GROUND WATER
QUARTERLY STATUS REPORT

Lakewood Towne Center
5731 Main Street SW
Lakewood, Washington

Prepared for

MBK Northwest, Inc.
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Prepared by

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April 4, 2003

Introduction

This report summarizes field activities and analytical results for the ninth round of ground water monitoring conducted at the Lakewood Towne Center site located in Lakewood, Washington. Since the Lakewood Towne Center site characterization project began in the summer of 2000, Herrera Environmental Consultants, Inc. (Herrera) has prepared the following deliverables:

Date	Deliverables
May 2000	Phase I Environmental Site Assessment
February 2001	Phase II Environmental Site Assessment
March 2001	Ground Water Quarterly Status Report (first quarter)
June 2001	Ground Water Quarterly Status Report (second quarter)
September 2001	Ground Water Quarterly Status Report (third quarter)
January 2002	Ground Water Monitoring Annual Summary Report (fourth quarter and first year summary)
February 2002	Updated Phase I Environmental Site Assessment
March 2002	Ground Water Quarterly Status Report (fifth quarter)
June 2002	Limited Phase II Site Investigation and Ground Water Quarterly Status Report (sixth quarter)
October 2002	Ground Water Quarterly Status Report (seventh quarter)
January 2003	Ground Water Monitoring Annual Summary Report (eighth quarter and second year summary)

Analytical results of samples collected during these field investigations indicate that a dry cleaner solvent, perchloroethylene (PCE), was detected in ground water across the northwest portion of the site. The main source has been identified by the presence of elevated PCE and its degradation by-products in shallow ground water near the former East Concourse building, which was occupied by a dry cleaner between 1968 and 1987. As part of site characterization activities and the implementation of a ground water monitoring program for the Lakewood Towne Center site, seven ground water monitoring wells were installed in the following locations:

- MW-1s (shallow), MW-1m (mid depth), and MW-1d (deep) in the source area
- MW-2d (deep) upgradient of the source area
- MW-3 (shallow) at the northwest property boundary (approximately 1,300 feet downgradient of the source area)

- MW-4 (shallow) immediately downgradient of the source area
- MW-5 (shallow) immediately downgradient of the source area.

Monitoring and analytical results from quarterly sampling events conducted since the monitoring program began in July/September 2000 indicate continued presence of residual PCE contamination in ground water, particularly within the source area located in the north-central portion of the mall property (Herrera 2003, 2002a). PCE and biodegradation by-products exceeding Model Toxics Control Act (MTCA) method A and B ground water cleanup levels continue to be found near the water table with low PCE concentrations found at the deeper wells. PCE degradation has occurred in the source area at shallow depth, as indicated by the increased concentrations of vinyl chloride and presence of other PCE degradation by-products detected in shallow well MW-1s. Low concentrations of some contaminants have spread downgradient across the northwest quadrant of the Lakewood Towne Center site at levels below MTCA method A and B criteria (Herrera 2003, 2002a).

In spring of 2002, additional limited Phase II site assessment work was performed to address the potential for recent contamination associated with dry cleaner activities at the northwest and southwest corners of the mall (Herrera 2002b). A release of PCE was identified at the northwest corner of the mall property associated with dry cleaning operations, as evidenced by low level soil contamination beneath the building found during an earlier investigation. Subsequent sampling of ground water from well MW-3 and soil boring SB-3 indicates low concentrations of PCE and two biodegradation by-products that may be associated with Villa One-Hour Cleaners, the 1968-1987 Plaza Cleaners source, or two other historic dry cleaners located in the North Concourse. The presence of PCE breakdown products, not identified at other non-source sampling locations, indicates a likely source beneath the western portion of Building N1. None of the compounds detected in ground water samples collected at three sampling locations (well MW-3, soil borings P22, and SB-3) exceeded MTCA method A and B cleanup criteria.

A release of PCE also was identified at the southwest corner of the mall property associated with a former dry cleaning facility that occupied the western portion of Building S2 between 2000 and 2001 (Herrera 2002b). Low concentrations of PCE in ground water at levels below the MTCA method A cleanup criteria of 5 µg/L were detected at two soil boring locations drilled in March 2002, with one boring advanced inside tenant space #4 in the dry cleaning operation area, and the other boring advanced immediately outside and downgradient of the building. Monitoring well MW-6 was installed adjacent to the boring to evaluate long-term ground water conditions. No PCE has been detected in ground water for four quarterly sampling events.

