8015,
- o Lead per SW-846 Method 7421, and
- o Pesticides per SW-846 Method 608/8080.

Analytical results were reviewed for precision, accuracy, comparability and completeness. The data evaluation memorandum is included in Appendix B.

3.2.5 Monitoring Well Development

All the monitoring wells were developed using a bladder pump supplied by Ponderosa. Water quality parameters, such as temperature, specific conductivity, and pH, were measured during well development. The wells were pumped until water appeared clear, and the water quality parameters had stabilized. All purge water was containerized in Department of Transportation (DOT)-approved 17-H type 55-gallon drums and stored in a staging area at Arden's Country Store.

3.2.6 Groundwater sampling

Prior to groundwater sampling, a minimum of three well volumes of standing water in the well was purged from each well using a disposable Teflon bailer. Purge water was retained on-site in labeled, DOT-approved 17-H type 55-gallon drums and moved to a staging area at Arden's Country Store.

Groundwater samples were collected from the five monitoring wells (MW-A1 through MW-A5). Samples were placed in appropriate containers, preserved, placed on ice, and stored in coolers during shipment to the Analytical Resources Inc., laboratory. Temperature, pH, and conductivity of water samples were measured in the field and recorded.

Groundwater samples were analyzed for the following parameters:

- o VOCs per EPA Method 624/524/8240,
- o TVPHs per EPA Method 8015,

- o Diesel hydrocarbons per SW-846 Method 7421,
- o Lead per SW-846 modified Method 8080, and
- o Ethylene dibromide per modified SW-846 Method 8010.

Analytical results were reviewed for precision, accuracy, comparability and completeness. The data evaluation memorandum is included in Appendix B.

3.2.7 Static Water Level Measurement and Groundwater Gradient

Well elevations were surveyed relative to a datum (100.00 feet) established at the northeast corner of Old Highway 97 and Allen Street. Water levels were measured at all the monitoring wells and converted to this project datum. Elevations are presented in Table 3-5.

Groundwater flow direction, east, did not change during Field Event 2, although the groundwater elevations decreased between the initial measurement and the final measurements obtained. This change may reflect discharge to the Okanogan River or decrease due to domestic and farming withdrawals.

During the RI drilling phase, a large thunderstorm occurred on July 24, 1991. The thunderstorm deposited several inches of rain upon the surrounding area, and within the next several hours, Loup Loup Creek was transformed from a dry creekbed to a rapidly flowing creek. Whether the sudden introduction of water to Loup Loup Creek has any effect on the hydrogeologic system encountered at the site is unknown. Groundwater elevations observed after the precipitation event show no marked increase in recharge from the creek, although the time required for such an increase to occur may be on the order of several days. The groundwater levels only were recorded during the remainder of the RI drilling phase which lasted 2 days after the precipitation event. Therefore, any recharge that occurred may not have been recorded.

The distances between the monitoring wells were measured and correlated to the static groundwater level measurements. An average horizontal groundwater gradient of 0.005 ft/ft was estimated from the groundwater evaluations during the RI. Using this gradient and an assumed effective porosity of 30 percent for the geologic materials

Table 3-5

STATIC OBSERVED GROUNDWATER ELEVATIONS
ARDEN'S COUNTRY STORE RI
MALOTT, WASHINGTON

(ft)

Monitoring Well	Project Elevations (Top of Casing)	Date/Time			
		7/23/91 (1600)	7/25/91 (0800)	7/25/91 (1650)	7/26/91
MW-A1	96.895	84.79	84.67	84.69	84.65
MW-A2	94.035	83.87	83.84	83.79	83.75
MW-A3	93.605	--	84.62	84.52	84.43
MW-A4	101.245	--	85.66	85.65	85.60
MW-A5	99.945	84.45	84.38	84.36	84.36

Reference datum at the telephone pole at the northwest corner of Old Highway 97 and Allen Street (10,000).

encountered (silty sand), a velocity (V) can be calculated to estimate the resident travel time within the aquifer underlying the site.

$$V = \frac{K}{n}\frac{dh}{dl} \qquad \text{(Cherry and Freeze 1979)}$$

Where: n = .30 (assumed effective porosity)
K = Hydraulic conductivity 1.5×10^{-5} ft/second (assumed value for silty sand)

$\frac{dh}{dl}$ = average gradient established between monitoring wells

Thus: $V = 2.5 \times 10^{-7}$ ft/second = 0.0216 ft/day

Assuming a hydraulic conductivity of 1.5×10^{-5} ft/second as an average value for a silty sand aquifer, an aquifer velocity of 0.0216 ft/day (7.884 ft/yr) is estimated. This value assumes that the saturated zone is homogenous and no vertical gradients exist.

3.3 FIELD EVENT 3

Field Event 3 was not performed per Ecology's direction, based on the results of residential well samples RW-1 and RW-7 obtained from the lower aquifer. These two samples exhibited detectable concentrations of 1,2-dichloroethane but were below the MTCA Method A Cleanup Levels for Groundwater. Therefore, installation of monitoring wells into the lower aquifer was not required.

4. INTERPRETATION AND DISCUSSION OF RI RESULTS

4.1 CONTAMINANT FATE AND TRANSPORT

A conceptualized model of containment migration at the Arden's site would occur as follows. Contaminants (petroleum products or solvents) are released into the subsurface. Soil is contaminated and the contaminants percolate toward the water table. Upon encountering the groundwater, the contaminants would go into solution, float, or sink, depending upon their relative densities and solute properties. Movement in the direction of the groundwater gradient would distribute free phase contaminants along the groundwater flow direction to the east. In addition, contaminants may partition into groundwater as dissolved components and are dispersed by the natural groundwater flow. Contaminant transport rate was estimated at 8 feet per year in Section 3.2.7. Any movement downward may be attenuated by soil particles and organic carbon content of the soil encountered. In addition, the thin silty-clay unit identified may act as an aquitard to the movement of the groundwater and may effectively prevent further vertical migration. Contaminant migration may move horizontally along a path of least resistance toward the east. Eventually, contaminants may encounter residential wells. Uptake of these contaminants into the residential wells may depend on downward migration potential as described above and/or construction integrity of the wells as a potential migration pathway would be dependent on many variables including precipitation, contaminant concentrations and volumes, soil type, migrations pathways, gradient, and residential well pumping in the area.

4.2 CONTAMINANTS OF CONCERN

Results of soil-gas sample field screening, and soil and groundwater sample analyses were reviewed by the project chemist. The overall

quality of the data was determined to be good and usable for the RI. The quality assurance memoranda concerning the RI sampling data are included in Appendix B. The actual sample results with the appropriate data qualifiers are presented in Appendix C.

4.2.1 Soil-Gas Contaminants

The soil-gas sample screening results indicated VOCs were present at concentrations above the portable GC quantitation limits at four soil-gas survey locations (SG-21, -27, -31, -32). The compounds detected included the following: DCA, 1,1,1-TCA, trichloroethene, benzene, toluene, ethylbenzene, m/p-xylenes, and o-xylenes. The highest concentrations were observed at SG-21, SG-31, and SG-32 (Table 3-2). These three soil-gas sample locations are within an approximate 40-foot radius from Arden's excavated USTs (Source Area 1).

4.2.2 Soil Contaminants

Subsurface soil samples collected were screened initially for TOVs using headspace screening techniques. Only soil samples A5-2 and A5-3 from monitoring well MW-A5 exhibited high TOV concentrations (>1,000 ppm).

Selected soil sample analytical results indicating detectable contaminants concentrations are presented in Table 4-1. VOC analysis of soil samples indicated detectable concentrations of benzene, toluene, ethylbenzene, total xylenes, methylene chloride, acetone, and 2-hexanone. Methylene chloride, acetone, and 2-hexanone were detected in the laboratory blanks and, therefore, were considered laboratory contaminants. Soil sample A5-2 exhibited concentrations greater than the MTCA Level A Cleanup Levels for Soils for the following compounds: benzene (2.4 mg/kg), toluene (71 mg/kg), ethylbenzene (33 mg/kg), and total xylenes (300 mg/kg). Also soil sample A5-3 exhibited a benzene concentration of 0.047 mg/kg, approximately equivalent to the MTCA cleanup level of 0.5 mg/kg benzene. All other samples exhibited concentrations below the MTCA cleanup levels.

Table 4-1

SELECTED SOIL AND GROUNDWATER ANALYTICAL RESULTS
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON
JULY 1991

Compound	MTCA Cleanup Level		Soil Concentration		Groundwater Concentrations				
	Soil (mg/kg)	Groundwater (µg/L)	A5-2 (mg/kg)	A5-3 (mg/kg)	A5-W1	A4-W1	A2-W1 (µg/L)	A3-W1	A1-W1
Benzene	0.5	5.0	2.4	0.470	25,000	ND	ND	ND	ND
Toluene	40.0	40.0	71.0	0.350	16,000	0.6	3.0	ND	ND
Ethylbenzene	20.0	30.0	33.0	0.058	1,500	ND	ND	ND	ND
Total Xylenes	20.0	20.0	300.0	0.320	6,500	ND	ND	ND	ND
TPH		1,000.0							
TVPH-Gasoline	100.0	--	4,800	ND	210,000	ND	ND	ND	ND
TRPH	--	--	3,700	ND	--	--	--	--	--
TPH-Diesel	200.00	--	3,100	ND	940	ND	ND	ND	ND
Lead	250.0	5.0	2.9	6.2	8.1	8.3	4.9	3.3	2.9
Methylene Chloride	0.5	5.0	0.930	0.01	380	1.1	1.2	1.1	1.1

ND - Not detected
TPH - Total petroleum hydrocarbons
TVPH - Total volatile petroleum hydrocarbons
TRPH - Total recoverable petroleum hydrocarbons

TVPH analyses of soil samples indicated that only sample A5-2 exhibited a gasoline-range hydrocarbon concentration (4,800 mg/kg) greater than the MTCA cleanup level of 100 mg/kg TPH (gasoline).

TRPH analysis of soil samples indicated only that sample A5-2 exhibited a detectable concentration (3,700 mg/kg) of TRPH.

Diesel-range hydrocarbon analysis indicated only sample A5-2 exhibited a detectable concentration (3,100 mg/kg) above the MTCA cleanup level of 200 mg/kg for TPH-diesel.

Lead analyses of soil samples indicated all soil sample lead concentrations were below MTCA cleanup levels for lead.

Pesticide analysis of soil samples indicated no detectable concentrations of pesticides within any soil sample.

In summary, only soil sample A5-2 exhibited contaminant concentrations above MTCA cleanup levels for benzene, toluene, ethylbenzene, total xylenes, total petroleum hydrocarbons-gasoline, and total petroleum hydrocarbons-diesel. The MW-A5 location is within the vapor plume area defined by the soil-gas survey and is also adjacent to the excavated USTs and existing USTs.

4.2.3 Groundwater Contaminants

Groundwater samples were collected from residential and monitoring wells. Selected groundwater sample analytical results indicating detectable contaminant concentrations are presented in Table 4-1.

VOC analysis of residential well samples were performed. VOC analytical results indicated detectable concentrations of the following compounds: 1,2-dichloroethane, tetrachloroethene, carbon disulfide, acetone, chloroform, and methylene chloride. All contaminant concentrations were in the low ppb range and below MTCA Cleanup levels for groundwater.

VOC analyses for monitoring well samples indicated detectable VOC concentrations above MTCA cleanup levels for water sample A5-W1 for the following compounds: benzene (25,000 µg/L), toluene (16,000 µg/L), ethylbenzene (1,500 µg/L), total xylenes (6,500 µg/L), and methylene chloride (380 µg/L). All other groundwater samples only exhibited low concentrations of methylene chloride, 2-hexanone acetone, and toluene.

TVPH analyses indicated that none of the residential wells sampled contained detectable levels of TVPH. Of the monitoring wells sampled, only sample A5-W1 exhibited a detectable concentration of TVPH. Sample A5-W1 contained a gasoline range hydrocarbon concentration of 210,000 µg/l and demonstrated a pattern match for gasoline. This concentration exceeds the MTCA Method A TPH cleanup level of 1,000 µg/L.

TRPH analyses of residential well samples indicated that TRPH was not detected in any of the residential well samples.

TPH-diesel analyses of monitoring well samples indicated that sample A5-W1 had an estimated 940 µg/L and but did not demonstrate a pattern match for diesel. TPH-diesel in all other samples was undetected.

Lead analyses were performed on all groundwater samples per SW-846 Method 7421. Residential well sample lead concentrations ranged from 1.0 to 3.5 µg/L. Monitoring well sample lead concentrations ranged from 2.9 to 8.3 µg/L. Sample numbers A4-W1 and A5-W1 exceeded the MTCA Method A Cleanup Level of 5.0 µg/L lead.

EDB analyses of all groundwater samples indicated that EDB was undetected in all samples.

In summary, the following samples exhibited contaminant concentrations above MTCA Method A Cleanup Levels for groundwater: sample A5-W1 for benzene, toluene, ethylbenzene, total xylenes, TPH, and lead; and sample A4-W1 for lead. Monitoring well MW-A5 is located directly adjacent to the excavated USTs (Source Area 1), and existing USTs (Source Area 2).

4.3 EXTENT OF CONTAMINATION

Soil and groundwater contamination plumes were estimated based on the sampling results generated during the RI.

4.3.1 Soil Contamination

The extent of soil contamination was estimated using data from soil-gas survey, TOV headspace screening of subsurface soil samples, and laboratory analysis of selected soil samples. The soil-gas survey locations exhibiting high concentrations of VOCs were SG-21, SG-31, and

SG-32. Soil contamination was detected only in MW-A5 samples. Therefore, the area of soil contamination is estimated using the area defined by SG-21, SG-31, SG-32, and MW-A5. This area surrounds the excavated USTs area at Arden's and is approximately 4,200 ft^3. Assuming 0 to 5 feet bgs were unaffected by the UST releases (since soils were excavated to 4.5 feet below grade [Olympus 1988]) and the depth of soil contamination was bounded by the static water table observed to be 12.5 feet bgs in MW-A5, then the vertical extent of soil contamination is between 5.0 to 12.5 feet bgs. Therefore, using 7.5 feet of contaminated soils, the volume of soil contamination was calculated as approximately 31,500 ft^3 or 1,200 yd^3.

4.3.2 Groundwater Contamination

The extent of groundwater contamination was estimated using data from residential well and monitoring well sampling, soil-gas survey results, and groundwater gradients.

MW-A5 was the only sampling location exhibiting BTEX and TPH concentrations above MTCA cleanup levels. The soil-gas survey data were also used to estimate the extent of groundwater contamination. Previous studies have demonstrated that the presence of VOCs in groundwater may be detected by analyzing soil-gas samples (Lappala and Thompson 1984). Therefore, the area bounded by soil-gas sampling location SG-21, SG-31, SG-32, and monitoring well MW-A5 (approximately 4,200 ft^3) was considered to have groundwater contamination. Also, since the groundwater gradient is east with an estimated velocity of 7.884 ft/yr (Section 3.2.7), the plume was assumed to migrate 23.5 feet beneath Arden's County Store in the 3 years since the UST release in 1988. Therefore, a total area of contaminated groundwater was estimated at 5,845 ft^2. Assuming the saturated thickness in the upper aquifer is 32.5 feet (12.5 feet to 45 feet bgs based on well logs) and a porosity of 30%, the total volume of contaminated groundwater is estimated at 57,000 ft^3 or 426,000 gallons. If the vertical distribution of groundwater contamination does not extend to the entire thickness of the saturated zone, or the confining clay layer is less than 45 feet bgs, then the volume of contaminated groundwater could be substantially less.

5. CONCLUSIONS

An RI was performed to characterize the Arden's site and investigate potential subsurface contamination caused by the release of petroleum products and solvents. The following general conclusions include:

- Eight potential source areas were investigated during the RI. Based on sampling results of soil-gas, subsurface soils, and groundwater, the known source of contamination is the excavated USTs at Arden's (Source Area 1).

- Based on groundwater sampling of Arden's basement well and MW-A5 indicating increasing concentration of BTEX since 1988, and the failure of a tank tightness test on the active regular gasoline UST; source area 2 is considered a continuing source of contamination.

