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APR 14 2005

DEPT OF ECOLOGY

Memorandum

To: Brian Sato, Department of Ecology
Copies: Clint Chase, Vulcan and Chuck Wolfe, Foster Pepper & Shefelmann
From: Tom Colligan
Date: 4/13/05
Re: Results of Groundwater Sampling at 428 Westlake Building

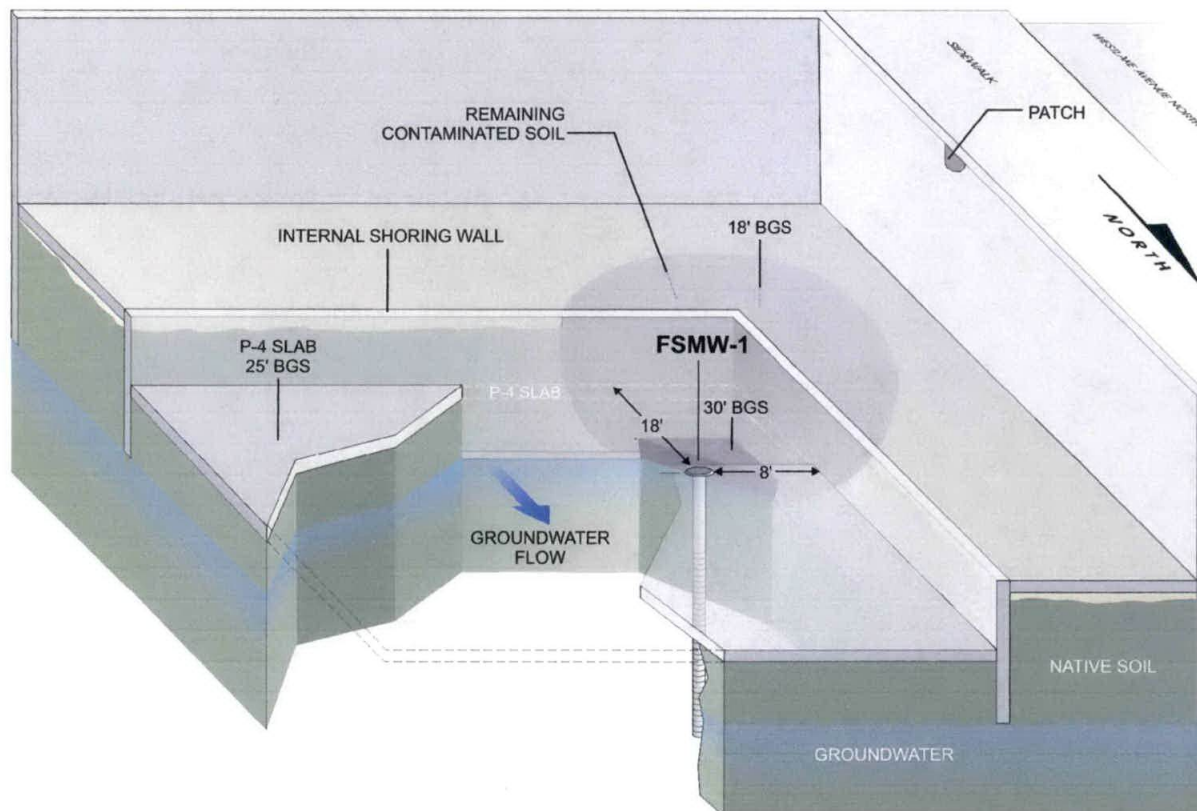
This memo presents the results from the investigation of groundwater quality at the 428 Westlake Building. We are submitting these results for your review as part of the Washington State Department of Ecology's (Ecology) review of this site under the Voluntary Cleanup Program.