Ground Water Conditions

Ground water levels were measured on February 20, 2003 at each of the eight site monitoring wells. Static ground water levels were encountered at depths ranging from 8.60 feet below ground surface in well MW-2d to 16.17 feet below ground surface in well MW-3. Ground water elevation data collected from these wells indicate a general ground water flow direction toward

the west-southwest, with an average hydraulic gradient of less than 0.01 feet per foot. The overall flow direction and gradient are consistent with previous monitoring data collected during the previous eight quarterly monitoring events starting in July 2000.

Sampling Procedure and Analysis

Ground water samples were collected for chemical analysis from the five shallow wells on February 20, 2003 using a low-flow purge method with dedicated polyethylene tubing and a peristaltic pump. Sample MW-7 was a field duplicate sample collected from well MW-1s. Six water samples were submitted to OnSite Environmental, Inc. of Redmond, Washington for analysis of halogenated volatile organic compounds (HVOCs) using U.S. Environmental Protection Agency (EPA) Method 8260B. The complete laboratory analytical package, including chain-of-custody form and data quality assurance review of all analytical results, is attached to this report.

Ground Water Analytical Results

Analytical results of ground water samples collected from wells MW-1s, MW-3, MW-4, MW-5, and MW-6 are summarized in Table 1, and illustrated in Figure 1. Contaminants of concern found at the Lakewood Towne Center site since site characterization began in spring of 2000 include:

PCE—perchloroethylene or tetrachloroethylene
TCE—trichloroethylene
cis DCE—cis 1,2-dichloroethylene
trans DCE—trans 1,2-dichloroethylene
1,1 DCE—1,1-dichloroethene
1,1 DCA—1,1-dichloroethane
1,4 DCB—1,4-dichlorobenzene
Vinyl chloride
Chloroform

Sampling performed in February 2003 represents the tenth assessment of ground water quality at well locations MW-1s, MW-3, MW-4, and MW-5 and the fourth assessment at well location MW-6. Overall, concentrations of most contaminants of concern have remained at consistent levels since site characterization over 2 years ago. The highest concentrations of each contaminant continue to be found in the source area located in the north-central portion of the mall property, represented by shallow well MW-1s. Concentrations of dry cleaning chemicals and breakdown by-products spiked in February 2002 and have generally reduce over the following 12 months. Vinyl chloride detected in MW-1s decreased compared to concentrations in the previous November 2002 sampling event. Methylene chloride was detected at MW-1s/MW-7 (duplicate) for the second time since sampling was initiated over 2 years ago. Concentrations at MW-1s/MW-7 during the February 2003 sampling event were detected at 13 and 16 µg/L; concentrations during the August 2002 sampling event were detected at 16 and

Table 1. HVOC results for ground water samples collected at the Lakewood Towne Center site (µg/L).

Well Identification	Date Sampled	PCE	TCE	cis DCE	trans DCE	1,1-DCE	1,1-DCA	Vinyl chloride	1,4-DCB	Chloroform
MTCA method A cleanup level [a]		*5*	*5*	*NA*	*NA*	*NA*	*NA*	*0.2*	*NA*	*NA*
MTCA method B cleanup level [b]		*0.858*	*3.98*	*80*	*160*	*0.0729*	*800*	*0.0292*	*1.82*	*7.17*
MW-1s	9/15/00	2.2	**19**	**670**	14	**0.76**	6.1	**52**	0.25	1.3
	2/12/01	1.2	**15**	**390**	8.2	**0.37**	3.1	**47**	(0.20)	(0.20)
	5/17/01	2.3	**18**	**600**	10	**0.64**	5.5	**41**	0.30	(0.20)
	8/15/01	1.7	**14**	**490**	8.3	**0.56**	4.2	**40**	(0.20)	(0.20)
	11/15/01	0.51	**9.1**	**320**	6.4	**0.47**	2.3	**59**	0.21	(0.20)
	2/20/02	**37**	**68**	**540**	7.2	**0.83**	3.1	**28**	0.35	(0.20)
	5/20/02	**18**	**37**	**520**	8.3	**0.61**	2.3	**25**	0.32	(0.20)
	8/19/02	**5.5**	**16**	**540**	7.3	(2.0)	(2.0)	**31**	(2.0)	(2.0)
	11/20/02	2.8	**17**	**330**	8.5	**1.0**	(0.20)	**58**	(0.20)	(0.20)
	2/20/03	**5.8**	**18**	**290**	3.6	(2.0)	(2.0)	**22**	(2.0)	(2.0)
MW-1m	7/21/00	0.80	0.45	5.0	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/15/01	0.87	(0.20)	0.95	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/20/02	0.69	0.24	0.93	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
MW-1d	7/21/00	0.50	(0.20)	0.29	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/15/01	0.64	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/20/02	0.52	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
MW-2d	7/21/00	0.73	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/16/01	1.2	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/21/02	1.2	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
MW-3	7/21/00	0.69	(0.20)	1.1	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/12/01	0.66	(0.20)	0.23	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	5/17/01	0.64	(0.20)	1.3	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	8/15/01	0.66	(0.20)	0.88	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/15/01	0.57	(0.20)	0.73	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/20/02	0.66	0.31	1.3	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	5/20/02	0.52	(0.20)	0.93	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	8/19/02	0.57	(0.20)	0.79	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/20/02	0.57	(0.20)	0.84	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	0.37
	2/20/03	0.68	(0.20)	1.1	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)