- Contaminants detected in soils above MTCA Method A cleanup levels included the following compounds: benzene, toluene, ethylbenzene, total xylenes, TPH-gasoline, and TPH-diesel.

- Contaminants detected in groundwater above MTCA Method A cleanup levels include the following compounds: Benzene, toluene, ethylbenzene, total xylenes, TPH, and lead.

- The detection of low concentration of the type of VOCs (i.e., 1,2-DCA, TCE) in residential well samples may indicate that additional contamination source(s) exist.

- The horizontal groundwater gradient in the upper aquifer was estimated to be 0.005 ft/ft. The direction of the groundwater gradient is toward the east. The upper aquifer velocity (horizontal) was estimated at 8 feet per year.

- The area of soil contamination is bounded by soil-gas survey locations SG-21, SG-31, SG-32, and monitoring well MW-A5. The volume of contaminated soils was estimated at 1,200 yd^3.

- The areal extent of groundwater contamination as estimated as the area bounded by SG-21, SG-31, SG-32, and MW-A5, plus an area extending approximately 25 feet to the east beneath the Arden's Country Store building. The total volume of contaminated groundwater was estimated at 426,000 gallons.

- Migration of contaminants in the direction of groundwater gradient may pose a health risk to nearby residents living east of Arden's (RW-4, RW-5, and RW-6) who obtain drinking water from the upper aquifer.

3.1.4 Soil-Gas Survey

A field screening soil-gas survey was performed at the site during the period from July 10 to July 12, 1991. The survey was accomplished using a Geoprobe Model 8-A, truck-mounted, hydraulic-percussion RAM system to drive 1-inch O.D. probe rods into the subsurface. The work was performed in accordance with the requirements of the RI Work Plan (E & E 1991). The probes were driven to depths of approximately 5 to 8 feet bgs. At the first soil-gas sample location, SG-18 probes were driven with the Geoprobe system to 8 feet bgs and water was extracted during the soil-gas sample collection. Another probe was driven to 5 feet bgs and a sample was collected. All subsequent soil-gas sampling locations were driven to 7 feet bgs and samples were collected without groundwater intake.

The Geoprobe was mobilized at sample locations previously determined to be clear of underground utilities and structures as discussed in Sections 3.1.1 and 3.1.2. The 1-inch O.D. probe rods with a well point were driven to approximately 7 feet bgs. The probe was then withdrawn approximately 1 inch to open a pathway for vapor collection from the vadose zone. A gas sampling cap was placed on the rod assembly. Approximately 15 to 20 inches of mercury vacuum was applied for approximately 6 minutes to purge the probe rod volume. Soil-gas screening was accomplished using a portable Photovac Microtip photoionization detector (PID) with a tube connected to the gas sampling cap. The PID screening was performed to obtain data to compare with the portable gas chromatograph (GC) screening data. The PID total organic vapor measurement was recorded and the sampling cap removed. An adapter connected to 1/4-inch diameter Teflon tubing was lowered into the probe rods and screwed into the well point holder to create an air-tight seal. The tubing was then connected to the vacuum pump and purged for approximately 2 minutes. A sampling apparatus was then utilized to collect soil-gas samples in 1-liter Tedlar bags. The Tedlar bags were labeled and submitted to the project chemist for field screening using a portable GC. The tubing was then withdrawn and purged with nitrogen gas. The probe rods were withdrawn and decontaminated with water before reuse. The well point remained in the hole. Each sampling station was

abandoned with sand and bentonite; an asphalt surface patch was installed at paved locations.

A total of 25 soil-gas sample locations were attempted. Probe refusal occurred at two locations, SG-12 and SG-28. At two locations, sand was drawn into the well point holder preventing proper sealing of the tubing adapter. These probes were withdrawn and the holes were backfilled. New probes were driven a short distance from these two survey locations. Twenty-three soil-gas samples were collected. In addition, one duplicate sample (SG-36) was collected from the SG-24 location. The soil-gas survey sample locations are shown on Figure 3-1.

Twenty-four soil-gas samples were screened in the field using a Photovac 10S50 portable GC. The samples were screened for dichloroethane (DCA), 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene, benzene, toluene, ethylbenzene,. and xylenes (BTEX). The results of the soil-gas survey are presented in Table 3-2. The compounds DCA and 1,1,1-TCA coeluted through the 10S50 GC column and are reported as a total concentration.

During the soil-gas survey, several environmental conditions may have influenced the organic vapor concentrations detected at the probe stations. Soil-gas sensing techniques for the plume migration study are based on the migration of indicator organic compounds having appropriate partition coefficients and degradation characteristics which would result in vapor phase entering the vadose zone (Environmental Research Center 1987). The physical dispersion of vapors in soil is influenced by four principal soil parameters: organic content, porosity/permeability, moisture content, and temperature. Dispersion generally is greatest when soil organic content is low, porosity/permeability are relatively high, moisture content is low, and soil temperature is relatively warm. Organic content and porosity/permeability, for practical purposes, are considered constant at the site. Moisture content and temperature depend on ambient weather conditions which also were considered relatively constant through the field event.

At the Arden's site, the parameters of organic content and porosity/permeability were suitable for survey applications, based on drilling logs. The survey was performed during a period of seasonally

Table 3-2

SOIL - GAS SCREENING RESULTS
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON

July 1991

(µg/L)

Compounds/Sample	SG-2	SG-3	SG-4	SG-6	SG-7	SG-8	SG-9	SG-10	SG-11	SG-14	SG-17	SG-18	SG-20
DCA/1,1,1-TCA (1)*	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Benzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Trichloroethene	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U
Toluene	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.47	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Ethyl benzene	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U
m/p-Xylenes	1.1 J	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Compounds/Sample	SG-21	SG-24	SG-27	SG-29	SG-30	SG-31	SG-32	SG-33	SG-34	SG-35	SG-36**
DCA/1,1,1-TCA (1)*	15,000	100 U	100 U	100 U	100 U	10,000 U	180,000	100 U	100 U	100 U	100 U
Benzene	61	0.36 U	0.58	0.36 U	0.36 U	100	3,000	0.36 U	0.36 U	0.36 U	0.36 U
Trichloroethene	217	0.59 U	0.59 U	0.59 U	0.59 U	240	1,800	0.59 U	0.59 U	0.59 U	0.59 U
Toluene	69	0.44 U	3.6	0.44 U	0.44 U	710	4,900	0.44 U	0.44 U	0.44 U	0.44 U
Ethyl benzene	5.6 U	0.56 U	0.56 U	0.56 U	0.56 U	56 U	110	0.56 U	0.56 U	0.56 U	0.56 U
m/p-Xylenes	15	1.2 U	5.5	1.2 U	1.0 J	100 U	1,100	1.2 U	1.1 J	1.2 U	1.2 U
o-Xylene	10 U	1.0 U	3.2	1.0 U	1.0 U	100 U	390	1.0 U	1.0 U	1.0 U	1.0 U

* - Dichloroethane (DCA) and 1,1,1-Trichloroethane (1,1,1-TCA) coeluted.
** - SG-36 is a duplicate of SG-24.
U - The material was analyzed for but was not detected. The associated numerical value is a quantitation limit, adjusted for sample dilution.
J - The analyte was analyzed for and was positively identified, but the associated numerical value was below the quantitation limit but above the instrument detection limit.

high soil temperatures and low soil moisture conditions. Therefore, the conditions at the Arden's site were favorable for a soil-gas survey.

3.2 FIELD EVENT 2

Field Event 2 was performed from July 22 through July 26, 1991.

3.2.1 Monitoring Well Installation

Five monitoring wells were installed in the upper aquifer at the Arden's site. The monitoring well locations are shown on Figure 3-1. The location of MW-A4 was moved to the west across B & O Road because of underground utility interference at the location proposed in the work plan.

The monitoring wells were drilled with a B-80 mobile drill hollow stem auger (HSA) rig equipped with 6- and 8-inch HSAs. The drill rig was operated by Ponderosa Drilling and Development Company. A decontamination pit was constructed north of Arden's Country Store and west of the yard fence using boards and plastic configured to collect water from steam cleaning of the drill rig and auger flights. All augers were steam cleaned prior to use to remove any particles accumulating on equipment during transportation to the site.

The monitoring wells were drilled with a 6-inch diameter HSA and soil samples were collected at 5-foot intervals using a split spoon sampler. The boring was then reamed with an 8-inch diameter HSA and the monitoring well was installed.

Monitoring wells were constructed and developed per WAC 173-160-500 through #550 requirements. Monitoring wells were constructed of 4-inch diameter, schedule 40 polyvinyl chloride (PVC) blank pipe with threaded, flush-jointed ends. No glue or solvents were used. Monitoring well screens were constructed of 4-inch diameter, schedule 40 PVC, with threaded, flush-jointed ends and 0.020-inch slot, continuous wound screen.

The filter pack material consisted of commercially prepared, washed silica sand, 20 to 40 mesh. The filter pack was tremied through the augers in the monitoring wells and extended from the bottom of the well screen to a point approximately 2 feet above the top of the well screen.

A bentonite seal was placed on top of the filter pack, and extended to an average height of 3 to 5 feet above the top of the filter pack. Bentonite pellets (3/8 inch diameter) were tremied into place through the auger. Water was added to the well annulus to hydrate the pellets.

The monitoring well annulus was grouted with a cement/bentonite slurry weighing 11 to 13 ppg. Type II Portland cement was used in the admixture. The cement slurry was pumped into place from bottom to top, through a tremie hose.

Locking caps were placed on the wells after completion. All monitoring wells were finished at grade with a traffic-rated, water-tight, locking security cover. The depth of each monitoring well installed was approximately 10 feet below the static groundwater level. All the monitoring wells included a one foot long casing sump and ten feet of well screen. Monitoring well construction as-built dimensions are summarized in Table 3-3.

At monitoring well MW-A1, groundwater was encountered at 12.5 feet bgs and the well was installed to 22 feet bgs on July 22, 1991. At MW-A2, groundwater was encountered at 8 feet bgs and the well was installed to 19 feet bgs on July 23, 1991. At MW-A3, groundwater was observed at 8 feet bgs and the well was installed to 18 feet bgs on July 24, 1991. At MW-A4, groundwater was encountered at 14 feet bgs and drilling continued in an effort to reach the clay layer and determine the thickness of the upper aquifer. Heaving sands were encountered and the bottom plug became jammed. While attempting to remove the HSA plug, the cable connecting the drill line to the HSA plug broke. The 6-inch HSA was removed and an 8-inch HSA was used to ream the hole. Bentonite pellet placement was inhibited by heaving sands. Bentonite pellets were added below the well installation. MW-A4 was installed at 22 feet bgs. At MW-A5 groundwater was encountered at 12.5 feet bgs and the monitoring well was installed to 21.5 feet bgs on July 23, 1991. Drilling and sampling logs for the five monitoring wells are provided in Appendix A.

3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected at 5-foot intervals during drilling using a 2-1/2 inch diameter, 18-inch long, split-tube sampler.

Table 3-3

MONITORING WELL CONSTRUCTION AS-BUILTS
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON
JULY 1991

Construction Item	Unit	Monitoring Well No. MW-A1	MW-A2	MW-A3	MW-A4	MW-A5
1. Total Depth	ft. bgs	22	18	18	45	21-1/2
2. 4-inch Diameter PVC Well Installation Depth:		21	18	18	21	21
3. Borehole diameter	inches	8	8	8	8	8
4. Screened interval	ft. bgs	10-20	7-17	7-17	10-20	10-20
5. Top of sand	ft. bgs	8	5	5	8	8
6. Top of bentonite	ft. bgs	5	3	3	5	5
7. Project elevation - top of casing	ft.	96.895	94.035	93.605	101.245	99.945

Borings drilled with B-10 mobile drill hollow stem auger (HSA) rig with 6-inch diameter augers and then reamed with 8-inch diameter augers.
bgs - Below ground surface

A total of 22 soil samples were collected. Each sample was visually inspected by the project geologist. Soil characteristics such as lithology, color, particle size, and moisture content were recorded on the drilling and sampling logs included in Appendix A.

3.2.3 Total Organic Vapor (TOV) Headspace Screening

Samples collected from the split-tube sampler were screened using a TOV headspace method to delineate the vertical extent of soil contamination. This technique was implemented to minimize the number of samples shipped for laboratory analyses and provide rapid turnaround of results for refining sampling locations. The split-tube sampler was equipped with three inner, 6-inch long, brass sleeves to collect soils. One sleeve was inspected and used to prepare the geologic log. The other two sleeves were wrapped in aluminum foil and labeled. One sleeve was stored in an ice-filled cooler for potential analysis. The other foil-wrapped sample was prepared for TOV headspace screening. Headspace samples were equilibrated in a heated portable oven at approximately 20°C and screened by puncturing the aluminum cover and inserting an OVA probe. The initial stabilized reading obtained by the OVA was recorded for each sample. The results of the TOV headspace screening are presented in Table 3-4. At least one sample from each soil boring was submitted for laboratory analyses. Field screening results of samples from each boring were reviewed to select samples for laboratory analyses. If field screening results were inconclusive, the deepest sample from the sample location was sent for laboratory analysis. Other samples selected for laboratory analyses were selected based on TOV headspace screening and sample physical characteristics.

3.2.4 Soil Sample Analysis

A total of eight soil samples selected for laboratory analysis, were packaged and sent to Analytical Resources, Inc., to be analyzed for the following parameters:

- o VOCs per EPA Method 624/8240,
- o TVPH per modified EPA Method 8015,

Table 3-4

TOTAL ORGANIC VAPOR HEADSPACE SCREENING RESULTS
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON

July 1991

Soil Sample Number	Depth (feet bgs)	Initial OVA Reading (ppm)
A1-1	5.0 - 6.5	0.0
A1-2	10.0 - 11.5	0.0
A1-3	15.0 - 16.5	0.0
A1-4	20.0 - 21.5	0.5
A5-1	5.0 - 6.5	60
A5-2	10.0 - 11.5	>1,000
A5-3	15.0 - 16.5	>1,000
A5-4	20.0 - 21.5	48
A2-1	5.0 - 6.5	0.0
A2-2	10.0 - 11.5	0.0
A2-3	15.0 - 16.5	0.0
A4-1	5.0 - 6.5	0.0
A4-2	10.0 - 11.5	0.0
A4-3	15.0 - 16.5	0.0
A4-4	20.0 - 21.5	6.2
A4-5	25.0 - 26.5	1.6
A4-6	30.0 - 31.5	0.0
A4-7	35.0 - 36.5	0.0
A4-8	40.0 - 41.5	0.0
A3-1	5.0 - 6.5	0.0
A3-2	10.0 - 11.5	0.0
A3-3	15.0 - 16.5	0.0

6.0 REFERENCES

Cherry, John A. and R. Allan Freeze, 1979, Groundwater Prentice Hall.

Ecology and Environment, Inc. (E & E), May 14, 1991, Arden's Country Store Remedial Investigation Work Plan, Seattle, Washington.

Environmental Research Center, University of Nevada, Las Vegas, 1987, Soil-gas Sensing for Detection and Mapping Volatile Organics, published through the National Water Well Association.

Florida Department of Environmental Regulations, January 1989, Guidelines for Assessment and Remediation of Petroleum Contaminated Soils.

Lappala, Eric G., Glenn M. Thompson, 1984, Detection of Groundwater Contamination by Shallow Soil Gas Sampling in the Vadose Zone Theory and Applications.

Locke, Dan, March 16, 1988, to Ecology Internal memorandum Clar Pratt, Arden's Country Store Tank Leaks - Malott.

Olympus Environmental, April 4, 1988, Remediation of Underground Storage Tank Release, Prepared for Washington State Department of Ecology.

Owens, J.M., March 23, 1990, Laucks Testing Laboratory memo to Stuart Magoon.

Price, Richard, B., November 21, 1989, letter to Elaine Peterson, Arden's Country Store site.

State of California Leaking Underground Fuel Tank Task Force, December 1987, Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure.

Tula, Alex, May 19, 1989, Hart Crowser memo to Richard S. Price, P.S.

United States Environmental Protection Agency (EPA), April 1989, Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034.

Walters, Kenneth L., 1974, Water in the Okanogan River Basin, Washington, Water Supply Bulletin 34.

