Release 336045
Starbucks
Seattle

GROUNDWATER SAMPLING AND TESTING

Pacific Color Property (Starbucks Site)
7100 East Green Lake Drive Northeast
Seattle, Washington

PACIFIC COLOR, INC.

Entered
CM
4-28-03

ENVIRONMENTAL
ASSOCIATES, INC.

2122 - 112th Avenue North East, Suite B-100
Bellevue, Washington 98004
(206) 399-6041 (206) 455-9025
FAX: (206) 455-2316

December 9, 1996 **JN 3071-X**

Pacific Color, Incorporated
% Mr. David Johansen
7101 Woodlawn Avenue Northeast
Seattle, Washington 98115

Subject: **GROUNDWATER SAMPLING AND TESTING**
Pacific Color Property (Starbucks Site)
7100 East Green Lake Drive Northeast
Seattle, Washington

Dear Mr. Johansen:

Environmental Associates, Inc. (EAI) has completed sampling of groundwater from the three (3) groundwater monitoring wells at the subject site located in Seattle, Washington, along with laboratory analysis of the samples for gasoline through heavy-oil range petroleum contaminants, including benzene, toluene, ethylbenzene, and xylenes (BTEX). This letter, prepared in accordance with the terms of our proposal dated October 28, 1996, presents a brief summary of our findings.

Groundwater Sampling

Groundwater sampling of the three (3) on-site monitoring wells was performed on November 11, 1996. Prior to sampling, a sterilized hand bailer was used to purge each well by removing at least three (3) well volumes of water. This procedure was followed in an effort to assure that samples obtained from the wells would be representative of ambient groundwater conditions in the surrounding water-bearing strata.

Following purging, a sterilized PTFE (teflon) bailer was used to extract groundwater samples from each well. Samples were carefully poured into preconditioned and preserved, labeled glassware (VOA vials with teflon septa and amber glass jars with teflon lined lids) furnished by the project laboratory. After sampling, sample jars were placed in zip-lock plastic bags, stored in an iced chest at or below 4 degrees centigrade, and transported to the project laboratory in this condition in an effort to preserve sample integrity. EPA recommended sample management protocol, including maintenance of chain-of-custody records, was observed at all times throughout the project.

Water-Table Survey

Water table survey data obtained in the course of our field work is presented below in Table 1:

TABLE 1
Water Table Survey

Well #	Elevation of M.P. in feet	Depth to Water below M.P. in feet	Water Table Elevation in feet
MW-1	175.00	9.17	165.83
MW-2	169.75	4.48	165.27
MW-3	171.64	5.91	165.73

(1) M.P. denotes measuring point (top outer edge of each steel well-head monument).

(2) Reference elevation datum chosen as the M.P. of MW-1, and arbitrarily assigned an elevation of 175.00 feet.

Water table elevations, as calculated from measurements taken on November 11, 1996, are included on Plate 2, Site Exploration Map, attached to this report. Based upon our interpretation of groundwater table survey data, it appears that shallow groundwater at the site is flowing generally from the east-southeast toward the west-northwest. This data reflects a slight change from the flow direction as interpreted during our January 1996 groundwater sampling effort (east-northeast toward the west-southwest). The groundwater table was found to be approximately 0.07 feet to 0.032 feet higher in altitude during our most recent (November 1996) sampling than it was during the January 1996 sampling round. The apparent slight change in interpreted groundwater flow direction may be attributable to one or a combination of the following factors:

1) changes in on-site recharge areas due to new construction on the subject property and/or new underground utility corridors/storm drains, etc., and,

2) seasonal fluctuations in groundwater recharge, due to changes in amount/duration of precipitation with respect to time.

Laboratory Analysis

Groundwater sample analysis was conducted by OnSite Environmental, Inc., Redmond, Washington, a Washington Department of Ecology (WDOE) certified laboratory. Complete laboratory reports are attached to this letter. A summary of the laboratory analysis results is provided below in Table 2. The laboratory report is attached to this letter.

Groundwater Sample Results

Groundwater samples from monitoring wells MW-1, MW-2, and MW-3 were analyzed using gas chromatography (GC) conducted in accordance with WTPH-Gas for petroleum hydrocarbons (TPH) in the gasoline range, along with EPA Method 8020 for benzene, toluene, ethylbenzene, and xylene (BTEX) constituents. In addition, groundwater samples from all three (3) monitoring wells were tested using gas chromatography by Method WTPH-Diesel Extended (EPA Modified 8015) for total petroleum hydrocarbons in the diesel through heavy-oil range.