Table 1. HVOC results for ground water samples collected at the Lakewood Towne Center site (µg/L) (continued).

Well Identification	Date Sampled	PCE	TCE	cis DCE	trans DCE	1,1-DCE	1,1-DCA	Vinyl chloride	1,4-DCB	Chloroform
MW-4	9/15/00	1.6	4.9	**120**	2.8	(0.20)	1.0	(0.20)	(0.20)	(0.20)
	2/12/01	1.0	2.3	48	0.90	(0.20)	0.22	(0.20)	(0.20)	(0.20)
	5/17/01	1.0	3.4	**100**	1.6	(0.20)	1.0	(0.20)	(0.20)	(0.20)
	8/15/01	0.97	2.9	70	1.1	(0.20)	0.68	(0.20)	(0.20)	(0.20)
	11/15/01	0.99	1.6	35	0.57	(0.20)	0.29	(0.20)	(0.20)	(0.20)
	2/20/02	**9.8**	**18**	**110**	1.3	(0.20)	0.71	(0.20)	(0.20)	(0.20)
	5/20/02	3.8	**6.6**	65	0.90	(0.20)	0.32	(0.20)	(0.20)	(0.20)
	8/19/02	2.4	4.2	77	1.7	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
	11/21/02	1.6	3.7	38	0.99	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/20/03	1.5	3.1	36	0.48	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
MW-5	9/15/00	1.2	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/12/01	0.70	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	5/17/01	0.62	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	8/15/01	0.88	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/15/01	0.90	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/20/02	0.44	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	5/20/02	0.39	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	8/19/02	0.71	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/21/02	0.86	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/20/03	0.62	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
MW-6	5/20/02	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	8/19/02	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	11/20/02	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
	2/20/03	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)

Values in **boldface** type indicate constituent detected above the established MTCA method A or method B cleanup level.
PCE = perchloroethylene; TCE = trichloroethene; cis DCE = (cis) 1,2-dichloroethene; trans DCE = (trans) 1,2-dichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane; 1,4-DCB = 1,4-dichlorobenzene.
(0.20) Analyte was not detected above the enclosed practical quantitation limit indicated.
NA Established ground water cleanup level for this constituent is not available.
[a] Ecology Publication no. 94-06, Model Toxics Control Act Cleanup Regulation, February 12, 2001.
[b] Ecology Publication no. 94-145, Cleanup Levels and Risk Calculations under the Model Toxics Control Act Cleanup Regulation, CLARC version 3.0, August 2001.
Shaded values represent results of the most recent sampling event.