Washington State Department of Ecology, (Ecology) February 1991, Guidance for Site Checks and Site Assessments for Underground Storage Tanks, 90-52.

_____, July 1, 1988, letter to Arden Brazil.

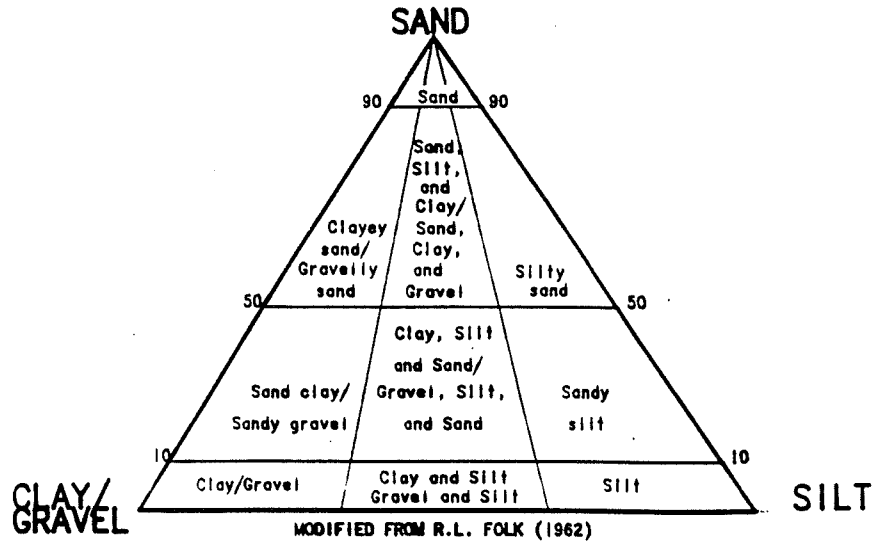
Appendix A

DRILLING AND SAMPLING LOGS
RESIDENTIAL WELL LOGS

Soil Classification Chart
Unified Soil Classification System

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (Little or No Fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines.
	More than 50% of Coarse Fraction Retained on No. 4 Sieve.		GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines.
		GRAVELS WITH FINES (Appreciable Amount of Fine	GM	Silty Gravels, Gravel-Sand-Silt Mixtures.
			GC	Clayey Gravels Gravel-Sand-Clay Mixtures.
More than 50% of Material is Larger than No. 200 Sieve Size.	SAND AND SANDY SOILS	CLEAN SANDS (Little or No Fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines.
			SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines.
	More than 50% of Coarse Fraction Passing No. 4 Sieve.	SAND WITH FINES (Appreciable Amount of Fines)	SM	Silty Sands, Sand-Silt Mixtures.
			SC	Clayey SAnd, Sand-Clay Mixtures.
FINE GRAINED SOILS	SILT AND CLAYS (Liquid Limit Less than 50)		ML	Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity.
			CL	Inorganic clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays.
			OL	Organic Silts and Organic Silty Clays of Low Plasticity.
More than 50% of Material is Smaller than No. 200 Sieve Size	SILT AND CLAYS (Liquid Limit Greater than 50)		MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
			CH	Inorganic Clays of High Plasticity, Fat Clays.
			OH	Organic Clays of Medium to High Plasticity, Organic Silts.
HIGHLY ORGANIC SOILS			PT	Peat, Humus, Swamp Soils with High Organic Contents.

Note: Dual Symbols Are Used to Indicate Borderline Soil Classifications



MODIFIED FROM R.L. FOLK (1962)

SOIL MOISTURE TERMINOLOGY

Moisture	Characteristic
Dry	Makes dust
Slightly Moist	Below plastic limit
Moist	At plastic limit
Very Moist	Above plastic limit--can pump water from silts
Wet	Free water or saturated

TERMS DESCRIBING COMPACTNESS OR COARSE-GRAINED SOILS

Compactness	Correct SPT Penetration (blows/feet)
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	

SIZE PROPORTIONS

Designation	Percent by Weight
Trace	0 to 10
Little	10 to 20
Some	20 to 35
And	35 to 50

USCS GRAIN-SIZE RANGES

Component	Millimeters
Cobbles	75
Gravel	75 to 4.75
Coarse	75 to 19
Fine	19 to 4.75
Sand	4.75 to 0.075
Coarse	4.75 to 2
Medium	2 to 0.425
Fine	0.425 to 0.075
Fines (silty or clay)	0.075

NOTES: Subsurface information from boring logs depict conditions only at the specific locations and dates indicated. Soil conditions and water levels at other locations may differ from conditions at these locations. Also the condition may change with time.

ecology and environment, inc.

DRILLING AND SAMPLING LOG

Sheet 1 of 2

Project: Arden
Boring Contractor: Ponderosa Drilling
Boring Method: HSA 6" + 8" OD
Logged By: David Anderson
Date Completed: 7/22/91

Job No.: WZ4060
Location: Malott, WA
Surface Elevation:
Casing Elevation: 96.895
Total Depth: 22.0' bgs
Groundwater: 12.5' bgs

Boring No.: MW-A1
Datum:
Datum: 100.00
Datum:

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA (ppm)	REMARKS Blows Recovery
0	0	Soil; Fill, Loam; Light grey, dry; soft			
	GM	Silty Gravel, light grey-brown gravel to 2-inch Dry; relatively hard drilling (Fill?)			
5	SP	Sand; Medium well sorted; light brown to yellowish brown; Dry Hard-dense; Gravel (5%) < 1/4 in-coarse	A1-1	0.0	12/10/9 1.5/3
10	SW	Gravelly Sand medium-coarse, yellowish-orange/brown, Moist, Dense; Gravel (5%) 1/4" coarse sub-rounded; Coal pieces (5%); black; little or no fines	A1-2	0.0	9-18-20 Full
15	SW	Gravelly Sand; coarse; light grey; saturated; very dense; Gravel (15%) 1/4" - 1/2" sub-rounded, little or no fines	A1-3	---	20-40-32 1/3

ecology and environment, inc. **DRILLING AND SAMPLING LOG** Sheet 2 of 2

Project: Arden RI Job No.: WZ4060 Boring No.: MW-A1

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA (ppm)	REMARKS Total Blows
20	GP-GW	Sandy Gravel - coarse; gravel to 2", light grey, saturated, very dense; Sand (25%) coarse	A1-4	---	Recovery 20-41-50 2/3
	TD	Total depth 22 feet bgs			
		---- Inferred Contact			
		____ Observed Contact			
		▽ Observed Water Table			

ecology and environment, inc.

DRILLING AND SAMPLING LOG

Sheet 1 of 1

Project: ARDEN
Boring Contractor: Ponderosa Drilling
Boring Method: HSA 6" + 8"
Logged By: David Anderson
Date Completed: 7/23/91

Job No.: WZ4060
Location: Malott, WA
Surface Elevation:
Casing Elevation: 94.035
Total Depth: 19.0' bgs
Groundwater: 8.0' bgs

Boring No.: MW-A2
Datum:
Datum: 100.00
Datum:

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA (ppm)	REMARKS Blows Recovery
0	GP	Fill - gravelly sand, light brown gravel to 2" (15%)			
5	SM	Silty Sand; very fine, fine light brown to olive grey; Moist, Loose, some interbedded lenses of yellowish brown fine sand/silt/clay	A2-1	0.0	5-8-8 2-5/3
	▽				
	=				
10	GM	Sandy Gravel, to 2 in, subrounded to rounded dark brown, saturated, very dense (80%); fine sand (15%); silt/clay (5%)	A2-2	0.0	18-26-26 2/3
	SM	Silty sand - fine to very fine, light brown, saturated, loose (95%); silt/clay (5%)			
15	ML-CL	Silt/clay -Blue to olive gray, some organic to 1/4" (1%); plastic somewhat stiff (99%); one with lenses of oxidized silt/clay	A2-3	0.0	7-8-8 3/3
	ML	Grades to dark blue grey sandy silt; sand (15%); organics? - black			
	SM	Sand - Medium to coarse light brown, saturated, loose, heaving, (90%); silt/clay (10%)			
19	TD				

ecology and environment, inc. **DRILLING AND SAMPLING LOG** Sheet 2 of 2

Project: Arden RI Job No.: WZ4060 Boring No.: MW-A2

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA	REMARKS Total Blows
		----- Inferred Contact _____ Observed Contact ▽ Observed Water Table			

ecology and environment, inc.

DRILLING AND SAMPLING LOG

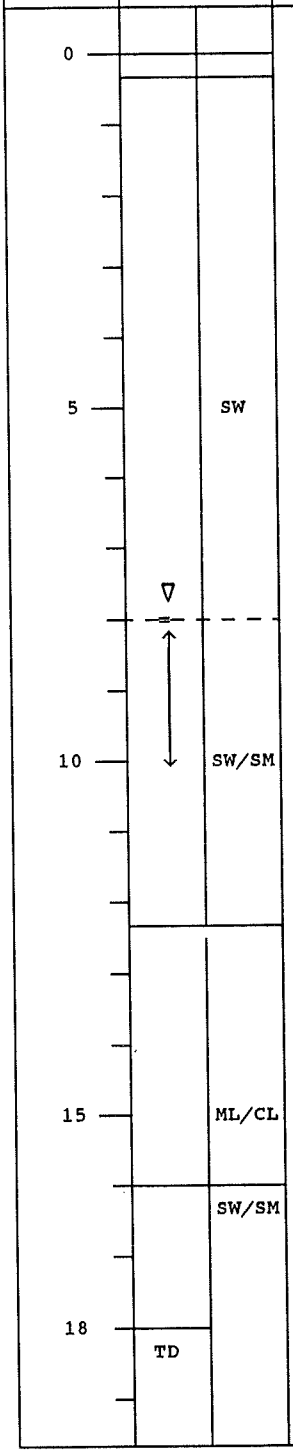
Sheet 1 of 1

Project: ARDEN
Boring Contractor: Ponderosa Drilling
Boring Method: HSA 6" + 8"
Logged By: David Anderson
Date Completed: 7/24/91

Job No.: WZ4060
Location: Malott, WA
Surface Elevation:
Casing Elevation: 93.605
Total Depth: 18.0' bgs
Groundwater: 8.0' bgs

Boring No.: MW-A3
Datum:
Datum: 100.00
Datum:

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA (ppm)	REMARKS Blows Recovery
0		Vegetation; Soil			
5	SW	Gravely Sand - Fine to medium light grey, dry, dense, (80%); gravel to 1/2"; rounded, 20%; little or no fines	A3-1	0.0	12-16-20 2.5/3
10	SW/SM	Same as above but grading towards silt; gravel (5%); saturated	A3-2	0.0	6-8-12 3/3
15	ML/CL	Silt/Clay - blue grey and olive gray, saturated plastic-soft	A3-3	---	7-12-X
	SW/SM	Silty Gravely Sand - fine sand, light brown, saturated, dense, (95%); silt (4%); gravel to 3" (1%)			
18	TD	Total depth 18 feets bgs			



ecology and environment, inc. **DRILLING AND SAMPLING LOG** Sheet 2 of 2

Project: Arden RI Job No.: WZ4060 Boring No.: MW-A3

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA	REMARKS Total Blows
		---- Inferred Contact ____ Observed Contact ▽ Observed Water Table ---			

ecology and environment, inc.

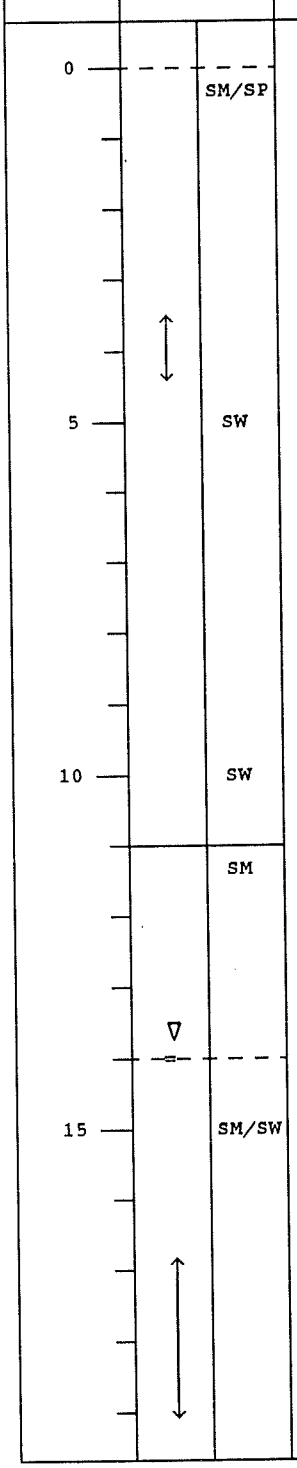
DRILLING AND SAMPLING LOG

Project: ARDEN
Boring Contractor: Ponderosa Drilling
Boring Method: HSA 6" to 8"
Logged By: David Anderson
Date Completed: 7/24/91

Job No.: WZ4060
Location: Malott, WA
Surface Elevation:
Casing Elevation: 101.245
Total Depth: 45.0 bgs
Groundwater: 14.0' bgs

Boring No.: MW-A4
Datum:
Datum: 100.00'
Datum:

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA (ppm)	REMARKS Blows Recovery
0	SM/SP	Silty Sand; fine to medium, light brown, damp/moist, loose, (99%); silt/clay (1%) - Possibly fill			
5	SW	Gravely Sand- Fine to medium, light grey, dry, loose, Dense, (85%); Gravel to 2" (15%); little or no fines	A4-1	0.5	41-62-29 2/3
10	SW	Same as above			
	SM	Silty Sand - fine to medium, light grey, damp, coherent/plastic, (80%); silt/clay (20%)	A4-2	1.2	20-30-18 2.5/3
15	SM/SW	Silty gravelly sand - medium to coarse, brown, saturated, very dense, sand to 1/4", (99%); silt/clay (1%)	A4-3	0.0	12-17-25 2.5/3



Project: ARDEN Job No.: WZ4060 Boring No.: MW-A4

DEPTH (Feet)	SYMBOL	LITHOLOGICAL DESCRIPTION	SAMPLE NUMBER	REMARKS OVA	REMARKS Blows
20	SM	Silty Sand - Fine to medium, olive grey, saturated, loose-flowing (99%); silt/clay (1%)	A4-4	(ppm) 3.5	Recovery 50=5 in Full
25	SM	Same as above	A4-5	0.5	5------- Full
30	SM	Grades to fine - medium coarse sand	A4-6	0.0	No blow count Full
35	SM	Same as above	A4-7	0.0	No blow count 1.5/3

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

Start Card 007971

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name Wes Tverberg Address Malott

(2) LOCATION OF WELL: County Okanogan — SE ¼ NE ¼ Sec 9 T 32 N., R 25 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well ..... inches.
Drilled ..... ft. Depth of completed well ..... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +1 ft. to 141 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☐ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐
Manufacturer's Name JOHNSON
Type TELESCOPING Model No .....
Diam. 5 Slot size 30 from 142 ft. to 147 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal .....
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 21 ft. below top of well Date .....
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? .....
Yield: 50+ gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
TOP SOIL	0	2
BROWN CLAY	2	12
SANDY CLAY	12	16
GRAVEL / WATER	16	27
BROWN SILT CLAY	27	63
GRAY SILT CLAY	63	138
Sand GRAVEL WATER	138	147

RECEIVED
R 22 1988
DEPARTMENT OF ECOLOGY
CENTRAL REGION OFFICE

Work started 3/16, 1988 Completed 3/18, 1988

WELL DRILLER'S STATEMENT:

ENTERED

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME CCT WELL DRILLING
(Person, firm, or corporation) (Type or print)

Address Rt 2, Box 395 Okanogan, WA 9884

[Signed] .....
(Well Driller)

License No. #0564 Date 3/21, 19 88

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. ....

Permit No. G4-26139

(1) OWNER: Name Bob Tollefson Address Mazama Wn

(2) LOCATION OF WELL: County Okanogan Govt Lot 2 ¼ Sec. 9 T. 32 N., R. 25 W.

Bearing and distance from section or subdivision corner 396' S + 620' E From The N. ¼ of Sec.