BACKGROUND

During the excavation work for the 428 Westlake Building in late 2003, approximately 8,000 tons of soil containing mostly heavy-oil range hydrocarbons mixed with a minor fraction of mineral spirits were encountered. This contamination was likely associated with poor quality fill used to fill this site to grade prior to the 1960s. The contaminated soil was segregated from clean soil, and transferred to the Rabanco Regional Disposal Company landfill in eastern Washington. According to the GeoEngineers report that documented the cleanup (dated January 5, 2004 and already forwarded to Ecology), approximately 200 cubic yards of soil above MTCA concentrations were unable to be excavated due to structural concerns about its location behind an internal shoring wall.

The depth of this soil behind the top of the internal shoring wall starts at 18 feet below ground surface (bgs). The depth of this contamination below this point was not established, but may extend to as deep as approximately 30 feet bgs based on the presence of a small amount of contaminated soil observed at approximately 30 feet bgs at the deeper inside corner of the shoring wall during excavation for pile caps. The top of the concrete slab at the lowest part of the parking garage now lies at 25 feet bgs. Based on geotechnical borings done as part of site planning, the depth to groundwater was estimated to be approximately 30 feet bgs, but likely varies seasonally. Groundwater flow (based on topography and studies at nearby sites) flows north and discharges to Lake Union, which lies approximately one-quarter mile to the north. Due to the intensity of development, groundwater in this area is considered non-potable, with the highest beneficial use being recharge to the waters of Lake Union. The figure presented below is a conceptual model of the site based on the above information. The remaining contamination is now completely covered by the concrete garage structure, thereby eliminating the risk of human exposure.

Site Conceptual Model and Monitoring Well Location—428 Westlake Ave. N.



Based on the discussion at our meeting on March 1, 2005, a data gap needed to be addressed concerning the quality of groundwater in order to reach an unconditional No Further Action determination at this site. The testing of groundwater would establish if both past and current concentrations of TPH in the soil were/are protective of groundwater. Soil cleanup levels based on human health are not applicable to this site, as all remaining contamination is less than the standard soil point of compliance (ground surface to 15 foot zone). The second reason is based on the potential for other contaminants, such as solvents, to have been associated with the oily soil found at the site. Our examination of all prior environmental reports indicated that other contaminants besides BTEX were never tested for, so the presence of halogenated solvents, for example, could not be ruled out. Halogenated solvents could have leached from the soil to groundwater and flowed off-site to Lake Union, the nearest receptor.

SCOPE OF WORK

The area of remaining contamination is relatively small and mostly confined behind the outside corner of the internal shoring wall. On March 28, 2005, a single monitoring well was installed directly downgradient of the remaining contamination, in the lowest (P-4) level of the parking garage just north of the inside corner of the internal shoring wall. The figure above shows the

location of this well, which is located approximately 8 feet east and 18 feet north of the west and south walls, respectively.

After a core was cut into the concrete floor, a "bobcat" type push-probe was used to advance a soil boring. Soil samples were collected continuously to a depth of 12 feet bgs to characterize the subsurface conditions. A boring log is included as Attachment A. The water table was encountered at approximately 2.75 feet below the garage surface. Once the boring was completed, a narrow-diameter 0.75" casing with 6 feet of pre-packed well screen was installed and sealed in accordance with Washington State Well Regulations.

The well, FSMW-1, was then developed until free of fines and sampled on March 29, 2005, using a peristaltic pump with disposable polyethylene tubing. Samples of both soil and groundwater were submitted for analysis. Because no field evidence of soil contamination was noted, only the soil encountered at the water table was submitted for analysis. The samples were analyzed as follows:

- TPH-G/BTEX (groundwater and soil)
- TPH-Dx (groundwater and soil)
- Volatile Organic Compounds via EPA Method 8260 (groundwater and soil)

Standard industry practices and Ecology guidance documents were followed concerning sampling technique, well development, decontamination, investigation derived waste, and QA/QC.

ANALYTICAL RESULTS

Analytical laboratory results from soil and groundwater samples are summarized in Table 1 and included as Attachment B. The TPH results for soil indicate no detection of gasoline-range hydrocarbons (with a detection limit greater than 3 mg/kg) or diesel-range hydrocarbons (greater than 25 mg/kg), or oil-range hydrocarbons (greater than 50 mg/kg). In addition, no volatile organic compounds were detected in soil (with detection limits greater than the range from 5 to 50 µg/kg).

