92-e46

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7171 Cleanwater Lane, Building 8, P.O. Box 47710 • Olympia, Washington 98504-7710

June 19, 1992

TO: Mike Kuntz
Toxics Cleanup Program

FROM: Pam Marti PM
Toxics, Compliance, and Ground Water Investigations Section, EILS

SUBJECT: Restover Truck Stop Long-term Monitoring Round VIII

The attached report summarizes the findings from the latest sampling at Restover Truck Stop Round VIII, conducted on February 19 and 21, 1992. Overall, BTEX concentrations in the upper aquifer appear to be decreasing. Concentrations exceeded Model Toxic Control Act (MTCA) cleanup levels in one well, WDOE-6A. I will be conducting Sample Round IX in July 1992. If you have any questions or comments, please call me at 586-8138.

PM:kd
Attachment

cc: Lynn Singleton
D.J. Patin
Bill Yake
Kathy Reed, TCP Library
Bob Kievit, EPA
Nancy Winters, Water Quality

RESTOVER TRUCK STOP
GROUND WATER MONITORING ROUND VIII
FEBRUARY 19 & 21, 1992

by Pamela B. Marti
June 19, 1992

Washington State Department of Ecology
Environmental Investigations and Laboratory Services Program
Toxics, Compliance and Ground Water Investigations Section
Olympia, Washington 98504-7710

Water Body No. WA-13-0030GW
(Segment No. 06-13-03GW)

SUMMARY

The eighth round of ground water monitoring at the Restover Truck Stop was completed by the Toxics, Compliance, and Ground Water Investigations Section on February 19 and 21, 1992. Two domestic supply and four monitoring wells were sampled for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and dissolved iron. Overall, BTEX concentrations in the upper aquifer appear to be decreasing. Concentrations exceeded Model Toxic Control Act (MTCA) cleanup levels in one well, WDOE-6A.

METHODS

Ground Water Sampling

Four monitoring wells and two domestic wells were sampled (Figure 1). Prior to sample collection, static water level measurements were obtained from 11 on-site wells using an electronic water level indicator. The meter was rinsed with deionized water and wiped clean between measurements. Monitoring wells that were sampled were purged with a centrifugal pump until pH, temperature, and specific conductance readings stabilized, and a minimum of three well volumes had been removed. Purge water was discharged onto the ground near each well, except for well WDOE-6A. Purge water from WDOE-6A was collected and treated by pumping it through a series of activated granulated carbon filters.

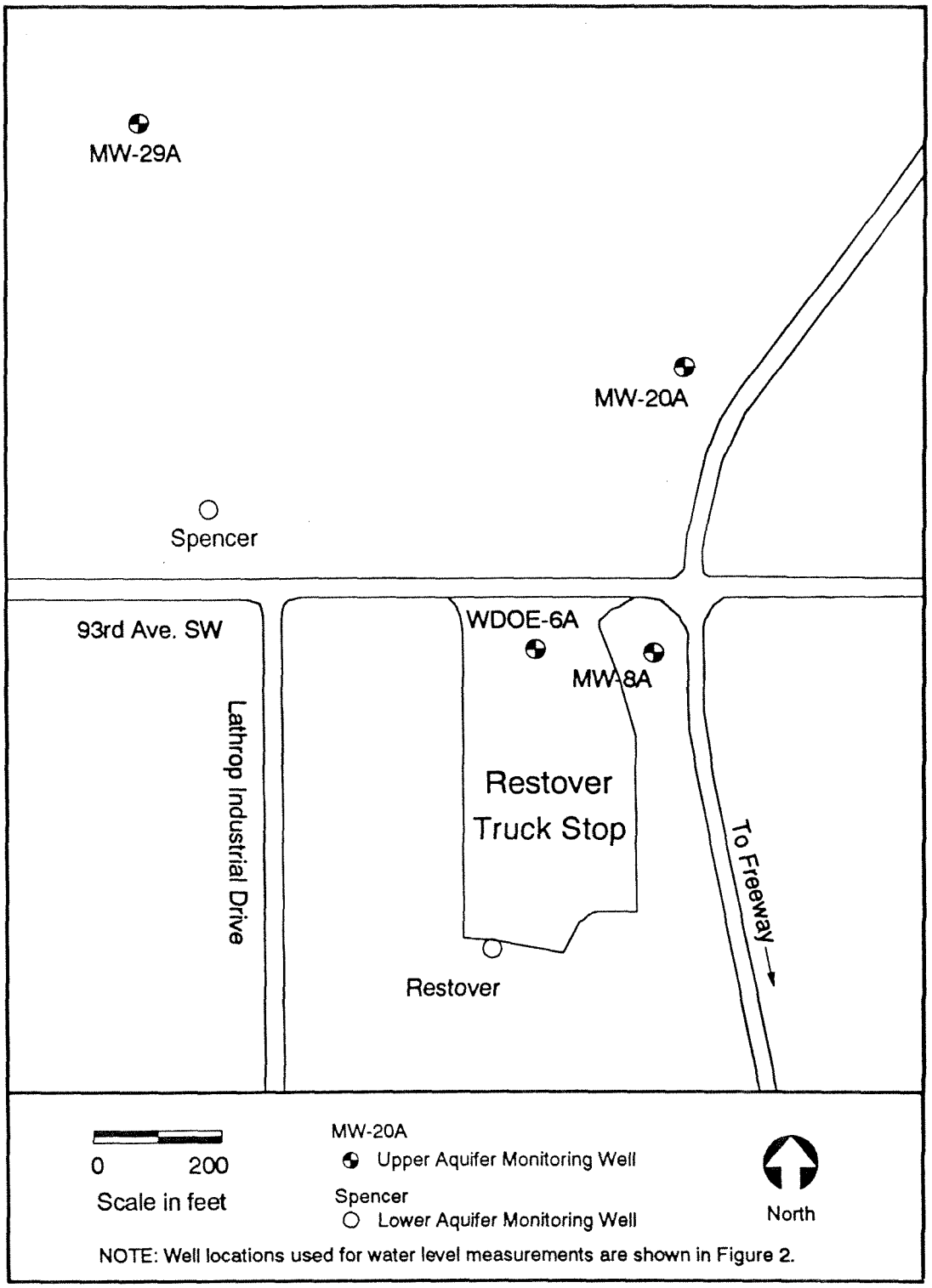

Figure 1: Sampling Locations, Restover Truck Stop

Round VIII - February 1992

Monitoring well samples were collected using decontaminated, bottom-emptying teflon bailers. Supply wells were sampled at the tap nearest the pump. Samples for volatile organics analysis were collected free of headspace and preserved with 1:1 hydrochloric acid. Samples for dissolved metals were field filtered using dedicated, in-line, 0.45 μm polycarbonate membrane filters and preserved with 1 mL of nitric acid to a pH < 2.