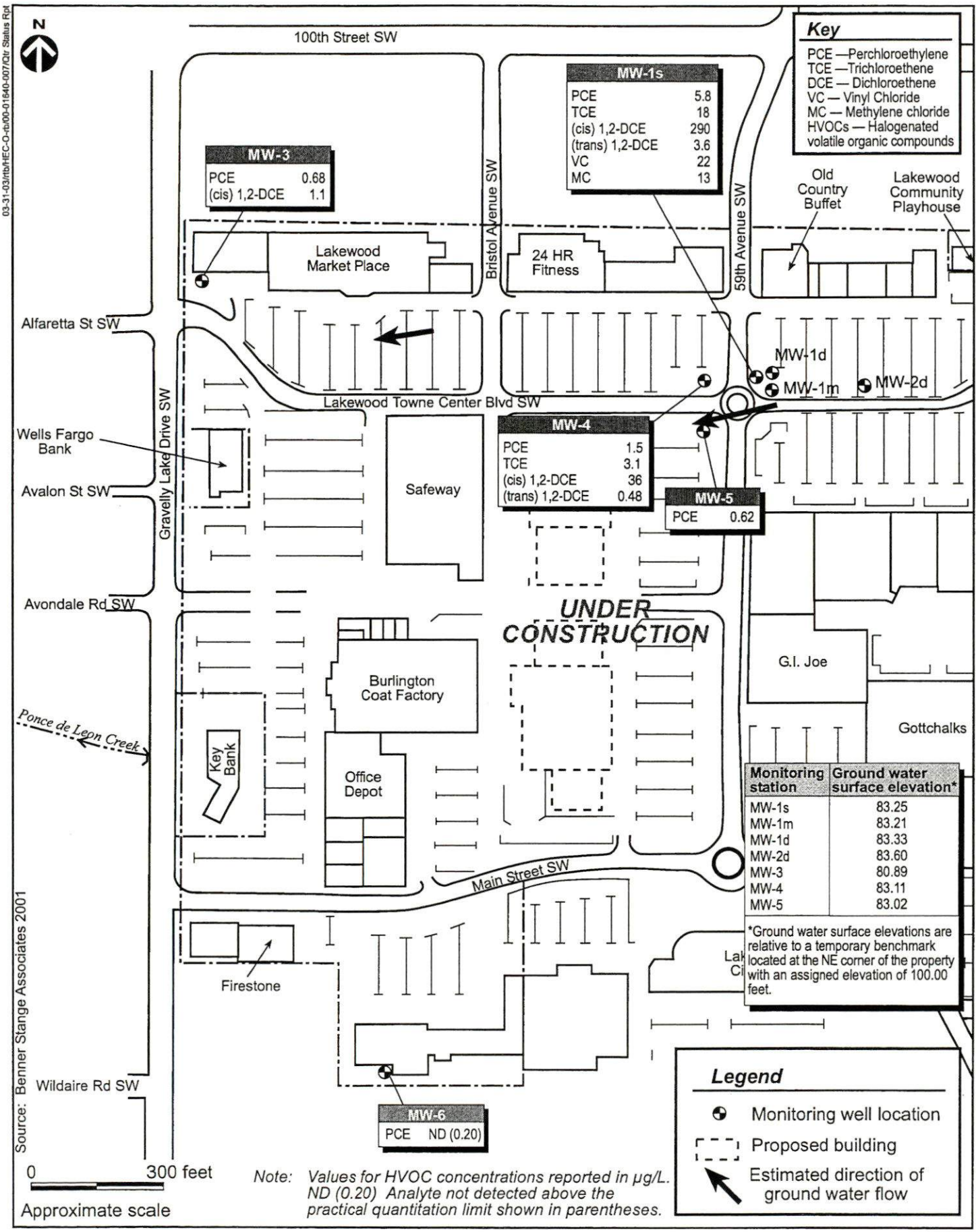

Figure 1. HVOC concentrations in ground water and inferred ground water flow direction, February 20, 2003, Lakewood Towne Center, Lakewood, Washington.

72 µg/L. Methylene chloride, a common laboratory contaminant, was not detected in the QA method blank or in the five remaining water samples during the August 2002 and February 2003 sampling events, nor was it detected in any of the samples and QA method blank during the November 2002 sampling event. The presence of this compound will be tracked during future sampling events.

Water quality at MW-4 represents conditions immediately downgradient of the source area and has consistently exhibited lower chemical concentrations than the source area. Concentrations rose in February 2002 and have generally fallen over the next 12 months to below MTCA method A and B cleanup levels.

PCE and cis DCE continued to be detected at concentrations below MTCA method A and B cleanup levels at MW-3 located in the northwest corner of the site. No chloroform was detected above the practical quantitation limit since it was first detected during the November 2002 sampling event. No TCE has been detected above the practical quantitation limit since it was first detected in February 2002.

No contaminants of concern were detected at MW-6 located in the southwest corner of the site during May, August, and November 2002, and February 2003 sampling events.