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 10" inches.
Drilled 110 ft. Depth of completed well 110 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 10" Diam. from 0 ft. to 110 ft.
Threaded ☐ ......" Diam. from ...... ft. to ...... ft.
Welded ☒ ......" Diam. from ...... ft. to ...... ft.

Perforations: Yes ☒ No ☐
Type of perforator used Mills
SIZE of perforations ...... in. by ...... in.
80 perforations from 99 ft. to 106 ft.
...... perforations from ...... ft. to ...... ft.
...... perforations from ...... ft. to ...... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name ....
Type .... Model No. ....
Diam. ...... Slot size ...... from ...... ft. to ...... ft.
Diam. ...... Slot size ...... from ...... ft. to ...... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: ....
Gravel placed from ...... ft. to ...... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? .... Depth of strata ....
Method of sealing strata off /

(7) PUMP: Manufacturer's Name ....
Type: .... H.P. ......

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 75' ft. below top of well Date ......
Artesian pressure ...... lbs. per square inch Date ......
Artesian water is controlled by .... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? ....
Yield: 150 gal./min. with 20 ft. drawdown after ...... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
Recovered	in 15	Seconds			

Date of test ....
Bailer test ...... gal./min. with ...... ft. drawdown after ...... hrs.
Artesian flow ...... g.p.m. Date ......
Temperature of water ...... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Dirt Rock + Gravel	0	14
Clay	14	80
Sand	80	95
Sand + Gravel	95	106
Sand w Less Gravel	106	110

RECEIVED
JUN 3 1980

Work started Nov 19 78 Completed Nov 19 78

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Dennis Hinger (Person, firm, or corporation) (Type or print)

Address Bx 181 Mazama

[Signed] Dennis Hinger (Well Driller)

License No. 0199 Date Nov 28, 1978

Ecology and environment

recycled paper

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

WRC

Application No. ~~[illegible]~~ 30814
Permit No. ....

(1) OWNER: Name Betty L. Carpenter Address ....

(2) LOCATION OF WELL: County Okanogan County — Molott Washington ¼ center ¼ Sec 9 T 32 N., R 25 W.M.
Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☑ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☐ Method: Dug ☑ Bored ☐
Deepened ☐ old Cable ☐ Driven ☐
Reconditioned ☐ well Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 3' inches.
Drilled ....ft. Depth of completed well 30' ft.

(6) CONSTRUCTION DETAILS:

Casing installed: ...." Diam. from .... ft. to .... ft.
cement
Threaded ☐ ...." Diam. from .... ft. to .... ft.
Welded ☐ ...." Diam. from .... ft. to .... ft.

Perforations: Yes ☐ No ☐
Type of perforator used ....
SIZE of perforations .... in. by .... in.
.... perforations from .... ft. to .... ft.
.... perforations from .... ft. to .... ft.
.... perforations from .... ft. to .... ft.

Screens: Yes ☑ No ☐
Manufacturer's Name Screened top (fine mesh screen)
Type .... Model No. ....
Diam. .... Slot size .... from .... ft. to .... ft.
Diam. .... Slot size .... from .... ft. to .... ft.

Gravel packed: Yes ☐ No ☑ Size of gravel: ....
Gravel placed from .... ft. to .... ft.

Surface seal: Yes ☐ No ☐ To what depth? .... ft.
Material used in seal ....
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? .... Depth of strata ....
Method of sealing strata off ....

(7) PUMP: Manufacturer's Name Sears Roebuck
Type: deep well H.P. 3/4

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 30' ft. below top of well Date ....
Artesian pressure .... lbs. per square inch Date ....
Artesian water is controlled by .... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☑ No ☐ If yes, by whom? 39 yrs. ago
Yield: 10 gal./min. with no ft. drawdown after ??? hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ....
Bailer test .... gal./min. with .... ft. drawdown after .... hrs.
Artesian flow .... g.p.m. Date ....
Temperature of water very Cold Was a chemical analysis made? Yes ☑ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO

Work started ...., 19.... Completed ...., 19....

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME dug 39 yrs. ago — (Person, firm, or corporation) (Type or print)

Address ~~purchased property from~~ Mr. Ivan Larsen Box 58 Molott Washington

[Signed] .... (Well Driller)
(I believe his Dad dug the well)
License No. .... Date ...., 19....
(Long since deceased)

recycled paper ecology and environment

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71).

: Original and First Copy with
partment of Ecology
econd Copy — Owner's Copy
hird Copy — Driller's Copy

WATER WELL REPORT No Record
STATE OF WASHINGTON

Application No. ....
Permit No. ....

(1) OWNER: Name ANDREW A. LARSEN Address BOX 132 MALOTT WN. 988

(2) LOCATION OF WELL: County OKANOGAN — SW ¼ ... ¼ Sec 9 T 32 N., R 25 EW

...aring and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6" inches.
Drilled .... ft. Depth of completed well .... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 0 ft. to 37 ft.
Threaded ☐ ...." Diam. from .... ft. to .... ft.
Welded ☒ ...." Diam. from .... ft. to .... ft.

Perforations: Yes ☐ No ☐
Type of perforator used ....
SIZE of perforations .... in. by .... in.
.... perforations from .... ft. to .... ft.
.... perforations from .... ft. to .... ft.
.... perforations from .... ft. to .... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name ....
Type .... Model No. ....
Diam. .... Slot size .... from .... ft. to .... ft.
Diam. .... Slot size .... from .... ft. to .... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: ....
Gravel placed from .... ft. to .... ft.

Surface seal: Yes ☐ No ☐ To what depth? .... ft.
Material used in seal ....
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? .... Depth of strata ....
Method of sealing strata off ....

(7) PUMP: Manufacturer's Name ....
Type: Jacuzzi H.P. 1/3

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 27 ft. below top of well Date ....
Artesian pressure .... lbs. per square inch Date ....
Artesian water is controlled by .... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? ....
Yield: .... gal./min. with .... ft. drawdown after .... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ....
...iler test .... gal./min. with .... ft. drawdown after .... hrs.
Artesian flow .... g.p.m. Date ....
Temperature of water .... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
dirt	0	2
gravel & ~~sand~~ rock	2	18
gravel & sand	18	37

RECEIVED AUG 28 11 57 AM '73 DEPT. OF ECOLOGY

AUG 2? ... DEPARTMENT OF ECOLOGY SPOKANE REGIONAL OFFICE

Work started Oct 1968 Completed .... 19....

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report true to the best of my knowledge and belief.

NAME Dennis Hingen (Person, firm, or corporation) (Type or print)

Address Rt 1 Bx 302 Okanogan

[Signed] .... (Well Driller)

License No. .... Date ...., 19....

recycled paper 8/29/73 AA

(USE ADDITIONAL SHEETS IF NECESSARY)

ecology and environment

S. F. No. 7356—OS—(Rev. 4-71).

Across P or ?

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. .... /

(1) OWNER: Name Mallott Community Well Address Colville Confederated Tribes, Nespelem, W

(2) LOCATION OF WELL: County OKANOGAN — NE ¼ SW ¼ Sec 7 T 32 N., R 25 W.M.

ing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).... 2
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 160 ft. Depth of completed well 157 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +1 ft. to 147 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type SS Model No
Diam. 6" Slot size .015 from 147 ft. to 157 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 50+est gal./min. with ft. drawdown after 2 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Sand	0	13
Sand & gravel	13	46
Blue muck (silt & clay)	46	132
Sand dirty	132	143
Sand & gravel	143	160

Work started 4/2, 19 80 Completed 4/4, 19 80

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Bartholomew Drilling, Inc.
(Person, firm, or corporation) (Type or print)

Address Nine Mile Falls, Wa 99026

[Signed] Gary Bartholomew
(Well Driller)

License No. 0051 Date 4/9, 19 80

(USE ADDITIONAL SHEETS IF NECESSARY)

DK 12.29.81

Across River

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. .... /

(1) OWNER: Name Dave Condon Address Colville Confederated Tribes, Nespelem, W

(2) LOCATION OF WELL: County OKANOGAN – SE ¼ SE ¼ Sec. 9 T. 32 N., R. 25

ing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 102 ft. Depth of completed well 97 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +1 ft. to 92 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Model No.
Diam. Slot size .015 from 92 ft. to 97 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
~~Bailer~~ test 40+ gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation*

MATERIAL	FROM	TO
Cobbles	0	32
Clay	32	53
Sand	53	94
Sand & clay	94	102

Work started 9/19, 19 80 Completed 9/22 19 8

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Bartholomew Drilling, Inc.
(Person, firm, or corporation) (Type or print)

Address Nine Mile Falls, Wa 99026

[Signed] Jerry Bartholomew
(Well Driller)

License No. 0051 Date 10/1, 19 80

recycled paper
ecology and environment

(USE ADDITIONAL SHEETS IF NECESSARY)

AR 102980

Appendix B

DATA EVALUATION OF SOIL-GAS SCREENING RESULTS AND SOIL AND GROUNDWATER SAMPLE ANALYTICAL RESULTS

MEMORANDUM

DATE: August 22, 1991

TO: Joe Mollusky, Project Manager, E & E, Seattle

FROM: David A. Ikeda, Chemist, E & E, Seattle
Lila Transue, Senior Chemist, E & E, Seattle

SUBJ: Soil-Gas Screening Results
Arden's Country Store
Malott, Washington

REF: Contract No. C0089007
Work Assignment No. 17

CC: Lyle Diediker, Program Manager, E & E, Seattle

Analytical screening of 24 soil-gas samples, collected at Arden's Country Store, was performed by Ecology and Environment, Inc. chemists under Ecology Task Number WZ4050. The samples were screened for benzene, toluene, ethylbenzene, m-xylene, p-xylene, o-xylene (BTEX), dichloroethane, 1,1,1-tricloroethane, and trichloroethene. The screening results should be considered as tentatively identified at estimated concentrations.

1) Instrument Parameters

Instrument:	Photovac 10S50
Column:	CPSIL 5CB, 10 meters
Carrier Gas:	Zero Air
Flow Rate:	5-7 mL/min. (set daily)
Oven:	30°C - Isothermal
Injection Volume:	20-200 microliters
G.C. Analysis Time:	15 minutes

Initial Calibration

Samples were quantitated using the external standard method. Working gas standards at known concentrations were prepared by dilution of primary gas standards. Prior to sample analysis, a three-point

initial calibration was performed for all target compounds except dichloroethane and 1,1,1-trichloroethane to establish detector linearity. Standard concentrations of 0.5 µg/L, 5.0 µg/L, and 50 µg/L were selected to bracket expected sample concentrations. As dichloroethane and 1,1,1-trichloroethane have significantly lower detector response than the other target compounds, a one-point calibration was performed for these two compounds, using the highest concentration standard.

Calibration factors (CFs) were calculated for each target compound at each concentration using the following equation:

$$CF = \frac{\text{Standard Peak Area}}{\text{Concentration of Standard Injected (normalized for a 200 µL injection)}}$$

1,1,1-trichloroethane and dichloroethane could not be separated on the CPSIL 5CB column. Therefore, the total response was calculated, and a single calibration factor was calculated for these two compounds.

To ensure detector linearity, the percent relative standard deviation (%RSD) for the initial calibration curve as calculated by the equation below, was confirmed as less than 35 percent for each target compound except benzene, which had a %RSD of 46 percent.

$$\%RSD = \frac{\text{Standard Deviation}}{\text{Mean CF}} \times 100$$

Where the Standard Deviation (SD), is given by:

$$SD = \sqrt{\sum_{i=1}^{N} \frac{(CF_i - \overline{CF})^2}{N-1}}$$

CF_i = Calibration factor for the individual calibration standard (per analyte).

$\overline{CF}$ = Mean CF (per analyte).

N = number of calibration standards

Continuing Calibration

A continuing calibration was performed daily to ensure instrument stability. A 5.0 µg/L gas standard (50 µg/L for dichloroethane and 1,1,1-trichloroethane) was injected into the gas chromatograph and a new CF was calculated. The relative percent difference (RPD) between the CF from the continuing calibration and the mean CF ($\overline{CF}$) from the initial calibration was calculated for each target compound using the following equation:

$$RPD = \frac{(\overline{CF} - CF)}{\left(\frac{\overline{CF} + CF}{2}\right)} \times 100$$

CFs were updated daily. Benzene and toluene RPD values for the mid point standard were consistently greater than 30 percent. However, when the CF from the 5.0 µg/L standard in the initial calibration and the CF from the continuing calibration were compared, the RPD values were within 30 percent for both benzene and toluene.

Sample Analysis

Following instrument calibration, a method blank was analyzed to ensure that the analytical system was free of contamination. For sample analysis, an aliquot of the soil-gas sample was injected into the GC for analysis. The sample chromatograms and peak areas were printed out on the 10S50 integrator at the end of each run. Every two hours, a midpoint standard analysis and blank analysis were performed to ensure detector response, verify retention times, and verify that the analytical system was free of contamination. Compounds were identified by comparing sample peak retention times to the standard peak retention times from the two standards that bracketed the sample analysis. If a peak was identified as a target compound, the peak area was used to compute the concentration of the analyte using the following equation:

$$\text{Conc. (ug/L)} = \frac{\text{Peak Area x Dilution Factor}}{\text{CF x Injection Volume (µL)}} \times 200$$

Where CF is the calibration factor for the identified compound taken from the daily continuing calibration.

A total concentration was reported for 1,1,1-trichloroethane and dichloroethane combined, as these two compounds co-eluted.

Sample results are presented in Table 1.

Table 1

SOIL – GAS SCREENING RESULTS
ARDEN'S COUNTRY STORE
MALOTT, WASHINGTON

(µg/L)

Compounds/Sample	SG-2	SG-3	SG-4	SG-6	SG-7	SG-8	SG-9	SG-10	SG-11	SG-14	SG-17	SG-18	SG-20
DCA/1,1,1-TCA (1)	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Benzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Trichloroethene	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U
Toluene	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.47	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Ethyl Benzene	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U
m/p-Xylenes	1.1 J	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Compounds/Sample	SG-21	SG-24	SG-27	SG-29	SG-30	SG-31	SG-32	SG-33	SG-34	SG-35	SG-36
DCA/1,1,1-TCA (1)	15000	100 U	100 U	100 U	100 U	10,000 U	180,000	100 U	100 U	100 U	100 U
Benzene	61	0.36 U	0.58	0.36 U	0.36 U	100	3,000	0.36 U	0.36 U	0.36 U	0.36 U
Trichloroethene	217	0.59 U	0.59 U	0.59 U	0.59 U	240	1,800	0.59 U	0.59 U	0.59 U	0.59 U
Toluene	69	0.44 U	3.6	0.44 U	0.44 U	710	4,900	0.44 U	0.44 U	0.44 U	0.44 U
Ethyl Benzene	5.6 U	0.56 U	0.56 U	0.56 U	0.56 U	56 U	110	0.56 U	0.56 U	0.56 U	0.56 U
m/p-Xylenes	15	1.2 U	5.5	1.2 U	1.0 J	100 U	1,100	1.2 U	1.1 J	1.2 U	1.2 U
o-Xylene	10 U	1.0 U	3.2	1.0 U	1.0 U	100 U	390	1.0 U	1.0 U	1.0 U	1.0 U

(1) Dichloroethane (DCA) and 1,1,1-Trichloroethane (1,1,1-TCA) coeluted.
U – The material was analyzed for but was not detected. The associated numerical value is an quantitation limit, adjusted for sample dilution.
J – The analyte was analyzed for and was positively identified, but the associated numerical value was below the quantitation limit but above the instrument detection limit.

MEMORANDUM

DATE: October 16, 1991

FOR: Joseph Mollusky, Project Manager, E & E, Seattle

THRU: Carolyn, O'Brien, Program Manager, E & E, Seattle

FROM: Lila Transue, Senior Chemist, E & E, Seattle

SUBJ: Data Evaluation for Arden's Country Store

REF: Contract Number C0089007
Work Assignment Number 20, WZ4080

CC: Susan Burgdorff, Department of Ecology, Olympia

An evaluation of data for 24 samples, collected from Arden's Country Store, has been completed. Eight water samples were analyzed for volatile organic compounds (VOCs) (low detection limit), ethylene dibromide (EDB), total volatile petroleum hydrocarbons (TVPH), total recoverable petroleum hydrocarbons (TRPH), pesticides, and lead. Five water samples were analyzed for VOCs, EDB, TVPH, diesel hydrocarbons, and lead. Three water samples were analyzed for VOCs, one with low detection limits. Eight soil samples were analyzed for VOCs, TVPH, diesel hydrocarbons, TRPH, pesticides, and lead. The samples were analyzed by Analytical Resources, Incorporated, of Seattle, Washington.