Bailers were pre-cleaned with sequential washes of Liquinox®, hot tap water, 10% nitric acid, distilled-deionized water and pesticide-grade acetone. After cleaning, bailers were air-dried and wrapped in aluminum foil. Peristaltic pump tubing was rinsed with 500 mL of 10% nitric acid then 500 mL of deionized water between samples. Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Huntamer and Hyre, 1991). The Ecology/ EPA Laboratory in Manchester analyzed all samples.

Quality Assurance

Quality control samples collected in the field consisted of a transfer blank, a filter blank, a transport blank, and blind field duplicates. A transfer blank for BTEX was obtained by running organic-free water through a decontaminated bailer and collecting the rinsate in a sample container. The filter blank for dissolved iron analysis was obtained by pumping organic-free water through a peristaltic pump and an in-line filter. Transport blanks for both BTEX and dissolved iron were carried unopened throughout the sampling period. A duplicate sample (labeled MW-8B) was obtained from monitoring well MW-8A. In addition to quality control samples collected in the field, matrix spike, matrix spike duplicates and surrogate compound recoveries were performed in the laboratory.

Dick Huntamer and Bill Kammin of the Manchester Laboratory conducted the quality assurance review, which has been included in Appendix A. All data are considered acceptable for use with the following qualifiers. The transfer and transport blank results showed no laboratory or field contamination by BTEX. These samples were analyzed after the allowable holding time and are qualified with a UJ. BTEX was detected below the quantitation limit in the method blanks. Analytical results for the filter and method blanks showed low levels of iron contamination. Sample results within a factor of five of the concentrations found in the blanks are flagged with a "B". Analytical results labeled with a "P" indicates the analyte was detected above the instrument detection limit, but below the established minimum quantitation limit.

Matrix spike and surrogate recoveries for BTEX and iron were all within acceptable limits. The relative percent differences for duplicate samples collected from MW-8A were 0% for ethylbenzene, 13% for total xylenes, and 1% for dissolved iron.

RESULTS

Field Observations

Depth to water measurements and water level elevations for on-site wells are shown in Table 1. Depth to water ranged from 8.84 to 13.93 feet with an elevation range from 184.83 to 182.45 mean sea level. Table 2 lists stabilized field measured pH, temperature and specific conductance readings. Field measurements ranged as follows: pH from 5.18 to 6.42 standard units, temperature from 9.6 to 13.3 °C, and specific conductance from 57 to 178 umhos/cm. Water purged from monitoring wells MW-8A, MW-20A, and WDOE-6A had a hydrocarbon odor and cloudy appearance. The odor and cloudy appearance were observed at these wells during previous sample events.

Table 1: Water Table Elevations (MSL)

Well ID Upper Aquifer	Depth to Water (Feet)	Elevation (MSL)
WDOE-1	13.81	184.16
WDOE-6A	11.60	184.47
MW-8A	13.93	184.06
MW-17	10.05	183.75
MW-18A	8.84	184.16
MW-20A	9.69	183.93
MW-23A	12.34	183.16
MW-24A	10.2	184.83
MW-26A	10.54	182.93
MW-27A	12.79	184.07
MW-29A	9.81	182.45

Table 2: Field Sampling Results (In Order Sampled)

Well ID	pH (standard) units)	Specific Conductance (umhos/cm)	Temp. (°C)	Purge Volume (gals)	Aquifer (Upper/ lower)
Restover	6.28	85	10.3	168	Lower
MW-29A	6.42	78	—	30	Upper
MW-8A	5.18	96	10.9	27	Upper
MW-20A	5.65	57	9.6	34	Upper
Spencer	6.10	67	10.4	91	Lower
WDOE-6A	6.10	178	13.3	36	Upper

Analytical Results

Analytical results for BTEX and dissolved iron are shown in Table 3. Detectable concentrations of BTEX were found in three of the six wells sampled; WDOE-6A, MW-8A, and MW-20A which are all screened in the upper aquifer. BTEX was not detected in the two domestic supply wells, which tap the lower aquifer. Samples from WDOE-6A had all four BTEX compounds, with a total concentration of 3830 μg/L. Well WDOE-6A continues to have the highest concentration of the wells sampled. Total BTEX concentrations measured at MW-8A and MW-20A were 9 μg/L and 11.4 μg/L, respectively.

Monitoring well MW-29A was sampled this round, because it had not been sampled since July 1989. This well is the farthest downgradient monitoring well from the Restover Truck Stop. No BTEX contamination was detected.

Dissolved iron concentrations in wells WDOE-6A and MW-8A were 4110 μg/L and 2150 μg/L, respectively. The remainder of the iron data was either qualified due to blank contamination or non-detect.

Table 3: Analytical Results (μg/L)

Well ID	Benzene	Toluene	Ethylbenzene	Total Xylene	Dissolved Iron
Spencer	1 U	1 U	1 U	1 U	22 B
Restover	1 U	1 U	1 U	1 U	5.0 U
MW-29A	1 U	1 U	1 U	1 U	9.4 PB
MW-8A	1 U	1 U	2	7	2150
MW-8B	1 U	1 U	2	8	2130
MW-20A	0.4 J	1 U	1	10	9.1 PB
WDOE-6A	430	800	350	2250	4110
Transfer	1 U	1 U	1 U	1 U	NA
Transport	1 U	1 U	1 U	1 U	5.0 U
Filter	NA	NA	NA	NA	6.1 PB

U: Not Detected at Detection Limit Shown
B: Analyte Detected in Associated Blanks
P: Analyte Detected Above Instrument Detection Limit but Below Quantitation Limit
J: Analyte Positively Identified, Associated Numerical Value is an Estimate.
NA: Analyte Not Analyzed

DISCUSSION

A water table contour map for the upper aquifer is shown in Figure 2. The map, constructed using water levels measured during this sample round, depicts ground water flow and direction. Ground water moves perpendicular to the contour lines from high to low potential. Based on Figure 2, ground water in the upper aquifer flows toward the west and northwest. This is consistent with the flow pattern observed during previous sample events.