Next Quarterly Ground Water Sampling Event

The next quarterly ground water sampling is scheduled for May 2003, with monitoring of shallow wells MW-1s, MW-3, MW-4, and MW-5. Because no contaminants of concern were detected in MW-6 during four consecutive quarterly sampling events, no further sampling will be performed.

References

Benner Stange Associates. 2001. Development site map of Lakewood Towne Center. Map produced by Benner Stange Associates, Architects of Lake Oswego, Oregon for MBK Northwest, Inc. Mr. Tony Nastansky, Lakewood Towne Center Management, provided a copy of the map to Herrera Environmental Consultants during the January 28, 2002 site visit.

Ecology. 2001a. Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC. Washington State Department of Ecology, Toxics Cleanup Program. Publication no. 94-06. Amended February 21, 2001.

Ecology. 2001b. Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act Cleanup Regulation. Washington State Department of Ecology, Toxics Cleanup Program. Publication no. 94-145. Updated August 2001.

Herrera. 2001. Phase II Environmental Site Assessment—Lakewood Mall I & II, 10509 Gravelly Lake Drive SW, Lakewood, Washington. Report prepared for Perkins Coie, LLP of Seattle, Washington (attorneys for Wells Fargo Bank of Los Angeles, CA). Herrera Environmental Consultants, Inc. of Seattle, Washington. February 20, 2001.

Herrera. 2002a. Ground Water Monitoring Annual Summary Report—Lakewood Mall Site, 10509 Gravelly Lake Drive SW, Lakewood, Washington. Report prepared for MBK Northwest, Inc. of Lake Oswego, Oregon. Herrera Environmental Consultants, Inc. of Seattle, Washington. January 31, 2002.

Herrera. 2002b. Limited Phase II Site Investigation and Ground Water Quarterly Status Report—Lakewood Towne Center, 5731 Main Street SW, Lakewood, Washington. Report prepared for MBK Northwest, Inc. of Lake Oswego, Oregon. Herrera Environmental Consultants, Inc. of Seattle, Washington. June 27, 2002.

Herrera. 2003. Ground Water Monitoring Annual Summary Report—Lakewood Towne Center, 5731 Main Street SW, Lakewood, Washington. Report prepared for MBK Northwest, Inc. of Lake Oswego, Oregon. Herrera Environmental Consultants, Inc. of Seattle, Washington. January 23, 2003.

USGS. 1959 (photorevised 1994). Steilacoom, Washington. Topographic 7.5 min. quadrangle map (47122-B5-TF-024). U.S. Geological Survey, Denver, CO.

Yoshida, Inc. 1986. Site plan of Villa Plaza Shopping Center—Water System Improvements. Prepared for Vyzis Company. Scale 1 inch = 100 feet. Mr. Tony Nastansky, Lakewood Mall Management, provided a copy of the map to Herrera Environmental Consultants.

ATTACHMENT A

Data Quality Assurance Review Summary

Data Quality Assurance Review Summary

A data quality assurance review was performed on analytical data from ground water samples collected during the February 2003 quarterly monitoring of the Lakewood Towne Center site in Lakewood, Washington. The laboratory's performance was reviewed in accordance with quality control specifications outlined by the analytical methods and the U.S. Environmental Protection Agency (EPA) functional guidelines for organic data review (U.S. EPA 1994).

Six ground water samples (including one field duplicate) were collected for chemical analysis from monitoring wells MW-1s, MW-3, MW-4, MW-5, and MW-6 on February 20, 2003. OnSite Environmental Inc. of Redmond, Washington analyzed all ground water samples for halogenated volatile organic compounds (HVOCs) using U.S. EPA Method 8260B.

Quality control data submitted by the laboratory were reviewed; raw laboratory data were not provided or reviewed. Review of the laboratory report and data validation results are summarized below. The water HVOC results were determined to be acceptable for use and no data were qualified, based on the following criteria:

Holding Times

All water samples were preserved with hydrochloric acid and analyzed within the maximum holding time (14 days) for U.S. EPA Method 8260B.

Laboratory Reporting Limits

The laboratory reporting (practical quantitation) limits for HVOC constituents in water are below regulatory criteria (i.e., WAC 173-340), with the exception of 1,1-dichloroethene (1,1-DCE). The MTCA method B ground water cleanup criterion for 1,1-DCE is 0.0729 µg/L (Ecology 2001), which exceeds the practical quantitation limit of 0.20 µg/L. Therefore, the usability of 1,1-DCE data for all six water samples is limited. In addition, samples MW-1s and MW-7 (field duplicate) were diluted due to high concentrations of (cis) 1,2-dichloroethene, which increased the practical quantitation limits by a factor of 10 for both samples.