TPH results for the groundwater sample indicate no detection of gasoline range hydrocarbons (with a detection limit greater than 50 µg/L) and no diesel-range hydrocarbons (greater than 130 µg/L), or oil-range hydrocarbons (greater than 250 µg/L). Only one VOC was detected, tetrachloroethylene, at 2 µg/L. The MTCA Method A Cleanup level for tetrachloroethylene in groundwater is 5 µg/L.

MTCA-B SW = 4.15 µg/L

The sample indicated no impact to groundwater from the residual concentrations of petroleum left at this site. The concentration of the single contaminant found was less than the applicable cleanup level. Now that this important data gap is filled, we consider the investigation and cleanup complete at this site.

List of Tables and Attachments

TABLES

Table 1. Soil and Groundwater Analytical Results

ATTACHMENTS

Attachment A Boring Log

Attachment B Laboratory Analytical Report

Table 1
Soil and Groundwater Analytical Results

Analyte	Method	Soil		Groundwater	
		FSMW-1	Units	FSMW-1	Units
Total Petroleum Hydrocarbons (TPH)					
Volatile Range	NWTPH-Gx	3 U	mg/kg	50 U	µg/L
Diesel Range	NWTPH-Dx	25 U	mg/kg	130 U	µg/L
Oil Range	NWTPH-Dx	50 U	mg/kg	250 U	µg/L
Volatile Organic Compounds (VOCs) ¹					
Tetrachloroethylene	EPA 8260	10.0 U	µg/kg	2 U	µg/L

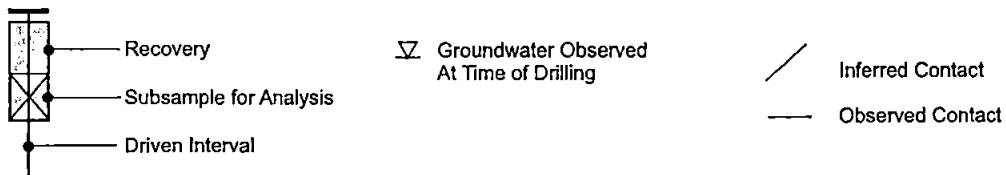
Notes:

U Indicates that the analyte was undetected at the reported concentration.

1 EPA Method 8260 measures 65 compounds, including BTEX components, benzene, toluene, ethylbenzene, and xylenes. Compounds not listed were undetected at 2-10 µg/L in groundwater and 550 µg/L in soil.

Log of Soil Boring and Well Construction FSMW-1

FLOYD SNIDER strategy • science • engineering				Floyd Snider Boring <u>FSMW-1</u> Date <u>March 28, 2005</u> Sheet <u>1</u> of <u>1</u> Job <u>Vulcan Westlake</u> Job No. <u>XX</u> Logged By <u>Brett Beaulieu</u> Weather <u>Overcast 50 Degrees</u> Drilled By <u>Cascade Drilling, Rowan Miller</u> Drill Type/Method <u>Direct Push Jackhammer Drill</u> Sampling Method <u>Direct Push, 2" Diameter by 4' Core Tubes</u> Bottom of Boring <u>13 Ft BGS</u> ATD Water Level Depth <u>2.75'</u> Ground Surface Elevation <u>XX</u>			
				Obs. Well Install. ☒ Yes ☐ No			
SAMPLE ID	Blow Count N/12"	RECOVERY		GRAPHIC RECOVERY	USCS Symbol	DESCRIPTION: color, texture, moisture MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	WELL CONSTRUCTION
		From	To				
FSMW-1	(NA)	0.0	1.0	[Solid]	0	Solid concrete, 12" diameter core. No chemical odors	
		1.0	4.5	[X]	2 3 4	SW Brown, well-graded fine sand with gravel. No chemical odors. Brown, well-graded fine sand. No chemical odors.	
		5.0	7.25	[Dotted]	5 6 7	SW Brown, well-graded fine sand. No chemical odors.	
	9.0	12.25	[Dotted]	8	SW	Brown, well-graded fine sand. No chemical odors.	
				9	SC	Brown, clayey sand. No chemical odors.	
				10	SW	Brown, well-graded fine sand, cobble. No chemical odors.	
			[Empty]	11			
				12			
				13			
				14			
				15			
				16			
				17			
		[Empty]	18				
			19				
			20				