A summary of laboratory analysis results for groundwater sampled November 11, 1996, is presented in Table 2 below. As a basis for interpretation of contaminant trends over the past year, Table 2 also includes a summary of earlier groundwater testing analytical results.

TABLE 2

Results of Laboratory Analysis of Groundwater Samples
All results and limits in parts per billion (ppb)
Please refer to Plate 2 for well locations

Well #	Sampling Date	WTPH-Gas	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	WTPH-DIESEL EXT.
MW-1	1/96	ND[1]	ND	ND	ND	3.2	ND
	11/96	ND	ND	ND	ND	ND	ND
MW-2	1/96	13,000	120	268	410	860	2,700[2,3]
	11/96	11,000	52	51	370	171	650[2,3]
MW-3	1/96	3,000	93	48	27	78	ND
	12/96	1,800	3	4.8	8.4	16.5	620[2,3]
Detection Limit[4]		100	1.0	1.0	1.0	1.0	500
Cleanup Level[5]		1,000	5	40	30	20	1,000

NOTES:
1 - "ND" denotes analyte not detected at or in excess of the detection level.
2 - Reported result is due to detection of hydrocarbons in the diesel range (C12 - C24); no oil-range (C24 - C34) petroleum hydrocarbons were detected.
3 - Flagged by laboratory: hydrocarbons in the gasoline range are elevating the reported diesel result.
4 - Detection limit is equivalent to the laboratory lower practical quantification limit.
5 - Method A groundwater cleanup levels as published in the Model Toxics Control Act (MTCA), Chapter 173-340-720 WAC.
6 - Shading denotes most recently monitored concentration detected exceeds the current WDOE "Cleanup Level".

SUMMARY

Based upon results of sampling and laboratory testing, it appears that groundwater beneath the down-gradient margins of the subject site in the areas explored (MW-2 and MW-3) remains affected by past on-site releases of gasoline and diesel-range petroleum hydrocarbons, along with gasoline-associated BTEX constituents benzene, toluene, ethylbenzene, and total xylenes, at reduced levels from contaminant concentrations detected during our January 1996 sampling round.

Relying upon results of analytical testing, MW-1 groundwater remains free of detectable concentrations of petroleum hydrocarbons and BTEX constituents.

MW-2 groundwater analysis reveals that groundwater at this location remains contaminated with gasoline and BTEX petroleum hydrocarbons in excess of WDOE Method A cleanup guidelines, although contaminant concentrations were found to be at reduced levels as compared to the January 1996 sampling/analysis study. The diesel-range petroleum hydrocarbon concentration appears to have diminished to a concentration less than the WDOE Method A cleanup level and, as was revealed during the January 1995 sampling round, no oil-range petroleum hydrocarbons were detected in groundwater from MW-2.

MW-3 groundwater analysis reveals that groundwater at this location remains in excess of the WDOE Method A cleanup level for total petroleum hydrocarbons in the gasoline range, however, BTEX contaminant concentrations have diminished to levels less than the WDOE Method A cleanup levels for these constituents. Diesel through heavy-oil range petroleum hydrocarbon concentrations appear to remain less than the WDOE cleanup level for total petroleum hydrocarbons.

As discussed in past cleanup reports regarding the site, as the primary and the majority of the secondary sources of on-site contaminants (tanks and affected soil) have been removed, future improvement of groundwater quality may possibly occur in response to various natural processes including chemical "weathering" of hydrocarbons (decomposition), biological/microbial degradation of hydrocarbons, and hydrodynamic dispersion (i.e., normal groundwater flow).

To provide a basis for conclusions regarding groundwater at this property, it is our recommendation that quarterly sampling and laboratory analysis of water samples be conducted in the existing monitoring well array for a period of possibly one year. The results of that testing combined with the work summarized in this report would then permit the owner to draw defensible conclusions regarding overall stability of groundwater quality at this site. The results of such testing should, of course, be provided to the WDOE for inclusion in their files.

Finally, to achieve full regulatory compliance under the Model Toxics Control Act (MTCA), Chapter 173-340-300, paragraphs (2) and (4), it is our recommendation that the findings of this study be shared with the Washington Department of Ecology (WDOE), Northwest Regional Office, within 90 days.