Blank Analysis

One method blank was analyzed with the water samples. The method blank did not contain reportable levels of HVOC constituents above their practical quantitation limits, and no data have been qualified. No field blanks were collected.

Surrogate Analysis

Three surrogate compounds were analyzed with the project samples and the method blank in accordance with the method. As shown in Table A-1, surrogate recovery values for each compound were within their respective laboratory control limit ranges.

Table A-1. Water HVOC surrogate recovery results.

Compound	Project Water Samples Percent Recovery	Method Blank Percent Recovery	Laboratory QC Limits—Water
Dibromofluoromethane	80-84	85	71-133
Toluene-d8	105-111	108	80-151
4-Bromofluorobenzene	94-101	96	75-139

Spike Blank Analysis

A spike blank sample (SB0224W1) was analyzed as the SB/SBD. Blank spike levels were 10 to 50 times the laboratory reporting (practical quantitation) limits. Percent recovery and relative percent difference (RPD) results were correctly calculated. As shown in Table A-2, percent recovery and RPD values for the five HVOC constituents were within their respective laboratory control limit ranges.

Table A-2. Water HVOC spike blank results.

Compound	SB % Recovery	SBD % Recovery	Laboratory % Recovery Limits	SB/SBD RPD Results	Laboratory RPD QC Limits
1,1-Dichloroethene	80	76	69-113	5.4	0-15
Benzene	93	88	72-128	5.8	0-9.6
Trichloroethene	98	96	82-122	2.9	0-12
Toluene	108	104	54-118	3.7	0-15
Chlorobenzene	91	87	85-103	4.0	0-5.8

Field Duplicate Analysis

Water sample MW-7 was analyzed as the field duplicate of water sample MW-1s. As shown in Table A-3, the relative percent difference (RPD) values between results of detected compounds were within the 30 percent control limit (or within the practical quantitation limit if either result is less than 5 times the practical quantitation limits). No data were qualified due to field duplicate results.

Table A-3. Water HVOC field duplicate results for detected compounds.

Compound	PQL (µg/L)	Sample MW-1s (µg/L)	Field Duplicate MW-7 (µg/L)	Relative Percent Difference	Difference/ PQL [a]
Tetrachloroethene (PCE)	2.0	**5.8**	**5.7**	NA	0.05
Trichloroethene (TCE)	2.0	18	18	0.0	NA
cis 1,2-Dichloroethene (cis DCE)	2.0	290	320	9.8	NA
trans 1,2-Dichloroethene (trans DCE)	2.0	**3.6**	**4.0**	NA	0.2
Vinyl chloride	2.0	22	23	4.4	NA
Methylene chloride	10	**13**	**16**	NA	0.3

Boldface type values are less than 5 times the practical quantitation limit (PQL).
[a] The difference between duplicate results divided by the PQL is used to assess results if either the result is less than 5 times the PQL.
NA Not applicable.

References

Ecology. 2001. Cleanup Levels and Risk Calculations under the Model Toxics Control Act Cleanup Regulation (CLARC). Washington State Department of Ecology, Toxics Cleanup Program. Publication Number 94-145, updated August 2001.

U.S. EPA. 1983. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency, Washington, D.C. EPA600/4-79-020.

U.S. EPA. 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846. Office of Solid Waste and Emergency Response. U.S. Environmental Protection Agency, Washington, D.C.

U.S. EPA. 1994. U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Washington, D.C. EPA 540/R-94-012.

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

February 26, 2003

Diana Phelan
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project C00-01640-007
Laboratory Reference No. 0302-113

Dear Diana:

Enclosed are the analytical results and associated quality control data for samples submitted on February 21, 2003.

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,

David Baumeister
Project Manager

Enclosures

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

Case Narrative

Samples were collected on February 20, 2003. Samples were maintained at the laboratory at 4°C and followed SW846 analysis and extraction methods.