The samples were analyzed using the following methodologies:

VOCs: USEPA Method 624, contained in the Federal Register Volume 49, Number 209, October 26, 1984, 40 CFR Part 136, Appendix A (low detection limits).

or

USEPA "Test Methods for Evaluating Solid Waste", SW-846, September 1986 (SW-846) Method 8240.

TVPH: SW-846 Method 5030/Method 8015 (modified).

Diesel Hydrocarbons: SW-846 Method 3510 or 3540/Method 8015 (modified).

TRPH: USEPA "Methods for Chemical Analysis of Water and Wastes", EPA 600/4-72-020, March 1983, Method 418.1.

Lead: SW-846 Method 7421.

Pesticides: SW-846 Method 3510 or 3540/Method 8080.

EDB: SW-846 Method 8010 (modified).

Due to laboratory miscommunication, samples A1-W1, A2-W1, A3-W1, A4-W1, and A5-W1 were not analyzed for TRPH. Also, diesel hydrocarbon analysis was performed for all soil samples and water samples A1-W1 through A5-W1, although this parameter was not requested in the laboratory subcontract. All reported results are included in this data evaluation memorandum.

Sample numbers and analyses performed are summarized below:

Sample Number	VOCs	TVPH	Diesel Hydro-carbons	TRPH	Lead	Pest.	EDB
RW-1 (water)	L	X	-	X	X	X	X
RW-2 (water)	L	X	-	X	X	X	X
RW-3 (water)	L	X	-	X	X	X	X
RW-5 (water)	L	X	-	X	X	X	X
RW-6 (water)	L	X	-	X	X	X	X
RW-7 (water)	L	X	-	X	X	X	X
RW-8 (water)	L	X	-	X	X	X	X
RW-9 (water)	L	X	-	X	X	X	X
TB-1 (water)	L	-	-	-	-	-	-
A1-W1 (water)	X	X	X	-	X	-	X
A2-W1 (water)	X	X	X	-	X	-	X
A3-W1 (water)	X	X	X	-	X	-	X
A4-W1 (water)	X	X	X	-	X	-	X
A5-W1 (water)	X	X	X	-	X	-	X
TB-A2 (water)	X	-	-	-	-	-	-
A1-2 (soil)	X	X	X	X	X	X	-
A1-4 (soil)	X	X	X	X	X	X	-
A2-2 (soil)	X	X	X	X	X	X	-
A3-2 (soil)	X	X	X	X	X	X	-
A4-4 (soil)	X	X	X	X	X	X	-
A4-9 (soil)	X	X	X	X	X	X	-
A4-10 (water)	X	-	-	-	-	-	-
A5-2 (soil)	X	X	X	X	X	X	-
A5-3 (soil)	X	X	X	X	X	X	-

Pest. = Pesticides
L = Analyzed at low detection limits (25 mL purge volume)
X = Analyzed
- = Not analyzed

The following assumptions were made by the data evaluator for this data package:

- All calibration were assumed to have followed correct procedures and have results within method specified Quality Control (QC) limits;
- Instrument detection limits were assumed to be less than or equal to the laboratory reporting limit;
- All analyte identifications were assumed to be correct;
- All specific QA requirements outlined in the appropriate methods were assumed to have been followed:
- All laboratory criteria for QC analyses were assumed to meet the method QC criteria;
- All transcriptions and calculations made by the laboratory were assumed to be correct.

The data evaluation consisted of a check of extraction and analysis times, surrogate recoveries, matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries, duplicate relative percent difference (RPD), and method blank results. Raw data was not checked as part of this data evaluation, except where a discrepancy was noted.

Overall, data were acceptable for use. Data qualifiers (based on USEPA Hazardous Site Evaluation Division, Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis, February, 1988) may have been used to flag data when Quality Assurance Project Plan (QAPjP) or laboratory quality control criteria were not met. Data qualifiers may modify the usefulness of individual values.

1) Timeliness

All samples met QAPjP or method required holding times, except:

Sample Number	Parameter	Matrix	Holding Time	QC Criteria
A5-W1	TVPH	Water	19 days	14 days
A3-2	TVPH	Soil	26 days	14 days
A5-2	TVPH	Soil	23 days	14 days

Data for the samples and parameters listed above were flagged as estimated quantities (J or UJ).

2) Blanks

Frequency criteria were met for laboratory blank analysis.

The following contaminants were detected in the laboratory blanks at levels above instrument detection limits (IDL):

Blank I.D.	Parameter	Contaminant	Amount Found	IDL	Assoc. samples
MB0718	VOCs	Methylene Chloride	0.3J µg/L	0.4 µg/L	+
MB0719	VOCs	Methylene Chloride	0.3J µg/L	0.4 µg/L	++
PBW1	Inorganic	Lead	1.4 µg/L	1.0 µg/L	*
CCB4B	Inorganic	Lead	1.3 µg/L	1.0 µg/L	**
MB0729	VOCs	Methylene Chloride	0.7J µg/kg	5.0 µg/kg	***
		Acetone	2.1J µg/kg	5.0 µg/kg	***
MB0730W	VOCs	Methylene Chloride	1.1J µg/L	5.0 µg/L	A4-10
		Acetone	9.4J µg/L	5.0 µg/L	A4-10
MB0730S	VOCs	Methylene Chloride	1.1J µg/kg	5.0 µg/kg	A3-2
		Acetone	9.4J µg/kg	5.0 µg/kg	A3-2
MB0730H	VOCs	Methylene Chloride	1,300J µg/kg	6,300 µg/kg	A5-2
		Acetone	12,000 µg/kg	6,300 µg/kg	A5-2
MB0801	VOCs	Methylene Chloride	1.6 µg/L	5.0 µg/L	**
		2-Hexanone	1.5 µg/L	5.0 µg/L	**

* - RW-1, RW-2, RW-3, RW-5, RW-6, RW-7, RW-8, RW-9
** - A1-W1, A2-W1, A3-W1, A4-W1
*** - A1-2, A1-4, A2-2, A4-4, A4-9, A5-3
\+ - RW-1, RW-2, RW-5, RW-7, TB-1
++ - RW-3, RW-6, RW-8, RW-9

Reported levels of the above compounds in the samples were flagged "UJ" (estimated quantitation limit) if the concentrations were below five times the concentrations found in the appropriate blank (10 times for common solvents).

No Tentatively Identified Compounds (TICs) were identified in the laboratory blanks.

3) Surrogate Recovery

Recoveries (%R) for all surrogate compounds for the VOC, TVPH, diesel hydrocarbons, EDB, and pesticide analyses met laboratory or method criteria, except:

Sample Number	Matrix	Parameter	Surrogate Compound	%R	QC Limits
RW-2	Water	VOC	1,2-Dichloroethane-d4	116	76-114%
RW-5	Water	VOC	1,2-Dichloroethane-d4	117	76-114%
RW-9	Water	VOC	Bromofluorobenzene	84.2	86-115%
TB-1	Water	VOC	1,2-Dichloroethane-d4	120	76-114%

For the samples listed above with high surrogate recoveries (RW-2, RW-5, and TB-1), positive results were flagged as estimated quantities (J) in the volatile fraction. For RW-9 with a low surrogate recovery, positive results and quantitation limits were flagged as estimated (J or UJ) in the volatile fraction.

4) Duplicate and Matrix Spike Analysis

All duplicate relative percent difference (RPD) values and matrix spike percent recoveries (%Rs) for lead analysis were within laboratory or QAPjP QC guidelines.

5) Matrix Spike and Matrix Spike Duplicate Analysis

All MS and MSD %Rs for VOCs TVPH, diesel hydrocarbons, TRPH, EDB and pesticide analysis met laboratory or QAPjP QC criteria, except:

Sample Number	Matrix	Parameter	Spike Compound	%R	QC Limits
A1-2 MS	Soil	Pesticides	Aldrin	141	34-132%
A1-2 MSD	Soil	Pesticides	Aldrin	147	34-132%
A3-2 MS	Soil	Pesticides	Aldrin	136	34-132%
A3-2 MSD	Soil	Pesticides	Aldrin	136	34-132%

No action was taken, as aldrin was not detected in sample A1-2 or sample A3-2.

All RPD values for MS and MSD analyses were within laboratory or QAPjP guidelines.

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is a laboratory quantitation limit, adjusted for sample weight/sample volume, extraction volume, percent solids and sample dilution.

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample. The data should be seriously considered for decision-making and are usable for many purposes.

UJ - The material was analyzed for, but was not detected. The associated numerical value is an estimated/adjusted quantitation limit. The associated numerical value may not accurately or precisely represent the concentration necessary to detect the analyte in this sample.

R - Quality Control indicates the data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not be verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

LT:rmh

Appendix C

SOIL AND GROUNDWATER SAMPLE ANALYTICAL RESULTS

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 A

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	2.0	UJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

LaJ 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 B

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-2

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	2.0	UJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

fdj 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 C

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-3

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	1.0	U
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

LAJ 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 D

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-5

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	1.0	U
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

laj 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 E

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-6

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	1.0	U
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 F

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-7

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	1.2	uJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

LaJ 10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 G

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-8

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	1.2	UJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8632 H

% Solids:

Date Received: 07/11/91

Client's Sample Number

RW-9

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	3.5	u J
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 A

% Solids: 89.83

Date Received: 07/29/91

Client's Sample Number

A1-2

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	4.5
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 B

% Solids: 92.74

Date Received: 07/29/91

Client's Sample Number

A1-4

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	3.5
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 E

% Solids: 87.69

Date Received: 07/29/91

Client's Sample Number

A2-2

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	2.7
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8729 A

% Solids: 81.05

Date Received: 07/29/91

Client's Sample Number

A3-2

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	2.8
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 F

% Solids: 83.61

Date Received: 07/29/91

Client's Sample Number

A4-4

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	2.4
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 G

% Solids: 81.21

Date Received: 07/29/91

Client's Sample Number

A4-9

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	2.4
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 C

% Solids: 96.08

Date Received: 07/29/91

Client's Sample Number

A5-2

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	2.9
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-1a-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Soil

Lab Sample ID: 8715 D

% Solids: 76.95

Date Received: 07/29/91

Client's Sample Number

A5-3

Concentration Units (ug/L or mg/kg dry weight): mg/kg-dry

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	6.2
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8729 C

% Solids:

Date Received: 07/29/91

Client's Sample Number

A1-W1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	2.9	UJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

LaJ 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8729 F

% Solids:

Date Received: 07/29/91

Client's Sample Number

A2-W1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	4.9	uJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

fdj 10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8729 E

% Solids:

Date Received: 07/29/91

Client's Sample Number

A3-W1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	
7429-90-5	Aluminum		
7440-36-0	Antimony		
7440-38-2	Arsenic		
7440-39-3	Barium		
7440-41-7	Beryllium		
7440-43-9	Cadmium		
7440-70-2	Calcium		
7440-47-3	Chromium		
7440-48-4	Cobalt		
7440-50-8	Copper		
7439-89-6	Iron		
7439-92-1	Lead	3.3	uJ
7439-95-4	Magnesium		
7439-96-5	Manganese		
7439-97-6	Mercury		
7440-02-0	Nickel		
7440-09-7	Potassium		
7782-49-2	Selenium		
7440-22-4	Silver		
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium		
7440-66-6	Zinc		
	Cyanide		

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

LG 10-10-91

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8729 D

% Solids:

Date Received: 07/29/91

Client's Sample Number

A4-W1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	8.3
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

10-10-91

INORGANIC ANALYSIS DATA SHEET

Client: E&E

Lab Name: Analytical Resources, Inc.

Matrix (soil/water): Water

Lab Sample ID: 8729 B

% Solids:

Date Received: 07/29/91

Client's Sample Number

A5-W1

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration
7429-90-5	Aluminum	
7440-36-0	Antimony	
7440-38-2	Arsenic	
7440-39-3	Barium	
7440-41-7	Beryllium	
7440-43-9	Cadmium	
7440-70-2	Calcium	
7440-47-3	Chromium	
7440-48-4	Cobalt	
7440-50-8	Copper	
7439-89-6	Iron	
7439-92-1	Lead	8.1
7439-95-4	Magnesium	
7439-96-5	Manganese	
7439-97-6	Mercury	
7440-02-0	Nickel	
7440-09-7	Potassium	
7782-49-2	Selenium	
7440-22-4	Silver	
7440-23-5	Sodium	
7440-28-0	Thallium	
7440-62-2	Vanadium	
7440-66-6	Zinc	
	Cyanide	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

fa 10-10-91

FORM I - IN

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-1

Lab ID: 8632A
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized:
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

Instrument: FINN III
Date Analyzed: 7/18/91

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	Methylene Chloride	0.4 U
67-64-1	Acetone	2.0 U
75-15-0	**Carbon Disulfide**	**0.08 J**
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**0.8**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-2

Lab ID: 8632B
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized: _____
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Instrument: FINN III
Date Analyzed: 7/18/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	Methylene Chloride	0.4 U
67-64-1	**Acetone**	**2.1 MJ**
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**0.7 J**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	**Tetrachloroethene**	**0.1 MJ**
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LaJ 10-91

Data Reporting Qualifiers

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected at the given detection limit.

J — Indicates an estimated value when result is less than specified detection limit.

B — This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K — This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M — Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-3

Lab ID: 8632C
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized:
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Instrument: FINN III
Date Analyzed: 7/19/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	Methylene Chloride	0.4 U
67-64-1	**Acetone**	**1.2 J**
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	**Chloroform**	**0.1 M**
107-06-2	**1,2-Dichloroethane**	**1.5**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	**Tetrachloroethene**	**0.1 M**
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-5

Lab ID: 8632D
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized: [signature]
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Instrument: FINN III
Date Analyzed: 7/18/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	0.4 U
74-83-9	Bromomethane	0.4 U
75-01-4	Vinyl Chloride	0.4 U
75-00-3	Chloroethane	0.4 U
75-09-2	**Methylene Chloride**	**0.08** UJ
67-64-1	**Acetone**	**2.3** J
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**2.3** J
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	**Tetrachloroethene**	**0.06 M**J
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

[initials] 10-10-91

Data Reporting Qualifiers

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected at the given detection limit.

J — Indicates an estimated value when result is less than specified detection limit.