LIMITATIONS

This report has been prepared for the exclusive use of Pacific Color, Inc. and their several representatives for specific application to this site. Our work for this project was conducted in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our proposal dated December 21, 1995. No other warranty, expressed or implied, is made. If new information is developed in future site work which may include excavations, borings, studies, etc., Environmental Associates, Inc., must be retained to reevaluate the conclusions of this report and to provide amendments as required.

We appreciate the opportunity to be of service to you on this project and trust that the information will be of value in your planning efforts. If you have any questions or we may be of further service, please do not hesitate to contact us.

Respectfully submitted,
ENVIRONMENTAL ASSOCIATES, INC.

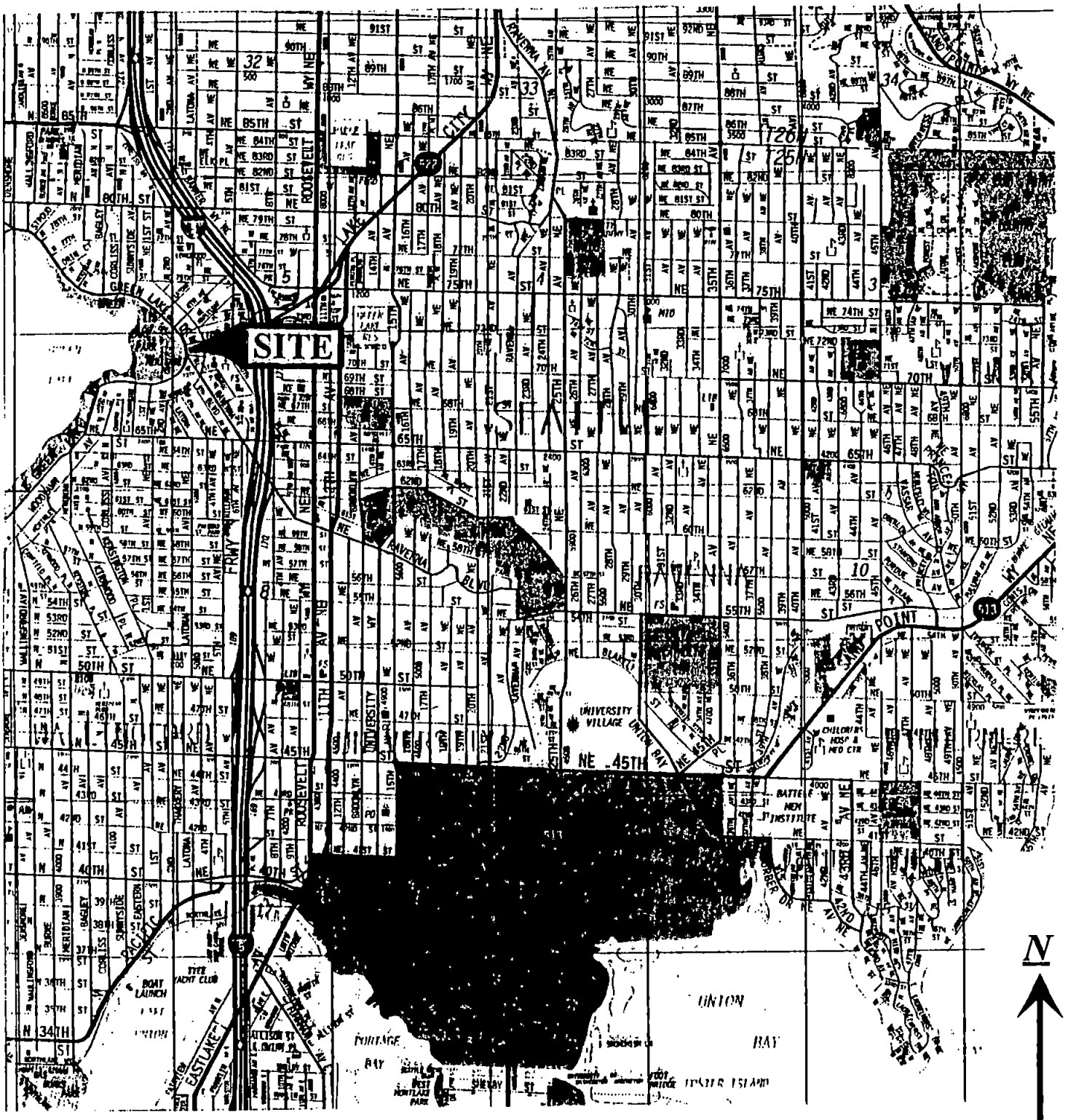
Tina Q. Schuy for/
James R. Ruef
Environmental Geologist