BTEX concentrations for sampling events between May 1987 and February 1992 are shown in Table 4. Overall, BTEX concentrations in the upper aquifer appear to be decreasing.

BTEX concentrations in well MW-20A appear to fluctuate seasonally although a longer record is needed to confirm this. The BTEX concentration in this well decreased from 293 μg/L in August 1991 to 11 μg/L in February 1992. BTEX concentrations also fluctuated between August 1990 and February 1991, decreasing from 1400 μg/L to 5 μg/L respectively.

Ground water cleanup levels under the Model Toxic Control Act (MTCA) for the BTEX compounds are; benzene (5.0 μg/L), toluene (40.0 μg/L), ethylbenzene (30.0 μg/L), and xylene (20.0 μg/L). Of the wells sampled during this round, MTCA cleanup levels were exceeded in well WDOE-6A only.

CONCLUSIONS

1. BTEX concentrations continue to be elevated in WDOE-6A although concentrations appear to be decreasing over time. MTCA cleanup levels were exceeded in well WDOE-6A only. Overall BTEX concentrations in the upper aquifer appear to be decreasing. Concentration decreases are probably due to combinations of plume spreading, dispersion, biodegradation, reduction of source loading and/or seasonal variability.

2. Dissolved iron continues to be detected at high levels where BTEX contamination is present. The highest concentrations occur near the contamination source.

3. Ground water flows generally toward the northwest, which is consistent with previous sampling events.

RECOMMENDATIONS

1. Monitoring wells WDOE-6A, MW-8A, MW-20A, the Spencer well, and the Restover supply well should continue to be sampled for BTEX and dissolved iron. An additional well west of the source, either MW-23A or MW-26A, should be sampled for dissolved iron and BTEX to assess potential contaminant migration in that direction.

2. All of the upper aquifer wells (8 wells) should be sampled for BTEX and dissolved iron to determine the current extent of the contaminant plume. This has not been done since May 1987.

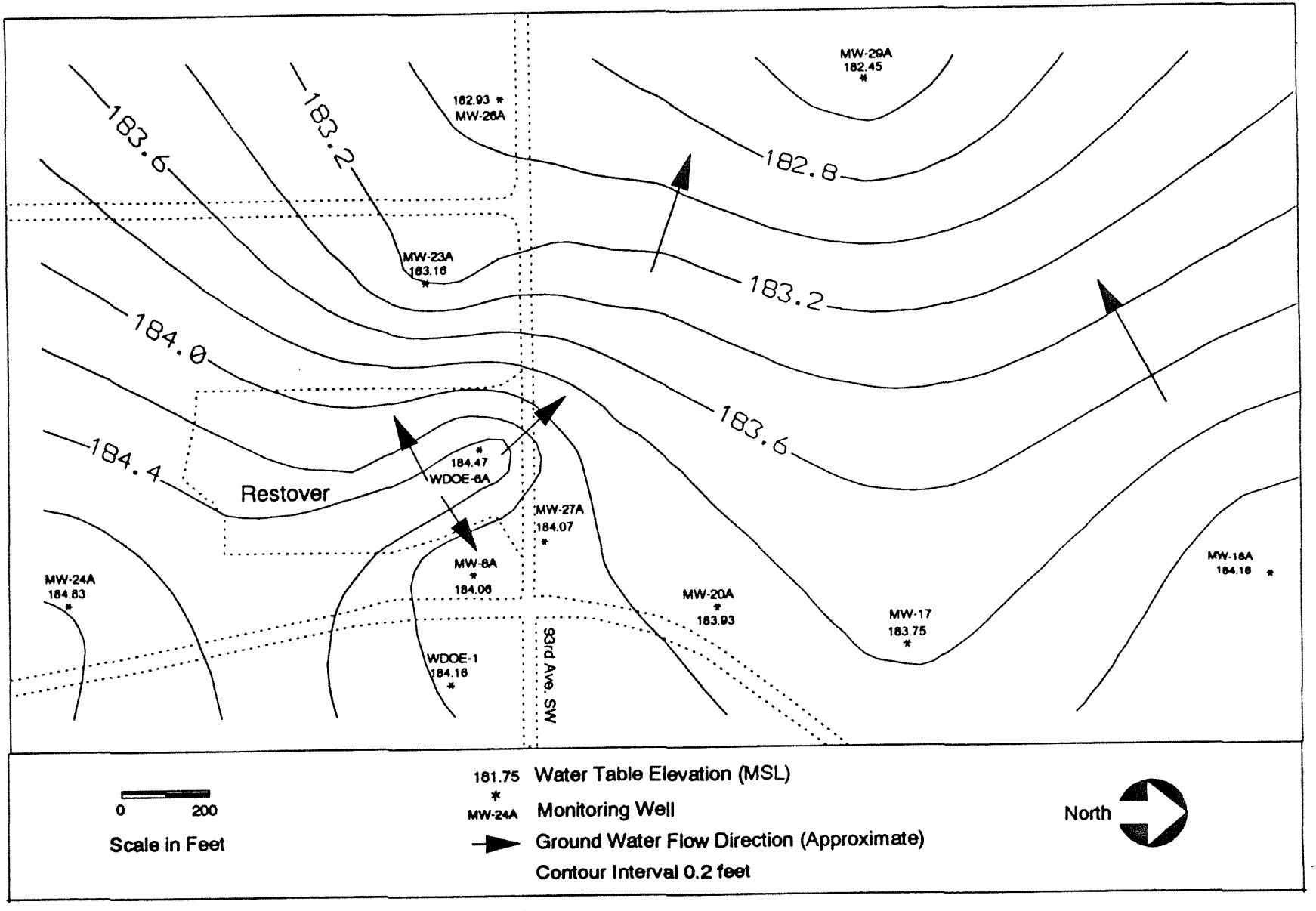

Figure 2: Restover Truck Stop - Water Table Map, February 1992

Table 4: Historical Restover Truck Stop BTEX Concentrations (ug/L)

Well Number	May 1987	September 1987	October 1988	January 1989	July 1989	January 1990	August 1990	February 1991	August 1991	February 1992
Upper Aquifer										
WDOE-6A	6950	1180	5300	28000	7490	9870	5190	3460	2840	3830
MW-8A	230	388	479	334	58	14	178	19	20	9
MW-15A	1433	NT	NT	ND	218	NT	285	122	NT	NT
MW-20A	126	NT	NT	NT	NT	20	1400	5	293	11
Lower Aquifer										
Restover	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND
Spencer	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND
MW-12	53	5	8	ND	4	ND	6	ND	NT	NT

ND: Compound Not Detected
NT: Compound Not Tested

REFERENCES

Huntamer, D. and J. Hyre. Manchester Environmental Laboratory - Laboratory Users Manual. July 1991.