Volatiles EPA 8260B Analysis

Any QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted: 2-24-03
Date Analyzed: 2-24-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-113-01
Client ID: MW-1s

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		2.0
Chloromethane	ND		2.0
Vinyl Chloride	22		2.0
Bromomethane	ND		2.0
Chloroethane	ND		2.0
Trichlorofluoromethane	ND		2.0
1,1-Dichloroethene	ND		2.0
Iodomethane	ND		10
Methylene Chloride	13		10
(trans) 1,2-Dichloroethene	3.6		2.0
1,1-Dichloroethane	ND		2.0
2,2-Dichloropropane	ND		2.0
(cis) 1,2-Dichloroethene	290		2.0
Bromochloromethane	ND		2.0
Chloroform	ND		2.0
1,1,1-Trichloroethane	ND		2.0
Carbon Tetrachloride	ND		2.0
1,1-Dichloropropene	ND		2.0
1,2-Dichloroethane	ND		2.0
Trichloroethene	18		2.0
1,2-Dichloropropane	ND		2.0
Dibromomethane	ND		2.0
Bromodichloromethane	ND		2.0
2-Chloroethyl Vinyl Ether	ND		10
(cis) 1,3-Dichloropropene	ND		2.0
(trans) 1,3-Dichloropropene	ND		2.0

gse 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-01
Client ID: MW-1s

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		2.0
Tetrachloroethene	5.8		2.0
1,3-Dichloropropane	ND		2.0
Dibromochloromethane	ND		2.0
1,2-Dibromoethane	ND		2.0
Chlorobenzene	ND		2.0
1,1,1,2-Tetrachloroethane	ND		2.0
Bromoform	ND		10
Bromobenzene	ND		2.0
1,1,2,2-Tetrachloroethane	ND		2.0
1,2,3-Trichloropropane	ND		2.0
2-Chlorotoluene	ND		2.0
4-Chlorotoluene	ND		2.0
1,3-Dichlorobenzene	ND		2.0
1,4-Dichlorobenzene	ND		2.0
1,2-Dichlorobenzene	ND		2.0
1,2-Dibromo-3-chloropropane	ND		10
1,2,4-Trichlorobenzene	ND		2.0
Hexachlorobutadiene	ND		2.0
1,2,3-Trichlorobenzene	ND		2.0

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	80	71-133
Toluene, d8	106	80-151
4-Bromofluorobenzene	96	75-139

gpc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted:	2-24-03
Date Analyzed:	2-24-03
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-113-02
Client ID:	**MW-3**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	1.1		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

gpc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-02
Client ID: **MW-3**

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	0.68		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	81	71-133
Toluene, d8	108	80-151
4-Bromofluorobenzene	99	75-139

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted:	2-24-03
Date Analyzed:	2-24-03
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-113-03
Client ID:	**MW-4**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	0.48		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	36		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	3.1		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-03
Client ID: MW-4

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	1.5		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	80	71-133
Toluene, d8	108	80-151
4-Bromofluorobenzene	100	75-139

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted:	2-24-03
Date Analyzed:	2-24-03
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-113-04
Client ID:	**MW-5**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-04
Client ID: MW-5

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	0.62		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	84	71-133
Toluene, d8	111	80-151
4-Bromofluorobenzene	94	75-139

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted:	2-24-03
Date Analyzed:	2-24-03
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-113-05
Client ID:	**MW-6**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-05
Client ID: MW-6

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	82	71-133
Toluene, d8	105	80-151
4-Bromofluorobenzene	98	75-139

3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Date Extracted:	2-24-03
Date Analyzed:	2-24-03
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	02-113-06
Client ID:	**MW-7**

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		2.0
Chloromethane	ND		2.0
Vinyl Chloride	23		2.0
Bromomethane	ND		2.0
Chloroethane	ND		2.0
Trichlorofluoromethane	ND		2.0
1,1-Dichloroethene	ND		2.0
Iodomethane	ND		10
Methylene Chloride	16		10
(trans) 1,2-Dichloroethene	4.0		2.0
1,1-Dichloroethane	ND		2.0
2,2-Dichloropropane	ND		2.0
(cis) 1,2-Dichloroethene	320		2.0
Bromochloromethane	ND		2.0
Chloroform	ND		2.0
1,1,1-Trichloroethane	ND		2.0
Carbon Tetrachloride	ND		2.0
1,1-Dichloropropene	ND		2.0
1,2-Dichloroethane	ND		2.0
Trichloroethene	18		2.0
1,2-Dichloropropane	ND		2.0
Dibromomethane	ND		2.0
Bromodichloromethane	ND		2.0
2-Chloroethyl Vinyl Ether	ND		10
(cis) 1,3-Dichloropropene	ND		2.0
(trans) 1,3-Dichloropropene	ND		2.0