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CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

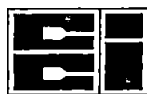
DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: 1
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: FSMW-1 3/28/05 11:15

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-VOLATILE RANGE	NWTPH-GX	ND	MG/KG	3/30/05	LAP
TPH-DIESEL RANGE	NWTPH-DX	ND	MG/KG	3/30/05	DLC
TPH-LUBE OIL RANGE	NWTPH-DX	ND	MG/KG	3/30/05	DLC
DICHLORODIFLUOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
VINYL CHLORIDE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRICHLOROFLUOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
ACETONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,1-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
METHYLENE CHLORIDE	EPA-8260	ND(<20)	UG/KG	4/5/05	CCN
ACRYLONITRILE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
METHYL T-BUTYL ETHER	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRANS-1,2-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1-DICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-BUTANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
CIS-1,2-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2,2-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOCHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROFORM	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,1-TRICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CARBON TETRACHLORIDE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
DIBROMOMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMODICHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRANS-1,3-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
4-METHYL-2-PENTANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
TOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CIS-1,3-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,2-TRICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-HEXANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,3-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN



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CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: FSMW-1 3/28/05 11:15

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TETRACHLOROETHYLENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
DIBROMOCHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DIBROMOETHANE	EPA-8260	ND(<5)	UG/KG	4/5/05	CCN
CHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,1,2-TETRACHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
ETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
M+P XYLENE	EPA-8260	ND(<20)	UG/KG	4/5/05	CCN
STYRENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
O-XYLENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOFORM	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
ISOPROPYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,2,2-TETRACHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,3-TRICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
N-PROPYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-CHLOROTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,3,5-TRIMETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
4-CHLOROTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
T-BUTYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,4-TRIMETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
S-BUTYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
P-ISOPROPYLTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,3-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,4-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
N-BUTYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DIBROMO 3-CHLOROPROPANE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,2,4-TRICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
HEXACHLOROBUTADIENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
NAPHTHALENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,3-TRICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN



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CLIENT SAMPLE ID: FSMW-1 3/28/05 11:15

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
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* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES OR AS FOLLOWS:
GASOLINE(VOLATILE RANGE) REPORTING LIMIT IS 3 MG/KG
DIESEL RANGE REPORTING LIMIT IS 25 MG/KG
LUBE OIL RANGE REPORTING LIMIT IS 50 MG/KG

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: 2
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: FSMW-1 3/29/05 9:05

DATA RESULTS

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CHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
VINYL CHLORIDE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRICHLOROFLUOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
ACETONE	EPA-8260	ND(<25)	UG/L	4/1/05	CCN
1,1-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
METHYLENE CHLORIDE	EPA-8260	ND(<5)	UG/L	4/1/05	CCN
ACRYLONITRILE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
METHYL T-BUTYL ETHER	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRANS-1,2-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1-DICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-BUTANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
CIS-1,2-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2,2-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOCHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROFORM	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,1-TRICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CARBON TETRACHLORIDE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
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1,2-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
DIBROMOMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMODICHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRANS-1,3-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
4-METHYL-2-PENTANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
TOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CIS-1,3-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,2-TRICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-HEXANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
1,3-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN



