Release 536045
Starbucks
Seattle

GROUNDWATER SAMPLING AND TESTING

Starbucks Coffee Site
7100 East Green Lake Drive Northeast
Seattle, Washington

PACIFIC COLOR, INC.

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CM
1-23-03

ENVIRONMENTAL ASSOCIATES, INC.

2122 - 112th Avenue North East, Suite B-100
Bellevue, Washington 98004
(425) 455-9025
FAX: (425) 455-2316

October 14, 1999 JN 3071-2X

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

Subject: **GROUNDWATER SAMPLING AND TESTING**
Starbucks Coffee 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) on-site groundwater monitoring wells, along with laboratory analysis of the samples for gasoline-range petroleum contaminants, gasoline-associated benzene, toluene, ethylbenzene, and xylene (BTEX) constituents, and diesel-through-heavy-oil-range petroleum hydrocarbons. This report, prepared in accordance with the terms of our proposal dated August 31, 1999, presents a brief summary of our findings.

Groundwater Sampling

Groundwater sampling of the three (3) on-site monitoring wells was completed on September 7, 1999. Prior to sampling, a portable peristaltic pump 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 groundwater sampled from the monitoring wells would be representative of ambient groundwater conditions in the surrounding water-bearing strata.

Following purging, the peristaltic pump was used to extract groundwater samples from each well. Samples were carefully pumped directly into preconditioned and preserved, labeled glassware (VOA vials with Teflon septa and amber glass jars with Teflon-sealed lids) furnished by the project laboratory. After sampling, sample jars were stored in an iced chest maintained 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 in Table 1.

TABLE 1
Water Table Survey

Well # & sample date	Elevation of M.P.[1]	Depth to Water Below M.P.	Elevation of Water Table Surface
MW-1			
01-02-96	175.00 ft.[2]	9.24 ft.	165.76 ft.
11-11-96		9.17 ft.	165.83 ft.
09-07-99		8.26 ft.	166.74 ft.
MW-2			
01-02-96	169.75 ft.	4.61 ft.	165.14 ft.
11-11-96		4.48 ft.	165.27 ft.
09-07-99		5.43 ft.	164.32 ft.
MW-3			
01-02-96	171.64 ft.	6.23 ft.	165.41 ft.
11-11-96		5.91 ft.	165.73 ft.
09-07-99		5.33 ft.	166.31 ft.

(1) M.P. denotes the measuring point for each well (top edge of PVC well casing, north side).
(2) Reference elevation datum chosen as the M.P. of MW-1 and assigned an elevation of 175.00 feet.

Based upon water table data as presented in Table 1, it would appear that shallow groundwater at the site (at the time of our most recent survey) flows locally from the east-southeast toward the west-northwest. The approximate groundwater flow direction, as interpreted from groundwater measurements on September 7, 1999, is depicted on the Site Exploration Map, Plate 1, attached to this report.

Laboratory Analysis

Groundwater sample analysis was conducted by TEG Northwest, Inc., Bellevue, Washington, a Washington Department of Ecology (WDOE) accredited laboratory. The complete laboratory report is attached to this report. A summary of the laboratory analysis results is provided in Table 2.

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 NWTPH-Gas/BTEX for petroleum hydrocarbons in the gasoline range, along with benzene, toluene, ethylbenzene, and xylene (BTEX)

constituents. In addition, groundwater samples from all three (3) monitoring wells were tested using gas chromatography by Method NWTPH-Dx Extended for total petroleum hydrocarbons in the diesel and heavy-oil ranges.

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 few years, 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)

Well #	Sampling Date	WTPH-Gas	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	NWTPH-DIESEL EXT.
MW-1	01-02-96	ND[1]	ND	ND	ND	3.2	ND
	11-11-96	ND	ND	ND	ND	ND	ND
	09-07-99	ND	ND	ND	ND	ND	ND
MW-2	01-02-96	13,000	120	268	410	860	2,700[2,3]
	11-11-96	11,000	52	51	370	171	650[2,3]
	09-07-99	3,500	21	17	340	63	ND
MW-3	01-02-96	3,000	93	48	27	78	ND
	11-11-96	1,800	3	4.8	8.4	16.5	620[2,3]
	09-07-99	690	ND	ND	4.1	1.1	ND
Detection Limit[4]		100	1.0	1.0	1.0	1.0	200
Cleanup Level[5]		1,000	5.0	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 heavy 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 (PQL).
5 - Method A groundwater cleanup levels as offered in the Model Toxics Control Act (MTCA), Chapter 173-340-720 WAC. Shading denotes most recently monitored concentration detected exceeds the current WDOE Method A "Cleanup Level".