gpc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B

Lab ID: 02-113-06
Client ID: MW-7

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		2.0
Tetrachloroethene	5.7		2.0
1,3-Dichloropropane	ND		2.0
Dibromochloromethane	ND		2.0
1,2-Dibromoethane	ND		2.0
Chlorobenzene	ND		2.0
1,1,1,2-Tetrachloroethane	ND		2.0
Bromoform	ND		10
Bromobenzene	ND		2.0
1,1,2,2-Tetrachloroethane	ND		2.0
1,2,3-Trichloropropane	ND		2.0
2-Chlorotoluene	ND		2.0
4-Chlorotoluene	ND		2.0
1,3-Dichlorobenzene	ND		2.0
1,4-Dichlorobenzene	ND		2.0
1,2-Dichlorobenzene	ND		2.0
1,2-Dibromo-3-chloropropane	ND		10
1,2,4-Trichlorobenzene	ND		2.0
Hexachlorobutadiene	ND		2.0
1,2,3-Trichlorobenzene	ND		2.0

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	83	71-133
Toluene, d8	106	80-151
4-Bromofluorobenzene	101	75-139

gpc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Date Extracted: 2-24-03
Date Analyzed: 2-24-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0224W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

gdc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Lab ID: MB0224W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	71-133
Toluene, d8	108	80-151
4-Bromofluorobenzene	96	75-139

gpc 3/7/03

Date of Report: February 26, 2003
Samples Submitted: February 21, 2003
Lab Reference: 02-113
Project: C00-01640-007

HALOGENATED VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Date Extracted: 2-24-03
Date Analyzed: 2-24-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0224W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	7.98	80	7.56	76	69-113	
Benzene	10.0	9.27	93	8.76	88	71-128	
Trichloroethene	10.0	9.85	98	9.57	96	82-122	
Toluene	10.0	10.8	108	10.4	104	54-118	
Chlorobenzene	10.0	9.09	91	8.74	87	85-103	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	5.4	15	
Benzene	5.8	9.6	
Trichloroethene	2.9	12	
Toluene	3.7	15	
Chlorobenzene	4.0	5.8	

qpc 3/7/03

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: HERRERA ENVIRONMENTAL CONSULTANTS
Project Number: C00-011640-007
Project Name: LAKEWDM7
Project Manager: DIANA M. PHELAN
Sampled by: DIANA M. PHELAN

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ _____ (other)

Laboratory Number: 02-113

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH				% Moisture
1	MW-1S*	2-20-03	1135	W	3					X														
2	MW-3		0945	W	3					X														
3	MW-4*		1250	W	3					X														
4	MW-5		1440	W	3					X														
5	MW-6		1555	W	3					X														
6	MW-7*		1045	W	3					X														

	Signature	Company	Date	Time
Relinquished by	Diana M. Phelan	HERRERA	2-21-03	0835
Received by	[illegible]	OSE	2.21.03	1:35
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

* SAMPLES MAY HAVE HIGH CONCENTRATIONS.

REQUEST 0.2 µg/L PQL ON ALL SAMPLES

Chromatograms with final report ☐

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Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: HERRERA ENVIRONMENTAL CONSULTANTS
Project Number: C00-01640-007
Project Name: LAKEWDM7
Project Manager: PETER JOWISE/DIANA PHELAN
Sampled by: DIANA M. PHELAN

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ _____ (other)

Laboratory Number: 05-172

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	% Moisture
1	MW-1S*	5-21-03	11:00	W	3					X											
2	MW-3		09:40	W	3					X											
3	MW-4		12:50	W	3					X											
4	MW-5		13:50	W	3					X											
5	MW-7*		11:30	W	3					X											

	Signature	Company	Date	Time
Relinquished by	Diana M. Phelan	HERRERA	5-21-03	15:55
Received by	[illegible]	OSE	5/21/03	3:55
Relinquished by				
Received by				
Relinquished by				
Received by				

Comments/Special Instructions:
REQUEST 0.2 µg/L or less PQL on all samples.
* POSSIBLE HIGH CONCENTRATIONS

Reviewed by/Date

Reviewed by/Date

Chromatograms with final report ☐

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