Registered Site Assessor
Washington Department of Ecology

Don W. Spencer
Don W. Spencer, M.Sc., P.G., R.E.A.
Principal

Registered Site Assessor/Licensed UST Supervisor
State Certification 949458636

License: W000010 (Washington)
License: 11464 (Oregon)
License: 876 (California)



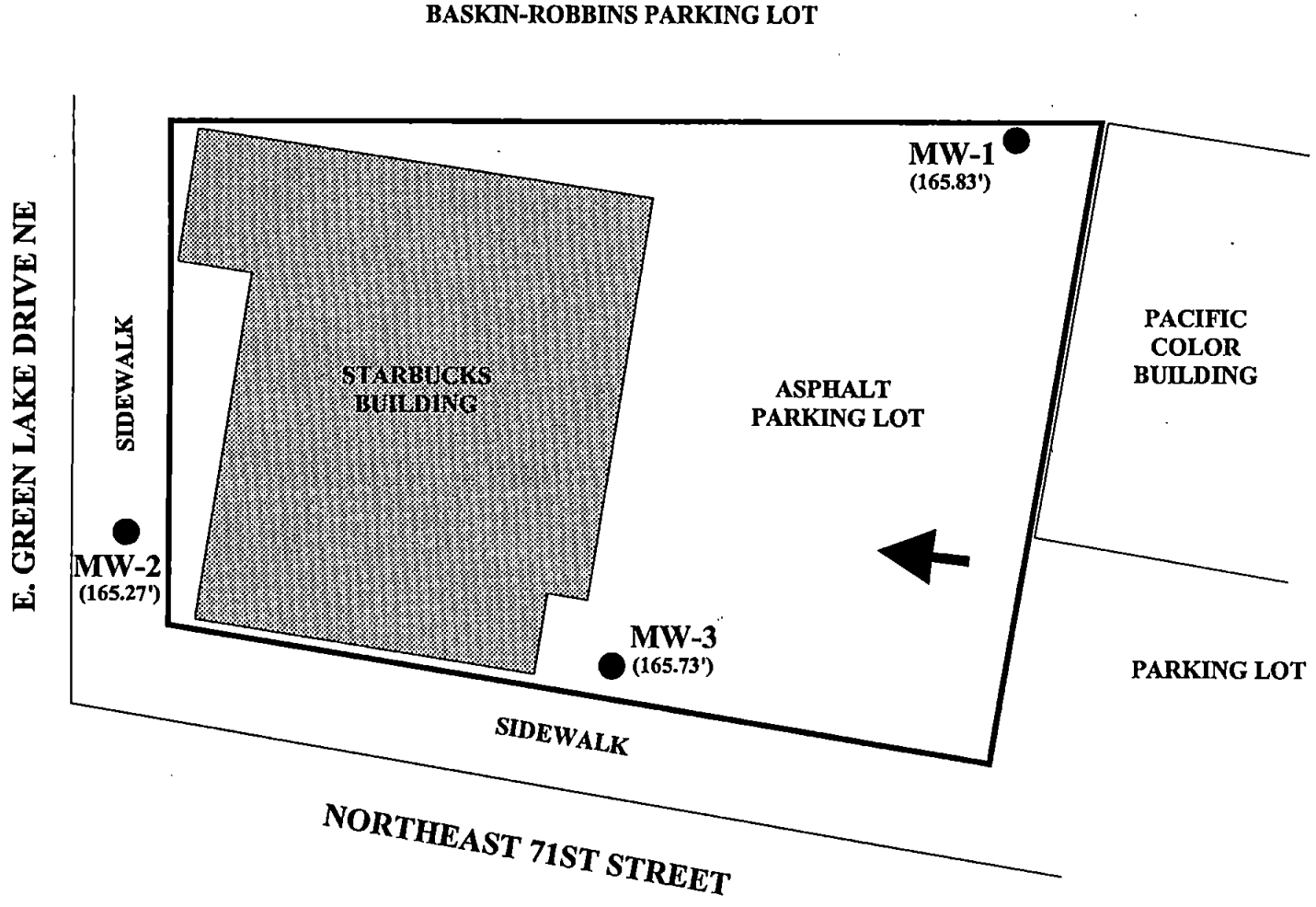
ENVIRONMENTAL
ASSOCIATES, INC.