PM:krc

cc: Bill Yake
Denis Erickson

APPENDIX A

Analytical Results
Restover Truck Stop
February 19-21, 1992

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

April 7, 1992

Subject: Restover Truck Stop - Part A

Samples: 92 - 088050 to 088055

Case No. DOE-450X

Officer: Pam Marti

By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA CLP and SW 846 Method 8240 purge-trap procedure with capillary GC/MS analysis. Normal CLP QA/QC procedures were performed on the samples.

BLANKS:

Low levels of the common laboratory solvents Acetone and Methylene Chloride were detected in the laboratory blanks The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

Surrogate recoveries were within acceptable limits for water samples.

HOLDING TIMES:

The water samples were analyzed within the recommended 14 day holding time for preserved samples.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spikes were within acceptable QC limits for both percent recovery and Relative Percent Differences (RPD).

SPECIAL ANALYTICAL PROBLEMS:

Inadvertently one sample, 088056, Spencer well plus the transfer and transport blanks, 088057 and 088058 were overlooked and not analyzed with the samples above. After discussion with the project officer, it was decided to resample Spencer well on April 9, 1992 and analyze it along with the transfer and transport blanks from the earlier set. The Spencer well resampling and the field blank results will be reported in a separate report.

The results are acceptable for the samples listed above and the data is usable without further qualification.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: MANCHESTER LAB Contract: D3K01

Lab Code: _____ Case No.: DOE-45 SAS No.: 1011 SDG No.: RESTOV

Lab File ID: IBW2062 Lab Sample ID: LAB BLANK

Date Analyzed: 03/02/92 Time Analyzed: 1202

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: FINN

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	I92088052Y	MATRIX_SPK	I088052Y	1250
02	I92088052Z	MATRIX_SPKDUP	I088052Z	1334
03	IBW2062	LAB_BLANK	IBW2062	1202

COMMENTS: IBW2062 - 5MLS - BLANK - 3/2/92
PURGE AND TRAP

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: MANCHESTER LAB Contract: D3K01

Lab Code: _____ Case No.: DOE-45 SAS No.: 1011 SDG No.: RESTOV

Lab File ID: IBW2056 Lab Sample ID: LAB BLANK

Date Analyzed: 02/25/92 Time Analyzed: 1029

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: FINN

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	I92088050	SAMPLE	I088050	1115
02	I92088051	SAMPLE	I088051	1159
03	I92088052	SAMPLE	I088052	1250
04	I92088052A	SAMPLE_REANAL	I088052A	1340
05	I92088053	SAMPLE	I088053	1433
06	I92088054	SAMPLE	I088054	1521
07	I92088055	SAMPLE	I088055	1608
08	IBW2056	LAB_BLANK	IBW2056	1029

COMMENTS: IBW2056 - 5MLS - BLANK - 2/25/92
PURGE AND TRAP

SAMPLE HOLDING TIMES AND DILUTIONS

Laboratory MANCHESTER LAB
Case Number DOE-450X

04/02/92

Sample Number	M	L	Rcvd	VOA Anal	VOA Hld	VOA Dil	BNA Extr	BNA Hld	BNA Anal	BNA Hld	BNA Dil	PEST Extr	PEST Hld	PEST Anal	PEST Hld	PEST Dil
192088050	W	L	02/19	02/25	6	0.200										
192088051	W	L	02/19	02/25	6	0.200										
192088052	W	L	02/19	02/25	6	0.200										
192088052	W	L	02/19	02/25	6	0.200										
192088053	W	L	02/19	02/25	6	0.200										
192088054	W	L	02/19	02/25	6	0.200										
192088055	W	L	02/19	02/25	6	2.00										
192088052Y	W	L	02/19	03/02	12	0.200										
192088052Z	W	L	02/19	03/02	12	0.200										

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-450X RESTOVER TRUCK STOP

Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088050 Description: RESTOVER Source: Drinking Water (At tap)

Begin Date: 92/02/19 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	5.0U	ug/l

VOA - PP Scan (GCMS)	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	1U	ug/l
Toluene	1U	ug/l
Total Xylenes	1U	ug/l
p-Bromofluorobenzene	95	% Recov
D4-1,2-Dichlorobenzene	105	% Recov
d8-Toluene	97	% Recov
d4-1,2-Dichloroethane	110	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088051 Description: MW-29A Source: Well (Test/Observation)

Begin Date: 92/02/19 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	9.4PB*	ug/l

Metals - ICP Scan Matrix Spike #1		Water-Filtere Result	Units
Iron	Fe-Diss	98	% Recov

Metals - ICP Scan Matrix Spike #2		Water-Filtere Result	Units
Iron	Fe-Diss	99	% Recov

VOA - PP Scan (GCMS)	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	1U	ug/l
Toluene	1U	ug/l
Total Xylenes	1U	ug/l
p-Bromofluorobenzene	99	% Recov
D4-1,2-Dichlorobenzene	103	% Recov
d8-Toluene	104	% Recov
d4-1,2-Dichloroethane	106	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088052 Description: MW-8A Source: Well (Test/Observation)

Begin Date: 92/02/19 :

Metals - ICP Scan	Water-Filtere Result	Units
Iron Fe-Diss	2150 *	ug/l

VOA - PP Scan (GCMS)	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	1U	ug/l
Toluene	1U	ug/l
Total Xylenes	1U	ug/l
p-Bromofluorobenzene	94	% Recov
D4-1,2-Dichlorobenzene	109	% Recov
d8-Toluene	99	% Recov
d4-1,2-Dichloroethane	108	% Recov

