BISON ENVIRONMENTAL NORTHWEST, INC.
200 South 333rd Street • Northmark Bldg • Suite 120 • Federal Way, WA 98003 • 206/838-7261 • 206/927-2610

October 27, 1994

Mr. Rob Will
University Volkswagen
4724 Roosevelt Avenue
Seattle, WA 98105

RE: Partial Cleanup, Tank # 2, 4,000 gallon gasoline
University Volkswagen
4724 Roosevelt Avenue
Seattle, WA 98105
Project Number 93380-2
WDOE Release Report Number 14123

Dear Rob:

Bison Environmental Northwest, Inc., is pleased to provide this partial cleanup report for the Gasoline excavation that contained the 4,000 gallon underground storage tank at your facility. Soils in this vicinity were contaminated with petroleum hydrocarbons. High levels of gasoline had resulted from the leaking union that was discovered in September, 1993 when this tank was taken out of service and permanently closed and removed.

METHODOLOGY/SCOPE OF WORK

Our scope of work for this project included observation and documentation of remedial activities, sampling and laboratory analysis of samples, arrangement for disposal of contaminated soil, and preparation of this report.

WDOE-registered UST site assessors from our firm were present on the site on September 23, 1993 for the tank removal, and again on August 31, 1994 to observe remedial activities and direct the excavation process and to collect soil samples.

During excavation, soils were screened for observable indications of contamination (e.g. discoloration, unusual odors), and by using a Model 1314 SMPN GasTechtor Gas Alarm. This device is a portable microprocessor controlled instrument designed to detect volatile organic compounds down to a concentration of 10 parts per million (ppm). "Head Space" measurements were taken by placing soils in a sealed plastic bag and shaking the bag to expose the soil to air trapped in the bag. The GasTechtor was then used to measure organic vapor concentrations within the bag. This method is used to provide relative concentrations of organic vapors, such as

gasoline, in soil samples. Variations can occur due to a variety of factors, including soil type, temperature and contaminant aging, and the method is used for sample screening, not as a replacement for more accurate laboratory analysis.

Sampling protocols followed during this project were in accordance with WDOE and EPA guidelines. Samples were collected using clean hand tools, and transferred to sterilized glassware provided by the project laboratory. A label indicating the sample number, project number, sampler, and date and time of sampling, was affixed to each sample, and the sample was recorded on a chain-of-custody form. Samples were stored in an iced chest on site and during transport to the laboratory.

Soil samples were analyzed for petroleum hydrocarbons using the WTPH-G method. In addition, samples of the contaminated soil were analyzed for volatile organic compounds (VOCs), as required by the treatment facility to accept the soil.(These were approved by Sterling in September, 1993 and not required to be re-tested in August, 1994).

Excavation of petroleum-contaminated soil from the vicinity of the UST was conducted by Lee Morse during August and September of 1994. Remedial excavation was discontinued with some contamination remaining in place because on September 24, 1994 the City of Seattle "Red Tagged" the site and all work was ordered to stop immediately due to the close proximity to the street and alley. The excavation was filled using "clean" fill provided by Lee Morse. Asphalt was used to resurface this section of the parking lot.

During August and September of 1994, the soil was transported to Sterling Asphalt in Kenmore, Washington, for remediation by thermal desorption. A certificate indicating that Sterling accepted and recycled approximately 450 tons of contaminated soil originating at University Volkswagen is available at their main office.

FINDINGS

The property is an operating new and used car agency located in Seattle, Washington. Land use in the immediate area is primarily light industrial, and commercial. Topography in the area slopes gently downward to the south and east.

The UST excavation was located in the southern portion of the property and is bordered on the north by the Detailing Shop as shown on the attached site plan.

At the time of our arrival on August 31, 1994, the area had been excavated to a depth of roughly 7 feet.

Soils in the excavation exhibited blue-gray discoloration and

relatively strong gasoline odors. Headspace screening of soil removed from the excavation reported volatile concentrations ranging from 900 to 1,700 parts per million (ppm). The soil was judged to be contaminated based on the results of field screening, and was therefore excavated and loaded directly on a Lee Morse Truck and Pup Trailer and transported to Sterling Asphalt. The presence of hydrocarbon concentrations in excess of "Method A" cleanup levels specified in the Model Toxics Control Act (MTCA) was confirmed by laboratory analysis of soil samples collected after the City of Seattle closed the site to further excavation or work of any nature.

On September 12, 1994 Holt Drilling Company of Puyallup, WA came on site and placed four borings around the now 20 foot deep excavation. Borings were drilled to a depth of 21 feet in all directions with the exception of Boring # 1 at a depth of 20.5'. The laboratory results are indicated in the sample log. Only Boring #1 at 20.5 six feet north of the excavation was above acceptable MTCA levels for gasoline having been analyzed to be 150 ppm using Method WTPH-G, maximum level is 100 ppm.