B — This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K — This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M — Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-6

Lab ID: 8632Ere
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized:
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Instrument: FINN III
Date Analyzed: 7/19/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	Methylene Chloride	0.4 U
67-64-1	**Acetone**	**0.9 M**
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	**Chloroform**	**0.3**
107-06-2	**1,2-Dichloroethane**	**0.7**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-7

Lab ID: 8632Fre
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized: *James B. Patton*
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

Instrument: FINN III
Date Analyzed: 7/18/91

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	**Methylene Chloride**	**0.1 UJ**
67-64-1	**Acetone**	**2.0 M**
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**1.0**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LAJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 **Sample: RW-8**

Lab ID: 8632Gre
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized: _____
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Instrument: FINN III
Date Analyzed: 7/19/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	Methylene Chloride	0.4 U
67-64-1	**Acetone**	**0.6 J**
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**0.8**
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 Sample: RW-9

Lab ID: 8632Hre
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized:
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

Instrument: FINN III
Date Analyzed: 7/19/91

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U J
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	**Methylene Chloride**	**0.06 U J**
67-64-1	**Acetone**	**0.7 J**
75-15-0	Carbon Disulfide	0.2 U J
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	**1,2-Dichloroethane**	**1.4 J**
78-93-3	2-Butanone	2.0 U J
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U J
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	**Tetrachloroethene**	**0.1 M J**
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U J
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

LAJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524/8240 **Sample: TB-1**

Lab ID: 8632I
Matrix: Waters

QC Report No: 8632 - E&E
Project No: WZ-4050

Data Release Authorized: *Lynn B. Kahn*
Report prepared 7/19/91 - MAC:K kas

Date Received: 07/11/91

Amount Purged: 25 mls
Conc/Dil: 1 to 1
pH: NA

Instrument: FINN III
Date Analyzed: 7/18/91

CAS Number		µg/L
74-87-3	Chloromethane	0.2 U
74-83-9	Bromomethane	0.2 U
75-01-4	Vinyl Chloride	0.2 U
75-00-3	Chloroethane	0.2 U
75-09-2	**Methylene Chloride**	**0.09 UJ**
67-64-1	Acetone	2.0 U
75-15-0	Carbon Disulfide	0.2 U
75-35-4	1,1-Dichloroethene	0.2 U
75-34-3	1,1-Dichloroethane	0.2 U
156-60-5	Trans-1,2-Dichloroethene	0.2 U
156-59-2	Cis-1,2-Dichloroethene	0.2 U
67-66-3	Chloroform	0.2 U
107-06-2	1,2-Dichloroethane	0.2 U
78-93-3	2-Butanone	2.0 U
71-55-6	1,1,1-Trichloroethane	0.2 U
56-23-5	Carbon Tetrachloride	0.2 U
108-05-4	Vinyl Acetate	0.2 U
75-27-4	Bromodichloromethane	0.2 U
75-69-4	Trichlorofluoromethane	0.4 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	0.2 U
10061-02-6	Trans-1,3-Dichloropropene	0.2 U
79-01-6	Trichloroethene	0.2 U
124-48-1	Dibromochloromethane	0.2 U
79-00-5	1,1,2-Trichloroethane	0.2 U
71-43-2	Benzene	0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.2 U
110-75-8	2-Chloroethylvinylether	0.2 U
75-25-2	Bromoform	0.2 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.2 U
108-88-3	Toluene	0.2 U
108-90-7	Chlorobenzene	0.2 U
100-41-4	Ethylbenzene	0.2 U
100-42-5	Styrene	0.2 U
1330-20-7	Total Xylenes	0.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U

Jaj 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A1-2

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 A
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: 4.8 g (Dry wt.)
Percent Moisture: 6.2%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	5.2 U
74-83-9	Bromomethane	3.1 U
75-01-4	Vinyl Chloride	3.1 U
75-00-3	Chloroethane	3.1 U
75-09-2	**Methylene Chloride**	**0.7 UJ**
67-64-1	**Acetone**	**22 UJ**
75-15-0	Carbon Disulfide	2.1 U
75-35-4	1,1-Dichloroethene	2.1 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	7.8 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	1.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	1.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone	2.1 U
591-78-6	2-Hexanone	4.2 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**0.7 J**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.1 U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.2 U

LAJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORA

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5
(206) 621-6490
(206) 621-7523 (FA

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A1-2

Lab ID: 8715 A
Matrix: Soils/Sediments
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown (BP M/E 249)	VOA	1142	52 J
2	-	Unknown (BP M/E 73)	VOA	1395	190 J
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A1-4

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 B
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: 4.6 g (Dry wt.)
Percent Moisture: 9.8%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	5.5 U
74-83-9	Bromomethane	3.3 U
75-01-4	Vinyl Chloride	3.3 U
75-00-3	Chloroethane	3.3 U
75-09-2	**Methylene Chloride**	1.1 UJ
67-64-1	**Acetone**	2.7 UJ
75-15-0	Carbon Disulfide	2.2 U
75-35-4	1,1-Dichloroethene	2.2 U
75-34-3	1,1-Dichloroethane	1.1 U
156-60-5	trans-1,2-Dichloroethene	1.1 U
156-59-2	cis-1,2-Dichloroethene	1.1 U
67-66-3	Chloroform	1.1 U
107-06-2	1,2-Dichloroethane	1.1 U
78-93-3	2-Butanone	8.2 U
71-55-6	1,1,1-Trichloroethane	1.1 U
56-23-5	Carbon Tetrachloride	1.1 U
108-05-4	Vinyl Acetate	1.1 U
75-27-4	Bromodichloromethane	1.1 U
75-69-4	Trichlorofluoromethane	1.1 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.1 U
10061-02-6	Trans-1,3-Dichloropropene	1.1 U
79-01-6	Trichloroethene	1.1 U
124-48-1	Dibromochloromethane	1.1 U
79-00-5	1,1,2-Trichloroethane	1.1 U
71-43-2	Benzene	1.1 U
10061-01-5	cis-1,3-Dichloropropene	1.1 U
110-75-8	2-Chloroethylvinylether	1.1 U
75-25-2	Bromoform	1.1 U
108-10-1	4-Methyl-2-Pentanone	2.2 U
591-78-6	2-Hexanone	4.4 U
127-18-4	Tetrachloroethene	1.1 U
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U
108-88-3	**Toluene**	**3.2**
108-90-7	Chlorobenzene	1.1 U
100-41-4	Ethylbenzene	1.1 U
100-42-5	Styrene	1.1 U
1330-20-7	Total Xylenes	2.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.5 U

LaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A1-4**

QC Report No: 8715-E & E
Project No: WZ4060

Lab ID: 8715 B
Matrix: Soils/Sediments
Instrument: FINN 5

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown (BP M/E 73)	VOA	1395	34 J
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Form 1, Part B

LAJ 10/2/91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A2-2

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 E
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: 4.8 g (Dry wt.)
Percent Moisture: 8.9%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	5.3 U
74-83-9	Bromomethane	3.2 U
75-01-4	Vinyl Chloride	3.2 U
75-00-3	Chloroethane	3.2 U
75-09-2	**Methylene Chloride**	**1.2 UB**
67-64-1	**Acetone**	**3.7 UB**
75-15-0	Carbon Disulfide	2.1 U
75-35-4	1,1-Dichloroethene	2.1 U
75-34-3	1,1-Dichloroethane	1.1 U
156-60-5	trans-1,2-Dichloroethene	1.1 U
156-59-2	cis-1,2-Dichloroethene	1.1 U
67-66-3	Chloroform	1.1 U
107-06-2	1,2-Dichloroethane	1.1 U
78-93-3	2-Butanone	7.9 U
71-55-6	1,1,1-Trichloroethane	1.1 U
56-23-5	Carbon Tetrachloride	1.1 U
108-05-4	Vinyl Acetate	1.1 U
75-27-4	Bromodichloromethane	1.1 U
75-69-4	Trichlorofluoromethane	1.1 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.1 U
10061-02-6	Trans-1,3-Dichloropropene	1.1 U
79-01-6	Trichloroethene	1.1 U
124-48-1	Dibromochloromethane	1.1 U
79-00-5	1,1,2-Trichloroethane	1.1 U
71-43-2	Benzene	1.1 U
10061-01-5	cis-1,3-Dichloropropene	1.1 U
110-75-8	2-Chloroethylvinylether	1.1 U
75-25-2	Bromoform	1.1 U
108-10-1	4-Methyl-2-Pentanone	2.1 U
591-78-6	2-Hexanone	4.2 U
127-18-4	Tetrachloroethene	1.1 U
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U
108-88-3	**Toluene**	**0.6 M**
108-90-7	Chlorobenzene	1.1 U
100-41-4	Ethylbenzene	1.1 U
100-42-5	Styrene	1.1 U
1330-20-7	Total Xylenes	2.1 U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.3 U

LAJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A2-2

QC Report No: 8715-E & E
Project No: WZ4060

Lab ID: 8715 E
Matrix: Soils/Sediments
Instrument: FINN 5

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

LAJ 10-10-91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A3-2

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8729 A
Matrix: Soils/Sediments

QC Report No: 8729
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/26/91 MAC:D jv

Date Received: 07/29/91
Amount Analyzed: 4.2 g (Dry wt.)
Percent Moisture: 19.0%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/30/91

CAS Number		µg/Kg
74-87-3	Chloromethane	6.0 U
74-83-9	Bromomethane	3.6 U
75-01-4	Vinyl Chloride	3.6 U
75-00-3	Chloroethane	3.6 U
75-09-2	**Methylene Chloride**	**1.2 UJ**
67-64-1	**Acetone**	**19 UJ**
75-15-0	Carbon Disulfide	2.4 U
75-35-4	1,1-Dichloroethene	2.4 U
75-34-3	1,1-Dichloroethane	1.2 U
156-60-5	trans-1,2-Dichloroethene	1.2 U
156-59-2	cis-1,2-Dichloroethene	1.2 U
67-66-3	Chloroform	1.2 U
107-06-2	1,2-Dichloroethane	1.2 U
78-93-3	2-Butanone	9.0 U
71-55-6	1,1,1-Trichloroethane	1.2 U
56-23-5	Carbon Tetrachloride	1.2 U
108-05-4	Vinyl Acetate	1.2 U
75-27-4	Bromodichloromethane	1.2 U
75-69-4	Trichlorofluoromethane	1.2 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.2 U
10061-02-6	Trans-1,3-Dichloropropene	1.2 U
79-01-6	Trichloroethene	1.2 U
124-48-1	Dibromochloromethane	1.2 U
79-00-5	1,1,2-Trichloroethane	1.2 U
71-43-2	Benzene	1.2 U
10061-01-5	cis-1,3-Dichloropropene	1.2 U
110-75-8	2-Chloroethylvinylether	1.2 U
75-25-2	Bromoform	1.2 U
108-10-1	4-Methyl-2-Pentanone	2.4 U
591-78-6	2-Hexanone	4.8 U
127-18-4	Tetrachloroethene	1.2 U
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U
108-88-3	**Toluene**	**1.8**
108-90-7	Chlorobenzene	1.2 U
100-41-4	Ethylbenzene	1.2 U
100-42-5	Styrene	1.2 U
1330-20-7	Total Xylenes	2.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		6.0 U

JaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A3-2

Lab ID: 8729 A
Matrix: Soil/Sediments
Instrument: FINN 5

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: Dan B. Potter
Report preparted: 08/26/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown (BP M/E 193)	VOA	1142	12 J
2	-	Unknown (BP M/E 73)	VOA	1395	25 J
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

LDJ 10-16-91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A4-4

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 F
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: 4.2 g (Dry wt.)
Percent Moisture: 15.7%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	5.9 U
74-83-9	Bromomethane	3.5 U
75-01-4	Vinyl Chloride	3.5 U
75-00-3	Chloroethane	3.5 U
75-09-2	**Methylene Chloride**	**2.0 UJ**
67-64-1	**Acetone**	**9.7 UJ**
75-15-0	Carbon Disulfide	2.4 U
75-35-4	1,1-Dichloroethene	2.4 U
75-34-3	1,1-Dichloroethane	1.2 U
156-60-5	trans-1,2-Dichloroethene	1.2 U
156-59-2	cis-1,2-Dichloroethene	1.2 U
67-66-3	Chloroform	1.2 U
107-06-2	1,2-Dichloroethane	1.2 U
78-93-3	2-Butanone	8.8 U
71-55-6	1,1,1-Trichloroethane	1.2 U
56-23-5	Carbon Tetrachloride	1.2 U
108-05-4	Vinyl Acetate	1.2 U
75-27-4	Bromodichloromethane	1.2 U
75-69-4	Trichlorofluoromethane	1.2 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.2 U
10061-02-6	Trans-1,3-Dichloropropene	1.2 U
79-01-6	Trichloroethene	1.2 U
124-48-1	Dibromochloromethane	1.2 U
79-00-5	1,1,2-Trichloroethane	1.2 U
71-43-2	Benzene	1.2 U
10061-01-5	cis-1,3-Dichloropropene	1.2 U
110-75-8	2-Chloroethylvinylether	1.2 U
75-25-2	Bromoform	1.2 U
108-10-1	4-Methyl-2-Pentanone	2.4 U
591-78-6	2-Hexanone	4.7 U
127-18-4	Tetrachloroethene	1.2 U
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U
108-88-3	Toluene	1.2 U
108-90-7	Chlorobenzene	1.2 U
100-41-4	Ethylbenzene	1.2 U
100-42-5	Styrene	1.2 U
1330-20-7	Total Xylenes	2.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.9 U

LaJ 10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORA

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FA

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A4-4

Lab ID: 8715 F
Matrix: Soils/Sediments
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: Dan H. Baker
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown (BP M/E 55)	VOA	679	7 J
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A4-9

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 G
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: 4.2 g (Dry wt.)
Percent Moisture: 18.4%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	6.0 U
74-83-9	Bromomethane	3.6 U
75-01-4	Vinyl Chloride	3.6 U
75-00-3	Chloroethane	3.6 U
75-09-2	**Methylene Chloride**	**1.9 UJ**
67-64-1	**Acetone**	**10 UJ**
75-15-0	Carbon Disulfide	2.4 U
75-35-4	1,1-Dichloroethene	2.4 U
75-34-3	1,1-Dichloroethane	1.2 U
156-60-5	trans-1,2-Dichloroethene	1.2 U
156-59-2	cis-1,2-Dichloroethene	1.2 U
67-66-3	Chloroform	1.2 U
107-06-2	1,2-Dichloroethane	1.2 U
78-93-3	2-Butanone	8.9 U
71-55-6	1,1,1-Trichloroethane	1.2 U
56-23-5	Carbon Tetrachloride	1.2 U
108-05-4	Vinyl Acetate	1.2 U
75-27-4	Bromodichloromethane	1.2 U
75-69-4	Trichlorofluoromethane	1.2 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1.2 U
10061-02-6	Trans-1,3-Dichloropropene	1.2 U
79-01-6	Trichloroethene	1.2 U
124-48-1	Dibromochloromethane	1.2 U
79-00-5	1,1,2-Trichloroethane	1.2 U
71-43-2	**Benzene**	**1.0 J**
10061-01-5	cis-1,3-Dichloropropene	1.2 U
110-75-8	2-Chloroethylvinylether	1.2 U
75-25-2	Bromoform	1.2 U
108-10-1	4-Methyl-2-Pentanone	2.4 U
591-78-6	2-Hexanone	4.8 U
127-18-4	Tetrachloroethene	1.2 U
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U
108-88-3	**Toluene**	**2.8**
108-90-7	Chlorobenzene	1.2 U
100-41-4	Ethylbenzene	1.2 U
100-42-5	Styrene	1.2 U
1330-20-7	Total Xylenes	2.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane		6.0 U

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A4-9**

Lab ID: 8715 G
Matrix: Soils/Sediments
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

daj 8/26/91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A5-2

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 C
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: .0038 g (Dry wt.)
Percent Moisture: 3.9%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/30/91

CAS Number		µg/Kg
74-87-3	Chloromethane	6500 U
74-83-9	Bromomethane	3900 U
75-01-4	Vinyl Chloride	3900 U
75-00-3	Chloroethane	3900 U
75-09-2	**Methylene Chloride**	**930** U J
67-64-1	Acetone	6500 U
75-15-0	Carbon Disulfide	2600 U
75-35-4	1,1-Dichloroethene	2600 U
75-34-3	1,1-Dichloroethane	1300 U
156-60-5	trans-1,2-Dichloroethene	1300 U
156-59-2	cis-1,2-Dichloroethene	1300 U
67-66-3	Chloroform	1300 U
107-06-2	1,2-Dichloroethane	1300 U
78-93-3	2-Butanone	9800 U
71-55-6	1,1,1-Trichloroethane	1300 U
56-23-5	Carbon Tetrachloride	1300 U
108-05-4	Vinyl Acetate	1300 U
75-27-4	Bromodichloromethane	1300 U
75-69-4	Trichlorofluoromethane	1300 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	1300 U
10061-02-6	Trans-1,3-Dichloropropene	1300 U
79-01-6	Trichloroethene	1300 U
124-48-1	Dibromochloromethane	1300 U
79-00-5	1,1,2-Trichloroethane	1300 U
71-43-2	**Benzene**	**2400**
10061-01-5	cis-1,3-Dichloropropene	1300 U
110-75-8	2-Chloroethylvinylether	1300 U
75-25-2	Bromoform	1300 U
108-10-1	4-Methyl-2-Pentanone	2600 U
591-78-6	2-Hexanone	5200 U
127-18-4	Tetrachloroethene	1300 U
79-34-5	1,1,2,2-Tetrachloroethane	1300 U
108-88-3	**Toluene**	**71000**
108-90-7	Chlorobenzene	1300 U
100-41-4	**Ethylbenzene**	**33000**
100-42-5	Styrene	1300 U
1330-20-7	**Total Xylenes**	**300000**
1,1,2-Trichloro-1;2,2-trifluoroethane		6500 U