2122 - 112th Avenue N.E., Ste. B-100
Bellevue, Washington 98004

VICINITY MAP

Pacific Color
7100 East Green Lake Drive Northeast
Seattle, Washington

Job Number:	*Date:*		*Plate:*
JN 3071-X	Dec. 1996		1



N

= Interpreted flow direction of shallow-seated groundwater (11-11-96).

MW-1 (165.83') = Approximate location of monitoring well installed by EAI 12/95; groundwater elevations, as calculated from measurements taken 11-11-96, are shown in parenthesis.

SCALE: 1 inch = approx. 20 feet.

ENVIRONMENTAL ASSOCIATES, INC.
2122 - 112th Avenue N.E., Ste. B-100
Bellevue, Washington 98004

SITE EXPLORATION MAP

Pacific Color Property
7100 East Green Lake Drive NE
Seattle, Washington

Job Number:	Date:		Plate:
JN 3071-X	Dec. 1996		2

ATTACHMENT 1

Laboratory Report

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

November 18, 1996

Jim Ruef
Environmental Associates, Inc.
2122 112th Ave, NE, Suite B-100
Bellevue, WA 98004

Re: Analytical Data for Project JN3071-X
Laboratory Reference No. 9611-042

Dear Jim:

Enclosed are the results of the analyses, and associated quality control data, of samples submitted on November 12, 1996.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

EPA 602 & WTPH-G

Date Extracted:	11-12-96					
Date Analyzed:	11-12-96					
Matrix: Water						
Units: ug/L (ppb)						
Lab ID:	11-042-1			11-042-2		
Client ID:	**MW-1**			**MW-2**		
Dilution Factor	1			1		
	Result	Flags	PQL	**Result**	Flags	PQL
Benzene	**ND**		1.0	**52**		1.0
Toluene	**ND**		1.0	**51**		1.0
Ethyl Benzene	**ND**		1.0	**370**	E	1.0
m,p-Xylene	**ND**		1.0	**140**	E	1.0
o-Xylene	**ND**		1.0	**31**		1.0
TPH-Gas	**ND**		100	**11000**		100
FLUOROBENZENE Surrogate Recovery	79%			137%		

E - Value reported exceeds the quantitation range. Value is an estimate.

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

EPA 602 & WTPH-G

Date Extracted: 11-12-96
Date Analyzed: 11-12-96

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-042-3
Client ID: **MW-3**

Dilution Factor 1

	Result	Flags	PQL
Benzene	**3.0**		1.00
Toluene	**4.8**		1.0
Ethyl Benzene	**8.4**		1.0
m,p-Xylene	**12**		1.0
o-Xylene	**4.5**		1.0
TPH-Gas	**1800**		100
FLUOROBENZENE Surrogate Recovery	79%		

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

EPA 602 & WTPH-G
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-12-96
Date Analyzed: 11-12-96

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1112W1

Dilution Factor 1

	Result	Flags	PQL
Benzene	ND		1.0
Toluene	ND		1.0
Ethyl Benzene	ND		1.0
m,p-Xylene	ND		1.0
o-Xylene	ND		1.0
TPH-Gas	ND		100
FLUOROBENZENE Surrogate Recovery	84%		

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

EPA 602 & WTPH-G
DUPLICATE QUALITY CONTROL

Date Extracted: 11-12-96
Date Analyzed: 11-12-96

Matrix: Water
Units: ug/L (ppb)

Lab ID:	11-042-1 Original	11-042-1 Duplicate	RPD
Dilution Factor	1	1	
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethyl Benzene	ND	ND	NA
m,p-Xylene	ND	ND	NA
o-Xylene	ND	ND	NA
TPH-Gas	ND	ND	NA
FLUOROBENZENE Surrogate Recovery	79%	73%	