VOA - PP Scan (GCMS) Matrix Spike #1	Water-Total Result	Units
Benzene	94	% Recov
Ethylbenzene	118	% Recov
Toluene	90	% Recov
Total Xylenes	118	% Recov
D4-1,2-Dichlorobenzene	102	% Recov
d8-Toluene	93	% Recov
d4-1,2-Dichloroethane	99	% Recov
p-Bromofluorobenzene	98	% Recov

VOA - PP Scan (GCMS) Matrix Spike #2	Water-Total Result	Units
Benzene	96	% Recov
Ethylbenzene	116	% Recov
Toluene	95	% Recov
Total Xylenes	117	% Recov
D4-1,2-Dichlorobenzene	102	% Recov
d8-Toluene	96	% Recov
d4-1,2-Dichloroethane	97	% Recov
p-Bromofluorobenzene	99	% Recov

VOA - PP Scan (GCMS) Duplicate #1	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	2 *	ug/l
Toluene	1U	ug/l
Total Xylenes	7 *	ug/l
p-Bromofluorobenzene	99	% Recov
D4-1,2-Dichlorobenzene	107	% Recov
d8-Toluene	105	% Recov
d4-1,2-Dichloroethane	101	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis R lts

Project: DOE-450X RESTOVER TRUCK STOP

Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088053 Description: MW-8B

Source: Well (Test/Observation)

Begin Date: 92/02/19 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	2130 *	ug/l

VOA - PP Scan (GCMS)	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	2 *	ug/l
Toluene	1U	ug/l
Total Xylenes	8 *	ug/l
p-Bromofluorobenzene	93	% Recov
D4-1,2-Dichlorobenzene	110	% Recov
d8-Toluene	98	% Recov
d4-1,2-Dichloroethane	99	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088054 Description: MW-20A Source: Well (Test/Observation)

Begin Date: 92/02/19 :

Metals - ICP Scan	Water-Filtere Result	Units
Iron Fe-Diss	9.1PB*	ug/l

VOA - PP Scan (GCMS)	Water-Total Result	Units
Benzene	0.4J*	ug/l
Ethylbenzene	1 *	ug/l
Toluene	1U	ug/l
Total Xylenes	10 *	ug/l
p-Bromofluorobenzene	96	% Recov
D4-1,2-Dichlorobenzene	104	% Recov
d8-Toluene	99	% Recov
d4-1,2-Dichloroethane	102	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088055 Description: WDOE-6A Source: Well (Test/Observation)

Begin Date: 92/02/21 :

Metals - ICP Scan	Water-Filtere Result		Units
Iron Fe-Diss	4110	*	ug/l

VOA - PP Scan (GCMS)	Water-Total Result		Units
Benzene	430	*	ug/l
Ethylbenzene	350	*	ug/l
Toluene	800	*	ug/l
Total Xylenes	2250	*	ug/l
p-Bromofluorobenzene	95		% Recov
D4-1,2-Dichlorobenzene	110		% Recov
d8-Toluene	99		% Recov
d4-1,2-Dichloroethane	98		% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088056 Description: SPENCER Source: Drinking Water (At tap)

Begin Date: 92/02/21 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	22B*	ug/l

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088058 Description: TRANSPOR Source: Water (General)

Begin Date: 92/02/19 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	5.0U	ug/l

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP
Officer: PZM
Account: D3K01

Laboratory: Ecology, Manchester

Sample No: 92 088059
Description: FILTER
Source: Water (General)

Begin Date: 92/02/19 :

Metals - ICP Scan		Water-Filtere Result	Units
Iron	Fe-Diss	6.1PB*	ug/l

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Blank ID: BW2056

VOA - PP Scan (GCMS) Blank #1	Water-Total Result	Units
Benzene	1U	ug/l
Ethylbenzene	1U	ug/l
Toluene	0.2J*	ug/l
Total Xylenes	0.2J*	ug/l
p-Bromofluorobenzene	97	% Recov
D4-1,2-Dichlorobenzene	108	% Recov
d8-Toluene	102	% Recov
d4-1,2-Dichloroethane	107	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Blank ID: BW2062

VOA - PP Scan (GCMS) Blank #2	Water-Total Result	Units
Benzene	0.07J*	ug/l
Ethylbenzene	1U	ug/l
Toluene	0.2J*	ug/l
Total Xylenes	1U	ug/l
p-Bromofluorobenzene	99	% Recov
D4-1,2-Dichlorobenzene	96	% Recov
d8-Toluene	97	% Recov
d4-1,2-Dichloroethane	104	% Recov

(Sample Complete)

Project: DOE-450X RESTOVER TRUCK STOP Officer: PZM Account: D3K01

Blank ID: EWPB 09.31

Metals - ICP Scan Blank #1		Water-Filtere Result	Units
Iron	Fe-Diss	5.6P*	ug/l

(Sample Complete)

*** Lab Analysis Report ***

==> Transaction #: 04209203 Laboratory: (WE) Ecology, Manchester Lab

Work Group: (51) VOA - PP Scan (GCMS)

Instrument: (INCOS-50) GC/MS INCOS 50

Method: (EP2-624) GC/MS Purge and Trap Scan

Chemist: (LAB) Lab (General R/O) Hours Worked: _____

Project: DOE-450X RESTOVER TRUCK STOP Prg Ele#: D3K01

Prj Off: Marti, Pam DOE Analysis Due: 920221 Revised Due:

*** Sample Records in Transaction ***

Seq#	Sample #	QA	Date/Time	Description	Alternate Keys		
01	92088057		920219	TRANSFER			
02	92088058		920219	TRANSPOR			
03	92158060		920409	SPENCER			
04	92158060	LBK1	920409	SPENCER			

Record Type: TRNIN3 Date Verified: 4/21/92 By:
Transaction Status: Edited Transaction...First Printing...Unverified.
Processed: 20-APR-92 13:15:51 Status: E Batch: (In CUR DB)

*** Lab Analysis Report ***

Transaction #: 04209203 Seq #: 01 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088057 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds: ____
QA Code: ( ) Unspecifed Peaks Total: ____
Date Extracted: Date Analyzed: 920415 # Days to Ext/Anal: 0/ 56