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

10-10-91

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A5-2

Lab ID: 8715 C
Matrix: Soils/Sediments
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown Hydrocarbon (BP M/E 43)	VOA	943	29000 J
2	-	Unknown (BP M/E 57)	VOA	1135	29000 J
3	-	Unknown Alkyl Benzene Isomer (BP M/E 105)	VOA	1231	130000 J
4	-	Unknown Trimethyl Benzene Isomer (BP M/E 105)	VOA	1238	47000 J
5	-	Unknown Benzene Isomer (BP M/E 105)	VOA	1275	38000 J
6	-	Unknown Trimethyl Benzene Isomer (BP M/E 105)	VOA	1294	150000 J
7	-	Unknown C7.H8 Isomer (BP M/E 91)	VOA	1310	26000 J
8	-	Unknown Benzene Isomer (BP M/E 105)	VOA	1362	30000 J
9	-	Unknown (BP M/E 105)	VOA	1389	65000 J
10	-	Unknown (BP M/E 119)	VOA	1401	74000 J
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

LAJ 10-10-91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A5-3

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8715 D
Matrix: Soils/Sediments

QC Report No: 8715
Ecology & Environment
Project No: WZ4060

Data Release Authorized: _____
Report prepared: 08/22/91 MAC:D jv

Date Received: 07/25/91
Amount Analyzed: .89 g (Dry wt.)
Percent Moisture: 19.4%
pH: NA

Instrument: FINN 5
Date Analyzed: 07/29/91

CAS Number		µg/Kg
74-87-3	Chloromethane	28 U
74-83-9	Bromomethane	17 U
75-01-4	Vinyl Chloride	17 U
75-00-3	Chloroethane	17 U
75-09-2	**Methylene Chloride**	**10 UJ**
67-64-1	**Acetone**	**57 UJ**
75-15-0	Carbon Disulfide	11 U
75-35-4	1,1-Dichloroethene	11 U
75-34-3	1,1-Dichloroethane	5.6 U
156-60-5	trans-1,2-Dichloroethene	5.6 U
156-59-2	cis-1,2-Dichloroethene	5.6 U
67-66-3	Chloroform	5.6 U
107-06-2	1,2-Dichloroethane	5.6 U
78-93-3	2-Butanone	42 U
71-55-6	1,1,1-Trichloroethane	5.6 U
56-23-5	Carbon Tetrachloride	5.6 U
108-05-4	Vinyl Acetate	5.6 U
75-27-4	Bromodichloromethane	5.6 U
75-69-4	Trichlorofluoromethane	5.6 U

CAS Number		µg/Kg
78-87-5	1,2-Dichloropropane	5.6 U
10061-02-6	Trans-1,3-Dichloropropene	5.6 U
79-01-6	Trichloroethene	5.6 U
124-48-1	Dibromochloromethane	5.6 U
79-00-5	1,1,2-Trichloroethane	5.6 U
71-43-2	**Benzene**	**470**
10061-01-5	cis-1,3-Dichloropropene	5.6 U
110-75-8	2-Chloroethylvinylether	5.6 U
75-25-2	Bromoform	5.6 U
108-10-1	4-Methyl-2-Pentanone	11 U
591-78-6	2-Hexanone	22 U
127-18-4	Tetrachloroethene	5.6 U
79-34-5	1,1,2,2-Tetrachloroethane	5.6 U
108-88-3	**Toluene**	**350**
108-90-7	Chlorobenzene	5.6 U
100-41-4	**Ethylbenzene**	**58**
100-42-5	Styrene	5.6 U
1330-20-7	**Total Xylenes**	**320**
1,1,2-Trichloro-1,2,2-trifluoroethane		28 U

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A5-3

Lab ID: 8715 D
Matrix: Soils/Sediments
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/Kg)
1	-	Unknown (BP M/E 43)	VOA	313	59 J
2	-	Unknown (BP M/E 43)	VOA	533	75 J
3	-	Unknown C8.H18 Isomer (BP M/E 57)	VOA	555	94 J
4	-	Unknown (BP M/E 43)	VOA	728	110 J
5	-	Unknown Hydrocarbon (BP M/E 43)	VOA	753	71 J
6	-	Unknown (BP M/E 105)	VOA	1230	200 J
7	-	Unknown Trimethyl Benzene Isomer (BP M/E 105)	VOA	1237	72 J
8	-	Unknown Trimethyl Benzene Isomer (BP M/E 105)	VOA	1293	220 J
9	-	Unknown (BP M/E 105)	VOA	1389	78 J
10	-	Unknown (BP M/E 119)	VOA	1400	150 J
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET - METHOD 624/524

Lab ID: 8715 H
Matrix: Waters

Data Release Authorized: _____
Report prepared: 08/22/91 - MAC:D jv

Instrument: FINN 5
Date Analyzed: 07/30/91

Sample: A4-10 Rinsate
QC Report No: 8715
Ecology & Environment
Project No: 25-63.30
Project V
Date Received: 07/25/91
Amount Purged: 5.0 mls
Conc/Dil: 1 to 1
pH: NA

CAS Number		µg/L
74-87-3	Chloromethane	5.0 U
74-83-9	Bromomethane	3.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	1.3 UJ
67-64-1	**Acetone**	5.2 UJ
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	2.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	1.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	1.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	4.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.0 U

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A-10 Rinsate**

Lab ID: 8715 H
Matrix: Waters
Instrument: FINN 5

QC Report No: 8715-E & E
Project No: WZ4060

VTSR: 07/25/91

Data Release Authorized: _____
Report preparted: 08/22/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

Laj 10-10-91

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A1-W1

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

Lab ID: 8729 C
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Data Release Authorized: [signature]
Report prepared: 08/23/91 - MAC:D jv

Project No: WZ4060

Instrument: FINN I
Date Analyzed: 08/01/91

Date Received: 07/29/91
Amount Purged: 5.0 mls
Conc/Dil: 1 to 1

CAS Number		µg/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	**1.1** UJ
67-64-1	**Acetone**	**12**
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
540-59-0	1,2-Dichloroethene (total)	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	2.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	2.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	2.0 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	**2-Hexanone**	**1.0** UJ
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane		2.0 U

Data Reporting Qualifiers

- **Value** If the result is a value greater than or equal to the detection limit, report the value.
- **U** Indicates compound was analyzed for but not detected at the given detection limit.
- **J** Indicates an estimated value when result is less than specified detection limit.
- **NR** Analysis not required.
- **B** This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
- **K** This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
- **M** Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

LQJ 10-10-91

ANALYTICAL RESOURCES INCORPORATE

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A1-W1**

Lab ID: 8729 C
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: Dan B. Potter
Report preparted: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A2-W1

Lab ID: 8729 F
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Project No: WZ4060

Data Release Authorized:
Report prepared: 08/23/91 - MAC:D jv

Date Received: 07/29/91
Amount Purged: 5.0 mls
Conc/Dil: 1 to 1

Instrument: FINN I
Date Analyzed: 08/01/91

CAS Number		µg/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	1.2 uJ
67-64-1	**Acetone**	**9.8**
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
540-59-0	1,2-Dichloroethene (total)	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	2.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	2.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	2.0 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	**2-Hexanone**	1.0 uJ
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	**Toluene**	**3.0**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-	1,2,2-trifluoroethane	2.0 U

10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A2-W1**

Lab ID: 8729 F
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: [signature]
Report prepared: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-				
2		No UNKNOWN pks >10% IS peak height	VOA	-	-
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

Ja 10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A3-W1

Lab ID: 8729 E
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Data Release Authorized: Ann B. Potter
Report prepared: 08/23/91 - MAC:D jv

Project No: WZ4060

Date Received: 07/29/91
Amount Purged: 5.0 mls
Instrument: FINN I
Date Analyzed: 08/01/91
Conc/Dil: 1 to 1

CAS Number		µg/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	1.1 uJ
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
540-59-0	1,2-Dichloroethene (total)	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	2.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	2.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	2.0 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	**2-Hexanone**	0.7 uJ
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane		2.0 U

10-10-91

Data Reporting Qualifiers

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected at the given detection limit.

J — Indicates an estimated value when result is less than specified detection limit.

NR — Analysis not required.

B — This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K — This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M — Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A3-W1**

Lab ID: 8729 E
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: _____
Report preparted: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A4-W1

Lab ID: 8729 D
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Project No: WZ4060

Data Release Authorized: Ann B. Potter
Report prepared: 08/23/91 - MAC:D jv

Date Received: 07/29/91
Amount Purged: 5.0 mls
Instrument: FINN I
Date Analyzed: 08/01/91
Conc/Dil: 1 to 1

CAS Number		µg/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	**1.1 UJ**
67-64-1	**Acetone**	**6.4 M**
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
540-59-0	1,2-Dichloroethene (total)	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	2.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	2.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	2.0 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	**Toluene**	**0.6 M**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane		2.0 U

10-10-91

Data Reporting Qualifiers

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected at the given detection limit.

J Indicates an estimated value when result is less than specified detection limit.

NR Analysis not required.

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: A4-W1

Lab ID: 8729 D
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: _____
Report preparted: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1		Unknown C6.H12 Isomer (BP M/E 56)	VOA	377	8 J
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Form 1, Part B

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: A5-W1

Lab ID: 8729 Bre
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Project No: WZ4060

Data Release Authorized:
Report prepared: 08/23/91 - MAC:D jv

Date Received: 07/29/91
Amount Purged: 5.0 mls
Instrument: FINN I
Date Analyzed: 07/31/91
Conc/Dil: 1 to 200

CAS Number		µg/L
74-87-3	Chloromethane	400 U
74-83-9	Bromomethane	400 U
75-01-4	Vinyl Chloride	600 U
75-00-3	Chloroethane	600 U
75-09-2	**Methylene Chloride**	**380**
67-64-1	Acetone	1000 U
75-15-0	Carbon Disulfide	400 U
75-35-4	1,1-Dichloroethene	200 U
75-34-3	1,1-Dichloroethane	200 U
540-59-0	1,2-Dichloroethene (total)	200 U
67-66-3	**Chloroform**	**130 M**
107-06-2	1,2-Dichloroethane	400 U
78-93-3	2-Butanone	2000 U
71-55-6	1,1,1-Trichloroethane	200 U
56-23-5	Carbon Tetrachloride	400 U
108-05-4	Vinyl Acetate	400 U
75-27-4	Bromodichloromethane	200 U
75-69-4	Trichlorofluoromethane	400 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	200 U
10061-02-6	Trans-1,3-Dichloropropene	400 U
79-01-6	Trichloroethene	200 U
124-48-1	Dibromochloromethane	200 U
79-00-5	1,1,2-Trichloroethane	200 U
71-43-2	**Benzene**	**25000**
10061-01-5	cis-1,3-Dichloropropene	200 U
110-75-8	2-Chloroethylvinylether	400 U
75-25-2	Bromoform	600 U
108-10-1	4-Methyl-2-Pentanone	400 U
591-78-6	2-Hexanone	400 U
127-18-4	Tetrachloroethene	200 U
79-34-5	1,1,2,2-Tetrachloroethane	400 U
108-88-3	**Toluene**	**16000**
108-90-7	Chlorobenzene	200 U
100-41-4	**Ethylbenzene**	**1500**
100-42-5	Styrene	200 U
1330-20-7	**Total Xylenes**	**6500**
1,1,2-Trichloro-1,2,2-trifluoroethane		400 U

LAJ 10-10-91

Data Reporting Qualifiers

Value — If the result is a value greater than or equal to the detection limit, report the value.

U — Indicates compound was analyzed for but not detected at the given detection limit.

J — Indicates an estimated value when result is less than specified detection limit.

NR — Analysis not required.

B — This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.

K — This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.

M — Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: **A5-W1**

Lab ID: 8729 Bre
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

VTSR: 07/29/91

Data Release Authorized: Ronn B. Patton
Report preparted: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Volatiles by Method 624/8240

Sample No: TB-A2

Lab ID: 8729 H
Matrix: Waters

QC Report No: 8729
Ecology & Environment

Data Release Authorized: James B. Patton
Report prepared: 08/23/91 - MAC:D jv

Project No: WZ4060

Date Received: 07/29/91
Amount Purged: 5.0 mls
Conc/Dil: 1 to 1

Instrument: FINN I
Date Analyzed: 07/31/91

CAS Number		µg/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	**Methylene Chloride**	**1.7**
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	2.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
540-59-0	1,2-Dichloroethene (total)	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	7.5 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	2.0 U
75-27-4	Bromodichloromethane	1.0 U
75-69-4	Trichlorofluoromethane	2.0 U

CAS Number		µg/L
78-87-5	1,2-Dichloropropane	1.0 U
10061-02-6	Trans-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	2.0 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone	2.0 U
591-78-6	2-Hexanone	2.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
1330-20-7	Total Xylenes	2.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane		2.0 U

10-10-91

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC ANALYSIS DATA SHEET - Tentatively Identified Compounds

Sample No: TB-A2

Lab ID: 8729 H
Matrix: Waters
Instrument: FINN 1

QC Report No: 8729-E & E
Project No: WZ4060

Data Release Authorized: [signature]
VTSR: 07/29/91
Report preparted: 08/23/91 MAC:D jv

	CAS Number	Compound Name	Fraction	Scan Number	Estimated Concentration (µg/L)
1	-	No UNKNOWN pks >10% IS peak height	VOA	-	-
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-1

Lab Sample ID: 8632-A
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/16/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

10-10-91

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

ANALYTICAL RESOURCES INCORPORATE

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-2

Lab Sample ID: 8632-B
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-3

Lab Sample ID: 8632-C
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

FORM 1-PEST-S

ANALYTICAL RESOURCES INCORPORA

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5
(206) 621-6490
(206) 621-7523 (FA)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-5

Lab Sample ID: 8632-D
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

AJ 10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-6

Lab Sample ID: 8632-E
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

FORM 1-PEST-S

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-7

Lab Sample ID: 8632-F
Matrix: Waters

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

QC Report No.: 8632-E&E
Project: WZ-4050

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-8

Lab Sample ID: 8632-G
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

10-10-91

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-5
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: RW-9

Lab Sample ID: 8632-H
Matrix: Waters

QC Report No.: 8632-E&E
Project: WZ-4050

Data Release Authorized:
Data Prepared: 07/17/91-MAC:C PAT

VTSR: 07/11/91

Date Extracted: 07/13/91
Date Analyzed: 07/17/91
Vol. Extracted: 1.0 L
Final Ext. Volume: 10 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/L
319-84-6	Alpha-BHC	0.04 U
319-85-7	Beta-BHC	0.04 U
319-86-8	Delta-BHC	0.06 U
58-89-9	Gamma-BHC (Lindane)	0.04 U
76-44-8	Heptachlor	0.04 U
309-00-2	Aldrin	0.04 U
1024-57-3	Heptachlor Epoxide	0.04 U
959-98-8	Endosulfan I	0.04 U
60-57-1	Dieldrin	0.08 U
72-55-9	4,4'-DDE	0.08 U
72-20-8	Endrin	0.08 U
33212-65-9	Endosulfan II	0.08 U
72-54-8	4,4'-DDD	0.08 U
1031-07-8	Endosulfan Sulfate	0.16 U
50-29-3	4,4'-DDT	0.08 U
72-43-5	Methoxychlor	0.16 U
53494-70-5	Endrin Ketone	0.12 U
5103-74-2	Gamma-Chlordane	0.06 U
5103-71-9	Alpha-Chlordane	0.06 U
8001-35-2	Toxaphene	6.0 U
-	Aroclor-1242/1016	0.8 U
12672-29-6	Aroclor-1248	0.8 U
11097-69-1	Aroclor-1254	0.8 U
11096-82-5	Aroclor-1260	0.8 U
	Aroclor-1221	0.8 U
	Aroclor-1232	0.8 U

10-10-91

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A1-2

Lab Sample ID: 8715-A
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 34.9g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A1-4

Lab Sample ID: 8715-B
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 33.5g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A2-2