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DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
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DIBROMOCHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DIBROMOETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,1,2-TETRACHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
ETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
M+P XYLENE	EPA-8260	ND(<4)	UG/L	4/1/05	CCN
STYRENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
O-XYLENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOFORM	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
ISOPROPYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,2,2-TETRACHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,3-TRICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
N-PROPYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-CHLOROTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,3,5-TRIMETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
4-CHLOROTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
T-BUTYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,4-TRIMETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
S-BUTYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
P-ISOPROPYLTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,3-DICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,4-DICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
N-BUTYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DIBROMO 3-CHLOROPROPANE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
1,2,4-TRICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
HEXACHLOROBUTADIENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
NAPHTHALENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,3-TRICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN



CCI
ANALYTICAL
LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: 2
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: FSMW-1 3/29/05 9:05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
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* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES OR AS FOLLOWS:
GASOLINE(VOLATILE RANGE) REPORTING LIMIT IS 50 UG/L
DIESEL RANGE REPORTING LIMIT IS 130 UG/L
LUBE OIL RANGE REPORTING LIMIT IS 250 UG/L

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174

DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	ANALYTE	SUR ID	% RECV
503174-01	NWTPH-GX	TFT	95
503174-01	NWTPH-DX	C25	85
503174-01	EPA-8260	1,2-DCE-d4	111
503174-01	EPA-8260	TOLUENE-d8	92
503174-01	EPA-8260	4-BFB	82
503174-02	NWTPH-GX	TFT	101
503174-02	NWTPH-DX	C25	97
503174-02	EPA-8260	1,2-DCE-d4	98
503174-02	EPA-8260	TOLUENE-d8	99
503174-02	EPA-8260	4-BFB	99

BLANK AND DUPLICATE RESULTS

METHOD	BLK RESULT	ASSOC SMPLS
NWTPH-GX (GAS)	ND(<3)	503174-01
NWTPH-DX (DSL)	ND(<25)	503174-01
NWTPH-DX (OIL)	ND(<50)	503174-01
NWTPH-GX (GAS)	ND(<50)	503174-02
NWTPH-DX (DSL)	ND(<130)	503174-02
NWTPH-DX (OIL)	ND(<250)	503174-02
EPA-8260	SEE BLANK REPORTS	



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DATE: 4/5/05
CCIL JOB #: 503174

DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

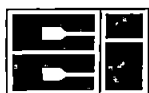
CLIENT PROJECT ID: VULCAN - WESTLAKE

QUALITY CONTROL RESULTS

SPIKE/ SPIKE DUPLICATE RESULTS

METHOD	SPIKE ID	ASSOCIATED SAMPLES	% SPIKE RECOVERY	% SPIKE DUP RECOVERY	REL % DIFF
NWTPH-GX	GASOLINE	503174-01	73	73	0
NWTPH-GX	GASOLINE	503174-02	95	96	1
NWTPH-DX	DIESEL	503174-02	93	88	5
NWTPH-DX	DIESEL	503174-01	77	90	16
EPA-8260	1,1 DICHLOROETHENE	503174-01	100	100	1
EPA-8260	BENZENE	503174-01	93	92	2
EPA-8260	TRICHLOROETHENE	503174-01	111	108	2
EPA-8260	TOLUENE	503174-01	101	99	2
EPA-8260	CHLOROBENZENE	503174-01	105	105	0
EPA-8260	1,1 DICHLOROETHENE	503174-02	101	89	13
EPA-8260	BENZENE	503174-02	108	98	9
EPA-8260	TRICHLOROETHENE	503174-02	88	85	3
EPA-8260	TOLUENE	503174-02	98	89	10
EPA-8260	CHLOROBENZENE	503174-02	95	91	4

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: BLK 1
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260 SOIL