SUMMARY

Relying upon the results of laboratory testing, it would appear that:

- Groundwater proximal to monitoring well MW-2 contains gasoline and gasoline-associated benzene, ethylbenzene, and total xylenes exceeding the current WDOE Method A cleanup level for these contaminants in groundwater;

- Groundwater proximal to monitoring well MW-2 is currently in compliance with current WDOE Method A cleanup levels for diesel-range and heavy-oil range petroleum hydrocarbon contaminants;

- Groundwater proximal to monitoring wells MW-1 and MW-3 is in compliance with current WDOE Method A cleanup levels for gasoline, BTEX, and diesel-range and heavy-oil range petroleum hydrocarbon contaminants.

In terms of groundwater quality trends, contaminant concentrations were found to be at significantly reduced levels as compared to the 1996 sampling/analysis events.

As discussed in past cleanup reports regarding the site, as the primary source and the majority of the secondary sources of on-site contaminants (tanks and contaminated 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, regular sampling and laboratory analysis of water samples be conducted in the existing monitoring well array. The results of that testing combined with the cleanup work summarized in EAI's earlier reports may 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, paragraph (4), it is our recommendation that the findings of this study be shared with the Washington Department of Ecology (WDOE), Northwest Regional Office, 3190-160th Avenue Southeast, Bellevue, Washington, 98008-5452.

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 August 31, 1999. The findings and conclusions of this study are based upon observations and testing made at separated locations on the subject property. Conditions may vary between the sample localities, or at other locations or depths. 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.

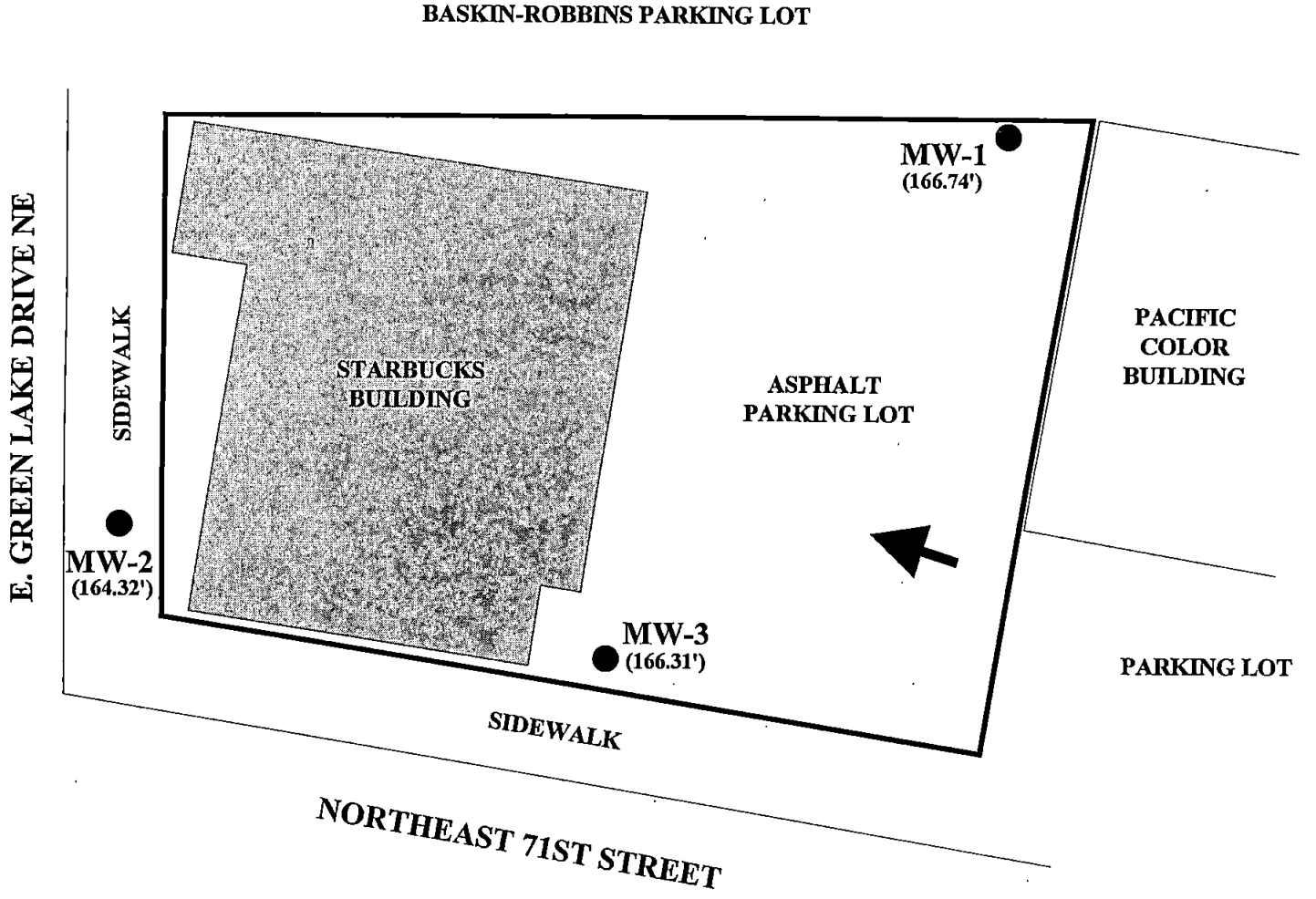
James R. Ruef
Environmental Geologist

IFCI/WDOE-Certified Site Assessor

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)
License: 5195	(Illinois)
License: 0327	(Mississippi)