Lab Sample ID: 8715-E
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized: _____
Data Prepared: 08/28/91-MAC:C PAT

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 32.6g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED
Analytical Chemists & Consultants
333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Lab Sample ID: 8729-A
Matrix: Soils

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

Sample No.: A3-2

QC Report No.: 8729-E&E
Project: WZ 4060

VTSR: 07/29/91

Date Extracted: 07/31/91
Date Analyzed: 08/14/91
Sample Amount: 24.2g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.5 U
319-85-7	Beta-BHC	3.5 U
319-86-8	Delta-BHC	5.0 U
58-89-9	Gamma-BHC (Lindane)	3.5 U
76-44-8	Heptachlor	3.5 U
309-00-2	Aldrin	3.5 U
1024-57-3	Heptachlor Epoxide	3.5 U
959-98-8	Endosulfan I	3.5 U
60-57-1	Dieldrin	7.0 U
72-55-9	4,4'-DDE	7.0 U
72-20-8	Endrin	7.0 U
33212-65-9	Endosulfan II	7.0 U
72-54-8	4,4'-DDD	7.0 U
1031-07-8	Endosulfan Sulfate	14 U
50-29-3	4,4'-DDT	7.0 U
72-43-5	Methoxychlor	14 U
53494-70-5	Endrin Ketone	10 U
5103-74-2	Gamma-Chlordane	5.0 U
5103-71-9	Alpha-Chlordane	5.0 U
8001-35-2	Toxaphene	500 U
-	Aroclor-1242/1016	70 U
12672-29-6	Aroclor-1248	70 U
11097-69-1	Aroclor-1254	70 U
11096-82-5	Aroclor-1260	70 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A4-4

Lab Sample ID: 8715-F
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 31.6g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A4-9

Lab Sample ID: 8715-G
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 30.5g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A5-2

Lab Sample ID: 8715-C
Matrix: Soils

QC Report No.: 8715-E&E
Project: WZ 4060

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PATI

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 30.6g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by method 608/8080

Sample No.: A5-3

Lab Sample ID: 8715-D
Matrix: Soils

Data Release Authorized:
Data Prepared: 08/28/91-MAC:C PAT

QC Report No.: 8715-E&E
Project: WZ 4060

VTSR: 07/25/91

Date Extracted: 07/26/91
Date Analyzed: 08/14/91
Sample Amount: 32.8g (Dry Weight)
Final Ext. Volume: 20 mls

GPC Cleanup: No
Alumina Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	3.0 U
319-85-7	Beta-BHC	3.0 U
319-86-8	Delta-BHC	4.0 U
58-89-9	Gamma-BHC (Lindane)	3.0 U
76-44-8	Heptachlor	3.0 U
309-00-2	Aldrin	3.0 U
1024-57-3	Heptachlor Epoxide	3.0 U
959-98-8	Endosulfan I	3.0 U
60-57-1	Dieldrin	6.0 U
72-55-9	4,4'-DDE	6.0 U
72-20-8	Endrin	6.0 U
33212-65-9	Endosulfan II	6.0 U
72-54-8	4,4'-DDD	6.0 U
1031-07-8	Endosulfan Sulfate	12 U
50-29-3	4,4'-DDT	6.0 U
72-43-5	Methoxychlor	12 U
53494-70-5	Endrin Ketone	8.0 U
5103-74-2	Gamma-Chlordane	4.0 U
5103-71-9	Alpha-Chlordane	4.0 U
8001-35-2	Toxaphene	400 U
-	Aroclor-1242/1016	60 U
12672-29-6	Aroclor-1248	60 U
11097-69-1	Aroclor-1254	60 U
11096-82-5	Aroclor-1260	60 U

10-10-91

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

ANALYTICAL RESOURCES INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL PETROLEUM HYDROCARBONS by IR Scan
Modified EPA Method 418.1

Matrix: Water

Project: WZ-4050
QC Report No: 8632 - Ecology & Enviroment
VTSR: 07/11/91

Data Release Authorized _____
Data Prepared: 07/16/91 -MAC:PJW

Date Prepared: 07/15/91
Date of Analysis: 07/15/91

Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
8632 A	RW-1	1	1 U
8632 B	RW-2	1	1 U
8632 C	RW-3	1	1 U
8632 D	RW-5	1	1 U
8632 E	RW-6	1	1 U
8632 F	RW-7	1	1 U
8632 G	RW-8	1	1 U
8632 H	MW-9	1	1 U

Values reported in ppm (mg/L).

U Indicates compound was analyzed for but not detected at the given detection limit.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-51
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL PETROLEUM HYDROCARBONS by IR Scan
Modified EPA Method 418.1

Matrix: Soil

Project: WZ 4060
QC Report No: 8729 - Ecology & Enviroment
VTSR: 07/29/91

Data Release Authorized _____
Data Prepared: 08/05/91 -MAC:PJW

Date Prepared: 08/01/91
Date of Analysis: 08/02/91

Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
8729 A	A3-2	1	10 U

Values reported in ppm (mg/Kg) based on wet weight of sample

U Indicates compound was analyzed for but not detected at the given detection limit.

10-10-91

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL GASOLINE RANGE HYDROCARBONS BY GC/FID (PURGE AND TRAP)
Modified EPA Method 8015

Matrix: ~~Waters~~ Soils

Data Release Authorized _____

Report Prepared: 08/26/91 - MAC:D jvl

QC Report No: 8715
Ecology & Environment
VTSR: 07/25/91
Project: WZ4060

Date of Analysis: Various

Lab ID	Client Sample ID	Dilution Factor	Gasoline Range Hydrocarbons †	GAS ID *
8715 A	*A1-2*	*1*	*10 U*	*NO*
8715 B	*A1-4*	*1*	*10 U*	*NO*
8715 D	*A5-3*	*1*	*10 U*	*NO*
8715 E	*A2-2*	*1*	*10 U*	*NO*
8715 F	*A4-4*	*1*	*10 U*	*NO*
8715 G	~~A4 AE-9~~	*1*	*10 U*	*NO*
8715 C 14X	**A5-2**	**14**	**4800 J**	**YES**

Values Reported in ppm (mg/Kg) on Dry Weight Basis

10-10-91

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
†	Value based on total peaks in C6 to C12 range.
X	Indicates a value above the linear range of the detector. Dilution required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate(s) was diluted out
NR	Not recovered.
*	In the opinion of the analyst, was there a pattern match for gasoline (YES or NO)

ANALYTICAL RESOURCES INCORPORATI

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-518
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL GASOLINE RANGE HYDROCARBONS BY GC/FID
Modified EPA Method 8015 (Purge & Trap)

QC Report No: 8729-E&E
Project: WZ4060

Matrix: Waters/Soils

VTSR: 07/29/91

Data Release Authorized _____
Data Prepared: 08/23/91 - MAC:C PAT

Date extracted: 08/06/91
Dates Analyzed: 08/06/91-08/14/91-08/20/91

Lab ID	Client Sample ID	Dilution Factor	Gasoline Range Hydrocarbons †	Gas ID *
			WATERS	
8729 B 28X	A5-W1	28	210 J	Yes
8729 C	A1-W1	1	1.0 U	No
8729 D	A4-W1	1	1.0 U	No
8729 E	A3-W1	1	1.0 U	No
8729 F	A2-W1	1	1.0 U	No
			SOILS	
8729 A	A3-2	1	10 U J	No

Surrogate A = Trifluorotoluene
Surrogate B = Bromobenzene

Values reported in ppm (mg/kg)/ppm (mg/L)

JAJ 10-10-91

U Indicates compound was analyzed for but not detected at the given detection limit.

X Indicates a value above the linear range of the detector. Dilution required.

* In the opinion of the analyst, was there a pattern match for gasoline (yes or no).

† Value based on total peaks in C6-C12 range.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL PETROLEUM HYDROCARBONS by IR Scan
Modified EPA Method 418.1

Matrix: Soil

Project: WZ 4060
QC Report No: 8715 - Ecology & Environe
VTSR: 07/25/91

Data Release Authorized _____
Data Prepared: 07/30/91 -MAC:PJW

Date Prepared: 7/26/91 & 7/29/91
Date of Analysis: 7/29/91 & 7/30/91

Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
8715 A	A1-2	1	10 U
8715 B	A1-4	1	10 U
8715 C	**A5-2**	**5**	**3700**
8715 D	A5-3	1	10 U
8715 E	A2-2	1	10 U
8715 F	A4-4	1	10 U
8715 G	A4-9	1	10 U

Values reported in ppm (mg/Kg) based on wet weight of sample

U Indicates compound was analyzed for but not detected at the given detection limit.

JA 10-10-91

ANALYTICAL
RESOURCES
INCORPORATI

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL GASOLINE RANGE HYDROCARBONS BY GC/FID (PURGE AND TRAP)
Modified EPA Method 8015

Project: WZ-4050

Matrix: Water

QC Report No: 8632-E&E
VTSR: 07/11/91

Data Release Authorized _____
Data Prepared: 07/22/91 - MAC:E

Date Extracted: 07/19/91
Date Analyzed: 07/19/91

Reported in ppm (mg/L)

Lab ID	Client Sample ID	† Gasoline Range Hydrocarbons	Gas ID *
8632 A	*RW-1*	*1.0 U*	*NO*
8632 B	*RW-2*	*1.0 U*	*NO*
8632 C	*RW-3*	*1.0 U*	*NO*
8632 D	*RW-5*	*1.0 U*	*NO*
8632 E	*RW-6*	*1.0 U*	*NO*
8632 F	*RW-7*	*1.0 U*	*NO*
8632 G	*RW-8*	*1.0 U*	*NO*
8632 H	*RW-9*	*1.0 U*	*NO*

10-10-91

J Indicates an estimated value when that value is less than the calculated detection limit.

U Indicates Compound was analyzed for but not detected at the given detection limit.

X Indicates a value above the linear range of the detector. Dilution required.

† Value based on total peaks in C6 to C12 range.

* In the opinion of the analyst, was there a pattern match for gasoline (YES or NO)

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL DIESEL RANGE HYDROCARBONS BY GC/FID
Modified EPA Method 8015

Matrix: Waters

QC Report No: 8729 - E&E
Project: WZ4060

VTSR: 07/29/91

Data Release Authorized _____
Data Prepared: 9/3/91 - MAC:K kas

Date extracted: 07/30/91
Date Analyzed: 08/29/91

Lab ID	Client Sample ID	Diesel Range Hydrocarbons †	Diesel ID *
8729 B	A5-W1	**0.94 J**	No
8729 C	A1-W1	1.0 U	No
8729 D	A4-W1	1.0 U	No
8729 E	A3-W1	1.0 U	No
8729 F	A2-W1	1.0 U	No

10-10-91

Surrogate is Me-Arachidate.
Values reported in ppm (mg/L).
U Indicates compound was analyzed for but not detected at the given detection limit.
X Indicates a value above the linear range of the detector. Dilution required.
* In the opinion of the analyst, was there a pattern match for diesel (yes or no).
† Value based on total peaks in C12-C24 range.

ANALYTICAL RESOURCES INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL DIESEL RANGE HYDROCARBONS BY GC/FID
Modified EPA Method 8015

Matrix: Soil/Sediments

QC Report No: 8729 - E&E
Project: WZ4060

VTSR: 07/29/91

Data Release Authorized _____
Data Prepared: 9/3/91 - MAC:K kas

Date extracted: 07/31/91
Date Analyzed: 8/28-8/29/91

Lab ID	Client Sample ID	Diesel Range Hydrocarbons †	Diesel ID *
8729 A	A3-2	10 U	No

10-10-91

Surrogate is Me-Arachidate.
Values reported in ppm (mg/Kg).
U Indicates compound was analyzed for but not detected at the given detection limit.
X Indicates a value above the linear range of the detector. Dilution required.
* In the opinion of the analyst, was there a pattern match for diesel (yes or no).
† Value based on total peaks in C12-C24 range.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

TOTAL DIESEL RANGE HYDROCARBONS BY GC/FID
Modified EPA Method 8015

Matrix: Soils

QC Report No: 8715-E&E
Project: WZ 4060

VTSR: 07/25/91

Data Release Authorized _____
Data Prepared: 08/22/91 - MAC:K JJR

Date extracted: 07/26/91
Date Analyzed: 08/20/91

Lab ID	Client Sample ID	Diesel Range Hydrocarbons †	Dilution Factor	Diesel ID *
8715 A	A1-2	10 U	-	No
8715 B	A1-4	10 U	-	No
8715 Cdl	A5-2	**3100**	1:20	**YES**
8715 D	A5-3	10 U	-	No
8715 E	A2-2	10 U	-	No
8715 F	A4-4	10 U	-	No
8715 G	A4-9	10 U	-	No

LaJ 10-10-91

Surrogate is Me-Arachidate.
Values reported in ppm ~~(mg/L)~~. (mg/Kg) LaJ
U Indicates compound was analyzed for but not detected at the given detection limit.
X Indicates a value above the linear range of the detector. Dilution required.
* In the opinion of the analyst, was there a pattern match for diesel (yes or no).
† Value based on total peaks in C12-C24 range.

ANALYTICAL
RESOURCES
INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Ethylene Dibromide Analysis

QC Report: 8632-Ecology & Environment
Project : WZ4050
Date Received: 07/11/91

Matrix: Water

Data Release Authorized _____
Report prepared: 07/17/91 - MAC:E

Reported in ppb (µg/L)

Sample #:	RW-1	RW-2	RW-3
ARI Lab ID:	*8632A*	*8632B*	*8632C*
Date Extracted:	*07/15/91*	*07/15/91*	*07/15/91*
Date Analyzed:	*07/16/91*	*07/16/91*	*07/16/91*
Volume Extracted:	*40 mls*	*40 mls*	*40 mls*
Final Volume:	*2.0 mls*	*2.0 mls*	*2.0 mls*
Dilution:	*1:1*	*1:1*	*1:1*
Ethylene Dibromide	0.03 U	0.03 U	0.03 U

Sample #:	RW-5	RW-6	RW-7	RW-8	RW-9
ARI Lab ID:	*8632D*	*8632E*	*8632F*	*8632G*	*8632H*
Date Extracted:	*07/15/91*	*07/15/91*	*07/15/91*	*07/15/91*	*07/15/91*
Date Analyzed:	*07/16/91*	*07/16/91*	*07/16/91*	*07/16/91*	*07/16/91*
Volume Extracted:	*40 mls*	*40 mls*	*40 mls*	*40 mls*	*40 mls*
Final Volume:	*2.0 mls*	*2.0 mls*	*2.0 mls*	*2.0 mls*	*2.0 mls*
Dilution:	*1:1*	*1:1*	*1:1*	*1:1*	*1:1*
Ethylene Dibromide	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U

10-10-91

U Indicates compound was analyzed for but not detected at the given detection limit.

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
Ethylenedibromide Analysis

QC Report: 8729-E&E
Project: WZ4060

Matrix: Waters

Date Received: 07/29/91

Data Release Authorized
Report prepared: 08/12/91 MAC:C PAT

Reported in ppb (µg/L)

Sample #:	Spike Blank	A5-W1
ARI Lab ID:	0730SB	8729B
Date Extracted:	07/30/91	07/30/91
Date Analyzed:	08/08/91	08/08/91
Amount Extracted:	40 mls	40 mls
Final Volume:	2.0 mls	2.0 mls
Dilution:	1:1	1:1
Ethylenedibromide	-	0.1 U

Sample #:	A1-W1	A4-W1	A3-W1	A2-W1
ARI Lab ID:	8729C	8729D	8729E	8729F
Date Extracted:	07/30/91	07/30/91	07/30/91	07/30/91
Date Analyzed:	08/08/91	08/08/91	08/08/91	08/08/91
Amount Extracted:	40 mls	40 mls	40 mls	40 mls
Final Volume:	2.0 mls	2.0 mls	2.0 mls	2.0 mls
Dilution:	1:1	1:1	1:1	1:1
Ethylenedibromide	0.03 U	0.03 U	0.03 U	0.03 U

10-10-91

U Indicates compound was analyzed for but not detected at the given detection limit.

* Surrogate is Bromoform.

NR Indicates compound not reported due to chromatographic interference and/or dilution.

X Indicates a value above the linear range of the detector. Dilution required.