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1UJ
2	75718	Methane, Dichlorodifluoro-	ug/l	5UJ
3	74839	Bromomethane	ug/l	1UJ
4	75014	Vinyl Chloride	ug/l	1UJ
5	75003	Chloroethane	ug/l	1UJ
6	75694	Trichlorofluoromethane	ug/l	1UJ
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	5UJ
9	75150	Carbon Disulfide	ug/l	5UJ
10	75354	1,1-Dichloroethene	ug/l	1UJ
11	75343	1,1-Dichloroethane	ug/l	1UJ
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1UJ
14	590207	2,2-Dichloropropane	ug/l	1UJ
15	74975	Bromochloromethane	ug/l	1UJ
16	67663	Chloroform	ug/l	1UJ
17	107062	1,2-Dichloroethane	ug/l	1UJ
18	78933	2-Butanone	ug/l	3UJ
19	71556	1,1,1-Trichloroethane	ug/l	1UJ
20	56235	Carbon Tetrachloride	ug/l	1UJ
21	563586	1,1-Dichloropropene	ug/l	1UJ
22	75274	Bromodichloromethane	ug/l	1UJ
23	78875	1,2-Dichloropropane	ug/l	1UJ
24	74953	Dibromomethane	ug/l	1UJ
25	10061026	trans-1,3-Dichloropropene	ug/l	1UJ
26	79016	Ethene, trichloro-	ug/l	1UJ
27	124481	Dibromochloromethane	ug/l	1UJ
28	106934	1,2-Dibromoethane (EDB)	ug/l	1UJ
29	79005	1,1,2-Trichloroethane	ug/l	1UJ
30	142289	1,3-Dichloropropane	ug/l	1UJ
31	71432	Benzene	ug/l	1UJ
32	10061015	cis-1,3-Dichloropropene	ug/l	1UJ
33	75252	Bromoform	ug/l	1UJ
34	591786	2-Hexanone	ug/l	1UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1UJ
36	127184	Tetrachloroethene	ug/l	1UJ
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1UJ
39	108883	Toluene	ug/l	1UJ
40	108907	Chlorobenzene	ug/l	1UJ
41	100414	Ethylbenzene	ug/l	1UJ
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1UJ
43	108861	Bromobenzene	ug/l	1UJ
44	96184	1,2,3-Trichloropropane	ug/l	1UJ
45	95498	2-Chlorotoluene	ug/l	1UJ
46	106434	4-Chlorotoluene	ug/l	1UJ
47	1330207	Total Xylenes	ug/l	1UJ
48	95636	1,2,4-Trimethylbenzene	ug/l	1UJ
49	98066	Tert-Butylbenzene	ug/l	1UJ
50	108678	1,3,5-Trimethylbenzene	ug/l	1UJ

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Transaction #: 04209203 Seq #: 01 (51) VOA - PP Scan (GCMS)

ıple No.: 92 088057 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1UJ	
52	99876	p-Isopropyltoluene	ug/l	1UJ	
53	104518	Butylbenzene	ug/l	1UJ	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5UJ	
55	87616	1,2,3-Trichlorobenzene	ug/l	1UJ	
56	98828	Isopropylbenzene (Cumene)	ug/l	1UJ	
57	103651	BENZENE, PROPYL-	ug/l	1UJ	
58	541731	1,3-Dichlorobenzene	ug/l	1UJ	
59	106467	1,4-Dichlorobenzene	ug/l	1UJ	
60	95501	1,2-Dichlorobenzene	ug/l	1UJ	
61	120821	1,2,4-Trichlorobenzene	ug/l	1UJ	
62	91203	Naphthalene	ug/l	1UJ	
63	87683	Hexachlorobutadiene	ug/l	1UJ	
64	2747582	d8-Toluene	% Recov	97	(Surr) PR
65	-460004	p-Bromofluorobenzene	% Recov	94	(Surr) PR
66	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr) PR
67	2199691	D4-1,2-Dichlorobenzene	% Recov	96	(Surr) PR

*** Lab Analysis Report ***

Transaction #: 04209203 Seq #: 02 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088058 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds: ____
QA Code: ( ) Unspecifed Peaks Total: ____
Date Extracted: Date Analyzed: 920415 # Days to Ext/Anal: 0/ 56

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1UJ
2	75718	Methane, Dichlorodifluoro-	ug/l	5UJ
3	74839	Bromomethane	ug/l	1UJ
4	75014	Vinyl Chloride	ug/l	1UJ
5	75003	Chloroethane	ug/l	1UJ
6	75694	Trichlorofluoromethane	ug/l	1UJ
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	5UJ
9	75150	Carbon Disulfide	ug/l	5UJ
10	75354	1,1-Dichloroethene	ug/l	1UJ
11	75343	1,1-Dichloroethane	ug/l	1UJ
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1UJ
14	590207	2,2-Dichloropropane	ug/l	1UJ
15	74975	Bromochloromethane	ug/l	1UJ
16	67663	Chloroform	ug/l	1UJ
17	107062	1,2-Dichloroethane	ug/l	1UJ
[illegible]	78933	2-Butanone	ug/l	2UJ
[illegible]	71556	1,1,1-Trichloroethane	ug/l	1UJ
20	56235	Carbon Tetrachloride	ug/l	1UJ
21	563586	1,1-Dichloropropene	ug/l	1UJ
22	75274	Bromodichloromethane	ug/l	1UJ
23	78875	1,2-Dichloropropane	ug/l	1UJ
24	74953	Dibromomethane	ug/l	1UJ
25	10061026	trans-1,3-Dichloropropene	ug/l	1UJ
26	79016	Ethene, trichloro-	ug/l	1UJ
27	124481	Dibromochloromethane	ug/l	1UJ
28	106934	1,2-Dibromoethane (EDB)	ug/l	1UJ
29	79005	1,1,2-Trichloroethane	ug/l	1UJ
30	142289	1,3-Dichloropropane	ug/l	1UJ
31	71432	Benzene	ug/l	1UJ
32	10061015	cis-1,3-Dichloropropene	ug/l	1UJ
33	75252	Bromoform	ug/l	1UJ
34	591786	2-Hexanone	ug/l	1UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1UJ
36	127184	Tetrachloroethene	ug/l	1UJ
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1UJ
39	108883	Toluene	ug/l	1UJ
40	108907	Chlorobenzene	ug/l	1UJ
41	100414	Ethylbenzene	ug/l	1UJ
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1UJ
43	108861	Bromobenzene	ug/l	1UJ
[illegible]	96184	1,2,3-Trichloropropane	ug/l	1UJ
[illegible]	95498	2-Chlorotoluene	ug/l	1UJ
46	106434	4-Chlorotoluene	ug/l	1UJ
47	1330207	Total Xylenes	ug/l	1UJ
48	95636	1,2,4-Trimethylbenzene	ug/l	1UJ
49	98066	Tert-Butylbenzene	ug/l	1UJ
50	108678	1,3,5-Trimethylbenzene	ug/l	1UJ