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

EPA 602 & WTPH-G
MS/MSD QUALITY CONTROL

Date Extracted: 11-12-96
Date Analyzed: 11-12-96

Matrix: Water
Units: ug/L (ppb)

Lab ID spiked @ 50 ppb Dilution Factor	11-042-1 **MS** 1	Percent Recovery	11-042-1 **MSD** 1	Percent Recovery	RPD
Benzene	**41.9**	**84%**	**44.0**	**88%**	4.9
Toluene	**41.4**	**83%**	**43.5**	**87%**	4.9
Ethyl Benzene	**42.6**	**85%**	**44.1**	**88%**	3.5
m,p-Xylene	**40.9**	**82%**	**42.6**	**85%**	4.1
o-Xylene	**41.7**	**83%**	**43.5**	**87%**	4.2
FLUOROBENZENE Surrogate Recovery	83%		84%		

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

WTPH-D

Date Extracted: 11-13-96
Date Analyzed: 11-13-96

Matrix: Water
Units: mg/L (ppm)

Client ID	Lab ID	Dilution Factor	TPH-Diesel C12-C24	TPH-Oil C24-C34	Surrogate Recovery*	Flags	Diesel MRL	Oil MRL
MW-1	11-042-1	0.02	ND	ND	91%		0.50	1.00
MW-2	11-042-2	0.02	**0.65**	ND	98%	N1	0.50	1.00
MW-3	11-042-3	0.02	**0.62**	ND	101%	N1	0.50	1.00

N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the diesel result.
* o-Terphenyl

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

WTPH-D
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-13-96
Date Analyzed: 11-13-96

Matrix: Water
Units: mg/L (ppm)

Lab ID: MB1113W1

	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery*	Flags	MRL
Method Blank	0.02	ND	100%		0.50

* o-Terphenyl

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

WTPH-D
DUPLICATE QUALITY CONTROL

Date Extracted: 11-08-96
Date Analyzed: 11-08-96

Matrix: Water
Units: mg/L (ppm)

Lab ID: 11-027-1

	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery*	Flags	MRL
Sample	0.02	ND	79%		0.50
Duplicate	0.02	ND	83%		0.50
RPD		NA			

* o-Terphenyl

Date of Report: November 18, 1996
Samples Submitted: November 12, 1996
Lab Traveler: 11-042
Project: JN3071-X

WTPH-D
SB/SBD QUALITY CONTROL

Date Extracted: 11-08-96
Date Analyzed: 11-08-96

Matrix: Water
Units: mg/L (ppm)

Lab ID: SB1108W1

	Dilution Factor	Total Petroleum Hydrocarbons	Percent Recovery	Surrogate Recovery*	Flags	MRL
Spike @ 2 ppm	0.02	1.65	83%	96%		0.50
Spike Duplicate	0.02	1.56	78%	92%		0.50
RPD		5.8%				

* o-Terphenyl

Chain Of Custody

OnSite Environmental Inc.
14924 NE 31st Circle • Redmond, WA 98052
Fax: (206) 885-4603 • Phone: (206) 883-3881

Company: ENVIRONMENTAL ASSOC'S., INC.
Project No: JN 3071-X
Project Name: GREEN LAKE
Project Manager: JIM RUEF

Turn Around Requested (Check One): Same Day / 24 Hours / 48 Hours / ☒ Standard / (other)

Project Chemist: KPH

Laboratory No. 11-042

Requested Analysis: WTPH-HCID; WTPH-G/BTEX; WTPH-D (Extended Diesel Quant. ⊛); WTPH-418.1; Volatiles by 8240/624; Volatiles by 8260; Chlorinated Volatiles by 8240/8260/624; Semivolatiles by 8270/625; PAHs by 8270/625; PCB's by 8080/608; Total RCRA Metals (8); TCLP Metals; % Moisture

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	WTPH-HCID	WTPH-G/BTEX	WTPH-D
1	MW-1	11-11-96	1210	w	3		X	X
2	MW-2	↓	1345	w	3		X	X
3	MW-3	↓	1300	w	3		X	X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
James Ruef	11-12-96	[signature]	11-12-96
FIRM: EAI	TIME: 0920	FIRM: OSE	TIME: 0920
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME

REVIEWED BY: | DATE REVIEWED:

COMMENTS: ⊛ Please report "diesel extended" results as diesel range (<C24) and oil range (C24-C34) separately.

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