= Interpreted flow direction of shallow-seated groundwater (9-7-99).

MW-1 (166.74') = Approximate location of monitoring well installed by EAI 12/95; groundwater elevations, as calculated from measurements taken 9-7-99, are shown in parenthesis.

N

SCALE: 1 inch = approx. 20 feet.

ENVIRONMENTAL ASSOCIATES, INC.

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

SITE EXPLORATION MAP

Starbucks Coffee Site
7100 East Green Lake Drive NE
Seattle, Washington

Job Number:	Date:		Plate:
JN 3071-2X	Oct. 1999		1

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

800 Sleater-Kinney SE, PMB #262
Lacey, Washington 98503-1127

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

September 10, 1999

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

Dear Mr. Ruef:

Please find enclosed the analytical data report for the Starbucks/Green Lake Project in Green Lake, Washington. Water samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended, Gasoline by NWTPH-Gx, and BTEX by Method 8021B on September 2, 1999.

The results of these analyses are summarized in the attached table. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed for your records.

TEG Northwest appreciates the opportunity to have provided analytical services to Environmental Associates for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A. Korosec
President

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4^{o} C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

Purgeable Volatile Aromatics
(BTEX, EPA 8021B)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

TEG NW SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

TEG Job Number: S90907-5
Client: ENVIRONMENTAL ASSOCIATES
Client Job Name: STARBUCKS / GREEN LAKE
Client Job Number: JN 3071-X

Analytical Results

NWTPH-Gx / BTEX		MTH BLK	LCS	MW-1	MW-1 DUPL	MW-2	MW-3
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99
Date analyzed	Limits	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99
NWTPH-Gx, mg/L							
Mineral spirits/Stoddard solvent	0.10	nd		nd	nd	nd	nd
Gasoline	0.10	nd		nd	nd	3.5	0.69
BTEX , µg/L							
Benzene	1.0	nd		nd	nd	21	nd
Toluene	1.0	nd		nd	nd	17	nd
Ethylbenzene	1.0	nd		nd	nd	340	4.1
Xylenes	1.0	nd		nd	nd	63	1.1
Surrogate recoveries:							
Trifluorotoluene		0%	0%	88%	83%	C	80%
Bromofluorobenzene		0%	0%	78%	83%	C	79%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

TEG NW SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

TEG Job Number:	S90907-5
Client:	ENVIRONMENTAL ASSOCIATES
Client Job Name:	STARBUCKS / GREEN LAKE
Client Job Number:	JN 3071-X

Analytical Results

NWTPH-Dx, mg/l		MTH BLK	MW-1	MW-2	DUPL MW-2	MW-3
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99
Date analyzed	Limits	09/07/99	09/07/99	09/07/99	09/07/99	09/07/99
Kerosene/Jet fuel	0.20	nd	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd	nd
Surrogate recoveries:						
Fluorobiphenyl		101%	100%	100%	100%	99%
o-Terphenyl		104%	106%	103%	103%	105%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

S909075

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

teg

CHAIN-OF-CUSTODY RECORD

CLIENT: Environmental Associates, Inc.

ADDRESS: 2122 - 112th Ave. NE, Ste. B-100

PHONE (425) 455-9025 FAX: (425) 455-2316

CLIENT PROJECT #: JN 3071-X PROJECT MANAGER: JIM RUEF

DATE: 9-7-99 PAGE 1 OF 1

PROJECT NAME: Starbucks/Green Lake

LOCATION: 7100 E. Green Lake Dr. N.

COLLECTOR: JIM RUEF DATE OF COLLECTION 9/7/99

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	NW TPH 8015 (gasoline) + BTEX	NW TPH (8015) (diesel) diesel extended	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS						FIELD NOTES	Total Number of Containers	Laboratory Note Number
MW-1	—	1035	W	VOAs/500ml						X	X															3	
MW-2	—	1235	W	↓ ↓						X	X															4	
MW-3	—	1135	W	↓ ↓						X	X															3	

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
James Ruef	9-7-99 / 3:34 pm	[signature]	9/7/99 3:40 pm

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☒ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Regular turn-around time.