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Transaction #: 04209203 Seq #: 02 (51) VOA - PP Scan (GCMS)

ple No.: 92 088058 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1UJ	
52	99876	p-Isopropyltoluene	ug/l	1UJ	
53	104518	Butylbenzene	ug/l	1UJ	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5UJ	
55	87616	1,2,3-Trichlorobenzene	ug/l	1UJ	
56	98828	Isopropylbenzene (Cumene)	ug/l	1UJ	
57	103651	BENZENE, PROPYL-	ug/l	1UJ	
58	541731	1,3-Dichlorobenzene	ug/l	1UJ	
59	106467	1,4-Dichlorobenzene	ug/l	1UJ	
60	95501	1,2-Dichlorobenzene	ug/l	1UJ	
61	120821	1,2,4-Trichlorobenzene	ug/l	1UJ	
62	91203	Naphthalene	ug/l	1UJ	
63	87683	Hexachlorobutadiene	ug/l	1UJ	
64	2747582	d8-Toluene	% Recov	99	(Surr) PR
65	-460004	p-Bromofluorobenzene	% Recov	93	(Surr) PR
66	17070070	d4-1,2-Dichloroethane	% Recov	100	(Surr) PR
67	2199691	D4-1,2-Dichlorobenzene	% Recov	105	(Surr) PR

*** Lab Analysis Report ***

Transaction #: 04209203 Seq #: 03 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 158060 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds: ____
QA Code: ( ) Unspecifed Peaks Total: ____
Date Extracted: Date Analyzed: 920415 # Days to Ext/Anal: 07 6

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1UJ
2	75718	Methane, Dichlorodifluoro-	ug/l	5UJ
3	74839	Bromomethane	ug/l	1UJ
4	75014	Vinyl Chloride	ug/l	1UJ
5	75003	Chloroethane	ug/l	1UJ
6	75694	Trichlorofluoromethane	ug/l	1UJ
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	4UJ
9	75150	Carbon Disulfide	ug/l	5UJ
10	75354	1,1-Dichloroethene	ug/l	1UJ
11	75343	1,1-Dichloroethane	ug/l	1UJ
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1UJ
14	590207	2,2-Dichloropropane	ug/l	1UJ
15	74975	Bromochloromethane	ug/l	1UJ
16	67663	Chloroform	ug/l	1UJ
17	107062	1,2-Dichloroethane	ug/l	1UJ
18	78933	2-Butanone	ug/l	2UJ
19	71556	1,1,1-Trichloroethane	ug/l	1UJ
20	56235	Carbon Tetrachloride	ug/l	1UJ
21	563586	1,1-Dichloropropene	ug/l	1UJ
22	75274	Bromodichloromethane	ug/l	1UJ
23	78875	1,2-Dichloropropane	ug/l	1UJ
24	74953	Dibromomethane	ug/l	1UJ
25	10061026	trans-1,3-Dichloropropene	ug/l	1UJ
26	79016	Ethene, trichloro-	ug/l	1UJ
27	124481	Dibromochloromethane	ug/l	1UJ
28	106934	1,2-Dibromoethane (EDB)	ug/l	1UJ
29	79005	1,1,2-Trichloroethane	ug/l	1UJ
30	142289	1,3-Dichloropropane	ug/l	1UJ
31	71432	Benzene	ug/l	1UJ
32	10061015	cis-1,3-Dichloropropene	ug/l	1UJ
33	75252	Bromoform	ug/l	1UJ
34	591786	2-Hexanone	ug/l	1UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1UJ
36	127184	Tetrachloroethene	ug/l	1UJ
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1UJ
39	108883	Toluene	ug/l	1UJ
40	108907	Chlorobenzene	ug/l	1UJ
41	100414	Ethylbenzene	ug/l	1UJ
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1UJ
43	108861	Bromobenzene	ug/l	1UJ
44	96184	1,2,3-Trichloropropane	ug/l	1UJ
45	95498	2-Chlorotoluene	ug/l	1UJ
46	106434	4-Chlorotoluene	ug/l	1UJ
47	1330207	Total Xylenes	ug/l	1UJ
48	95636	1,2,4-Trimethylbenzene	ug/l	1UJ
49	98066	Tert-Butylbenzene	ug/l	1UJ
50	108678	1,3,5-Trimethylbenzene	ug/l	1UJ

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Transaction #: 04209203 Seq #: 03 (51) VOA - PP Scan (GCMS)

Sample No.: 92 158060 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1UJ	
52	99876	p-Isopropyltoluene	ug/l	1UJ	
53	104518	Butylbenzene	ug/l	1UJ	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5UJ	
55	87616	1,2,3-Trichlorobenzene	ug/l	1UJ	
56	98828	Isopropylbenzene (Cumene)	ug/l	1UJ	
57	103651	BENZENE, PROPYL-	ug/l	1UJ	
58	541731	1,3-Dichlorobenzene	ug/l	1UJ	
59	106467	1,4-Dichlorobenzene	ug/l	1UJ	
60	95501	1,2-Dichlorobenzene	ug/l	1UJ	
61	120821	1,2,4-Trichlorobenzene	ug/l	1UJ	
62	91203	Naphthalene	ug/l	1UJ	
63	87683	Hexachlorobutadiene	ug/l	1UJ	
64	2747582	d8-Toluene	% Recov	99	(Surr) PR
65	-460004	p-Bromofluorobenzene	% Recov	96	(Surr) PR
66	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr) PR
67	2199691	D4-1,2-Dichlorobenzene	% Recov	109	(Surr) PR