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
DICHLORODIFLUOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
VINYL CHLORIDE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRICHLOROFLUOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
ACETONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,1-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
METHYLENE CHLORIDE	EPA-8260	ND(<20)	UG/KG	4/5/05	CCN
ACRYLONITRILE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
METHYL T-BUTYL ETHER	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRANS-1,2-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1-DICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-BUTANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
CIS-1,2-DICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2,2-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOCHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CHLOROFORM	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,1-TRICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CARBON TETRACHLORIDE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRICHLOROETHENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
DIBROMOMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMODICHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TRANS-1,3-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
4-METHYL-2-PENTANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
TOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
CIS-1,3-DICHLOROPROPENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,2-TRICHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-HEXANONE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,3-DICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
TETRACHLOROETHYLENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
DIBROMOCHLOROMETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DIBROMOETHANE	EPA-8260	ND(<5)	UG/KG	4/5/05	CCN
CHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,1,2-TETRACHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN



CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: BLK 1
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260 SOIL

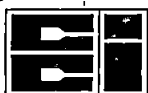
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
ETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
M+P XYLENE	EPA-8260	ND(<20)	UG/KG	4/5/05	CCN
STYRENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
O-XYLENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOFORM	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
ISOPROPYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,1,2,2-TETRACHLOROETHANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,3-TRICHLOROPROPANE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
BROMOBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
N-PROPYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
2-CHLOROTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,3,5-TRIMETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
4-CHLOROTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
T-BUTYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,4-TRIMETHYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
S-BUTYL BENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
P-ISOPROPYLTOLUENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,3-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,4-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
N-BUTYLBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2-DIBROMO 3-CHLOROPROPANE	EPA-8260	ND(<50)	UG/KG	4/5/05	CCN
1,2,4-TRICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
HEXACHLOROBUTADIENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
NAPHTHALENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN
1,2,3-TRICHLOROBENZENE	EPA-8260	ND(<10)	UG/KG	4/5/05	CCN

* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY: 



CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: BLK 2
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260 WATER

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
DICHLORODIFLUOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
VINYL CHLORIDE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRICHLOROFLUOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
ACETONE	EPA-8260	ND(<25)	UG/L	4/1/05	CCN
1,1-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
METHYLENE CHLORIDE	EPA-8260	ND(<5)	UG/L	4/1/05	CCN
ACRYLONITRILE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
METHYL T-BUTYL ETHER	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRANS-1,2-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1-DICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-BUTANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
CIS-1,2-DICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2,2-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOCHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROFORM	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,1-TRICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CARBON TETRACHLORIDE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRICHLOROETHENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
DIBROMOMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMODICHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TRANS-1,3-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
4-METHYL-2-PENTANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
TOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CIS-1,3-DICHLOROPROPENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,2-TRICHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-HEXANONE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
1,3-DICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
TETRACHLOROETHYLENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
DIBROMOCHLOROMETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DIBROMOETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
CHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,1,2-TETRACHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN



CCI
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CERTIFICATE OF ANALYSIS

CLIENT: FLOYD/SNIDER
83 S. KING ST., SUITE 614
SEATTLE, WA 98104

DATE: 4/5/05
CCIL JOB #: 503174
CCIL SAMPLE #: BLK 2
DATE RECEIVED: 3/29/05
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BRETT BEAULIEU

CLIENT PROJECT ID: VULCAN - WESTLAKE
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260 WATER

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
ETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
M+P XYLENE	EPA-8260	ND(<4)	UG/L	4/1/05	CCN
STYRENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
O-XYLENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOFORM	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
ISOPROPYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,1,2,2-TETRACHLOROETHANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,3-TRICHLOROPROPANE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
BROMOBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
N-PROPYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
2-CHLOROTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,3,5-TRIMETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
4-CHLOROTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
T-BUTYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,4-TRIMETHYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
S-BUTYL BENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
P-ISOPROPYLTOLUENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,3 DICHLOOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,4-DICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
N-BUTYLBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2-DIBROMO 3-CHLOROPROPANE	EPA-8260	ND(<10)	UG/L	4/1/05	CCN
1,2,4-TRICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
HEXACHLOROBUTADIENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
NAPHTHALENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN
1,2,3-TRICHLOROBENZENE	EPA-8260	ND(<2)	UG/L	4/1/05	CCN

* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

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