*** Lab Analysis Report ***

Transaction #: 04209203 Seq #: 04 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Blank ID : BW2106
Sample No.: 92 158060 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds: ____
QA Code: (LBK1) Lab Blank Sample #1 Peaks Total: ____
Date Extracted: Date Analyzed: 920415 # Days to Ext/Anal: 07 6

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	5U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1UJ
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	0.3J
8	67641	Acetone	ug/l	3J
9	75150	Carbon Disulfide	ug/l	5U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1U
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	590207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
[illegible]	107062	1,2-Dichloroethane	ug/l	1U
[illegible]	78933	2-Butanone	ug/l	2J
19	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1UJ
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
[illegible]	108861	Bromobenzene	ug/l	1U
[illegible]	96184	1,2,3-Trichloropropane	ug/l	1U
45	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

Transaction #: 04209203 Seq #: 04 (51) VOA - PP Scan (GCMS)

ple No.: 92 158060 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1U	
52	99876	p-Isopropyltoluene	ug/l	1U	
53	104518	Butylbenzene	ug/l	1U	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5UJ	
55	87616	1,2,3-Trichlorobenzene	ug/l	1U	
56	98828	Isopropylbenzene (Cumene)	ug/l	1U	
57	103651	BENZENE, PROPYL-	ug/l	1U	
58	541731	1,3-Dichlorobenzene	ug/l	1U	
59	106467	1,4-Dichlorobenzene	ug/l	1U	
60	95501	1,2-Dichlorobenzene	ug/l	1U	
61	120821	1,2,4-Trichlorobenzene	ug/l	1U	
62	91203	Naphthalene	ug/l	1U	
63	87683	Hexachlorobutadiene	ug/l	1U	
64	2747582	d8-Toluene	% Recov	103	(Surr) PR
65	-460004	p-Bromofluorobenzene	% Recov	95	(Surr) PR
66	17070070	d4-1,2-Dichloroethane	% Recov	100	(Surr) PR
67	2199691	D4-1,2-Dichlorobenzene	% Recov	102	(Surr) PR

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES
MANCHESTER ENVIRONMENTAL LABORATORY

March 4, 1992

TO: Pam Marti

FROM: Bill Kammin, Environmental_Lab_Director BK

SUBJECT: Restover Dissolved Iron Data

SAMPLE RECEIPT

The samples from the Restover project were received by the Manchester Laboratory on 2/20/92 in good condition.

HOLDING TIMES

All analyses were performed within the specified holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the relevant CLP control limits.

PROCEDURAL BLANKS

The procedural blank associated with these samples showed ultra-trace levels of iron. Samples containing iron at less than ten times the amount in the blank are flagged with B.

SPIKED SAMPLE ANALYSIS

Spiked sample and duplicate spiked sample analyses were performed on sample number 92088051. All spike recoveries were within the acceptance limits of +/- 25%.

PRECISION DATA

The duplicate results of the spiked and duplicate spiked sample were used to calculate precision related to the analysis of these samples. The % RPD for all parameters was within the +/- 20% window for duplicate analysis.

SUMMARY

The data generated by the analysis of the above referenced samples can be used with the above-mentioned qualification.

If you have any questions about the results or the methods used to obtain these results, please call me at SCAN 744-4737.

*** Lab Analysis Report ***

==> Transaction #: 03030831 Laboratory: (WE) Ecology, Manchester Lab

Work Group: (38) Metals - ICP Scan

Instrument: (ICP) ICP, Jarrell-Ash AtomComp 1100 (DOE)

Method: (EP1-200.7) Inductively Coupled Plasma Atomic Emissions Analysis

Chemist: (AGH) Hedley, Art DOE Hours Worked:

Project: DOE-450X RESTOVER TRUCK STOP Prg Ele#: D3K01

Prj Off: Marti, Pam DOE Analysis Due: 920221 Revised Due:

*** Sample Records in Transaction ***

Seq#	Sample #	QA	Date/Time	Description	Alternate Keys		
01	92088051	LBK1	920219	MW-29A			
02	92088050		920219	RESTOVER			
03	92088051		920219	MW-29A			
04	92088051	LMX1	920219	MW-29A			
05	92088051	LMX2	920219	MW-29A			
06	92088052		920219	MW-8A			
07	92088053		920219	MW-8B			
[illegible]	92088054		920219	MW-20A			
	92088055		920221	WDOE-6A			
10	92088056		920221	SPENCER			
11	92088058		920219	TRANSPOR			
12	92088059		920219	FILTER			

Record Type: TRNIN3 Date Verified: 3/3/92 By: [illegible]

T[illegible]nsaction Status: New Transaction...First Printing...Unverified.

P[illegible]cessed: 3-MAR-92 08:52:29 Status: N Batch: (In CUR DB)

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 01 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Blank ID : EWPB 09.31
Sample No.: 92 088051 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: (LBK1) Lab Blank Sample #1 Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	5.6P

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 02 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088050 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	5.0U

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 03 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088051 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	9.4PB

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 04 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088051 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (94) % Recov %Slds:
QA Code: (LMX1) Lab Mtrx Spike #1 (% Rec Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss ug/l	% Recov	98

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 05 (38) Metals - ICP Scan
P ~j Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088051 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (94) % Recov %Slds:
QA Code: (LMX2) Lab Mtrx Spike #2 (% Rec Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss ug/l	% Recov	99

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 06 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088052 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	2150

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 07 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088053 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	2130

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 08 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088054 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	9.1PB

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 09 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088055 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 5

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	4110

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 10 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088056 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 5

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	22B

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 11 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088058 Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	5.0U

*** Lab Analysis Report ***

Transaction #: 03030831 Seq #: 12 (38) Metals - ICP Scan
Proj Code : DOE-450X RESTOVER TRUCK STOP PE # : D3K01

Sample No.: 92 088059- Alternate Keys:

Samp Matrix: (11) Water-Filtered Units: (00) %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 920226 # Days to Ext/Anal: 0/ 7

Line	Par #	Parameter Description	Units	Value
1	01046	Iron Fe-Diss	ug/l	6.1PB