Soils remaining in the excavation consisted of approximately 1 foot of gravel and course sand underlain by slightly gravelly medium to fine-grained sands which appeared to be native. A layer of very dense, silty gravelly sand (glacial till) was encountered at the bottom of the excavation. Soils with blue-gray discoloration and hydrocarbon odors were observed extending from a depth of roughly 8 feet down to the bottom in all four sides of the excavation. Soils remaining in the bottom of the excavation also exhibited strong gasoline odors. There was no groundwater seepage observed along the glacial till layer at the very bottom of the excavation.

The results of laboratory analysis are included in Table A, appended to this report. The laboratory reports documenting analysis have also been appended. Sampling locations are included on the site plan.

Three soil samples, all of which appeared to be contaminated, were collected from the side and bottom of the excavation. Two samples from the bottom and the side sample were analyzed. A gasoline product was reported in the samples at concentrations of 340 to 1,900 ppm. The MTCA Method A cleanup level for gasoline in soil is 100 ppm.

As previously noted, the excavation was filled and sealed with asphalt once soil samples had been collected.

CONCLUSIONS

Based on our observations and the results of laboratory analysis, it appears that soil in the Gasoline tank excavation site has been contaminated with gasoline petroleum hydrocarbons. The gasoline

contaminant appears to be aged gas based on the EPA 8020 data reported (BTEX). The likely sources of this contamination would be leakage from the loose union discovered when the tank was removed on Septembe 23, 1993. See sample log from the original tank removal, sample SS-11 specifically.

Approximately 450 tons of contaminated soil excavated from around the tank burial site have been transported to an off-site treatment facility licensed to accept petroleum-contaminated soil.

Excavation was discontinued with contamination remaining in place to avoid damaging the existing City of Seattle Alley running north to south through the property. Petroleum contamination appears to be present in soil remaining in all four sides and in the bottom of the excavation. Groundwater seepage was not encountered in the very bottom of the excavation, and it is possible that groundwater on the site could become contaminated since we were unable to excavate to the end of the contamination.

RECOMMENDATIONS

Further study is recommended to install a system of vapor wells to extract the gasoline that is still in place. Specifically, we recommend that test borings be drilled in the area of the excavation and vented to the surface. We also have the option of adding a pump to the system to extract the vapors more aggressively as we have discussed in the past. Monitoring wells are also a consideration to determine if the aquifer has been contaminated as a result of the leaking union.

LIMITATIONS

This report has been prepared for the exclusive use of the client and their representatives for specific application to the site. The work for this project was conducted in a manner consistent with generally accepted environmental science practices in the area, and in accordance with the terms of the client's request. No other warranty is expressed or implied.

If new information on the site is developed during future environmental studies, Bison Environmental Northwest, Inc., should be allowed to review this information, to reevaluate the conclusions of this report, and to provide amendments as required.

* * *

We appreciate the opportunity to provide environmental consulting services on this project. If you have any questions or concerns on this matter, please do not hesitate to contact us.

Sincerely,

Harry E. Bush
Senior Biologist
WDOE-Registered Site Assessor

Bill Shuck
President

Attachments: Site Location Map (1)
Site Plan (1)
Table A: Analytical Results (2)
Laboratory Reports

TABLE A: LABORATORY RESULTS - PROJECT #93380-2

Sample Number	Date	Location	Analysis	Analyte	Results (ppm)	Cleanup Level (ppm)
1	9/12/94	Boring # 1 at 14.5-15.5 feet	Gasoline	WTPH-G	19	100
2	9/12/94	Boring # 1 at 19-20.5 feet	Gasoline EPA 8020	WTPH-G BETX	150 ND, 0.33,1.1,6.1	100 *
3	9/12/94	Boring # 2 at 14.5-15.0 feet	Gasoline	WTPH-G	ND	100
4	9/12/94	Boring # 2 at 20.0-21.5feet	Gasoline EPA 8020	WTPH-G BETX	ND ND	100 *
5	9/12/94	Boring # 3 at 14.0-14.5 feet	Gasoline	WTPH-G	ND	100
6	9/12/94	Boring # 3 at 20.0-21.0 feet	Gasoline EPA 8020	WTPH-G BETX	ND ND	100 *
7	9/12/94	Boring # 4 at 16.0-17.0 feet	Gasoline	WTPH-G	ND	100
8	9/12/94	Boring # 4 at 20.0-21.0 feet	Gasoline EPA 8020	WTPH-G BETX	76 0.17,1.2,0.9,6.1	
9	9/12/94	Boring # 4 at 21.5 feet after breaking through the silt layer	Gasoline EPA 8020	WTPH-G BETX	ND ND,0.09,ND,0.07	
10	9/26/94	South wall a depth of 12.0 feet	Gasoline EPA 8020	WTPH-G BETX	360 ND,0.7,1.6,14.0	
11	9/26/94	Bottom of the excavation a a depth of 20.0 feet	Gasoline EPA 8020	WTPH-G BETX	1,600 ND,45.0,21.0,170	
12	9/26/94	North wall at a depth of 15.0 feet	Gasoline EPA 8020	WTPH-G BETX	1,900 ND,16.0,19.0,170	

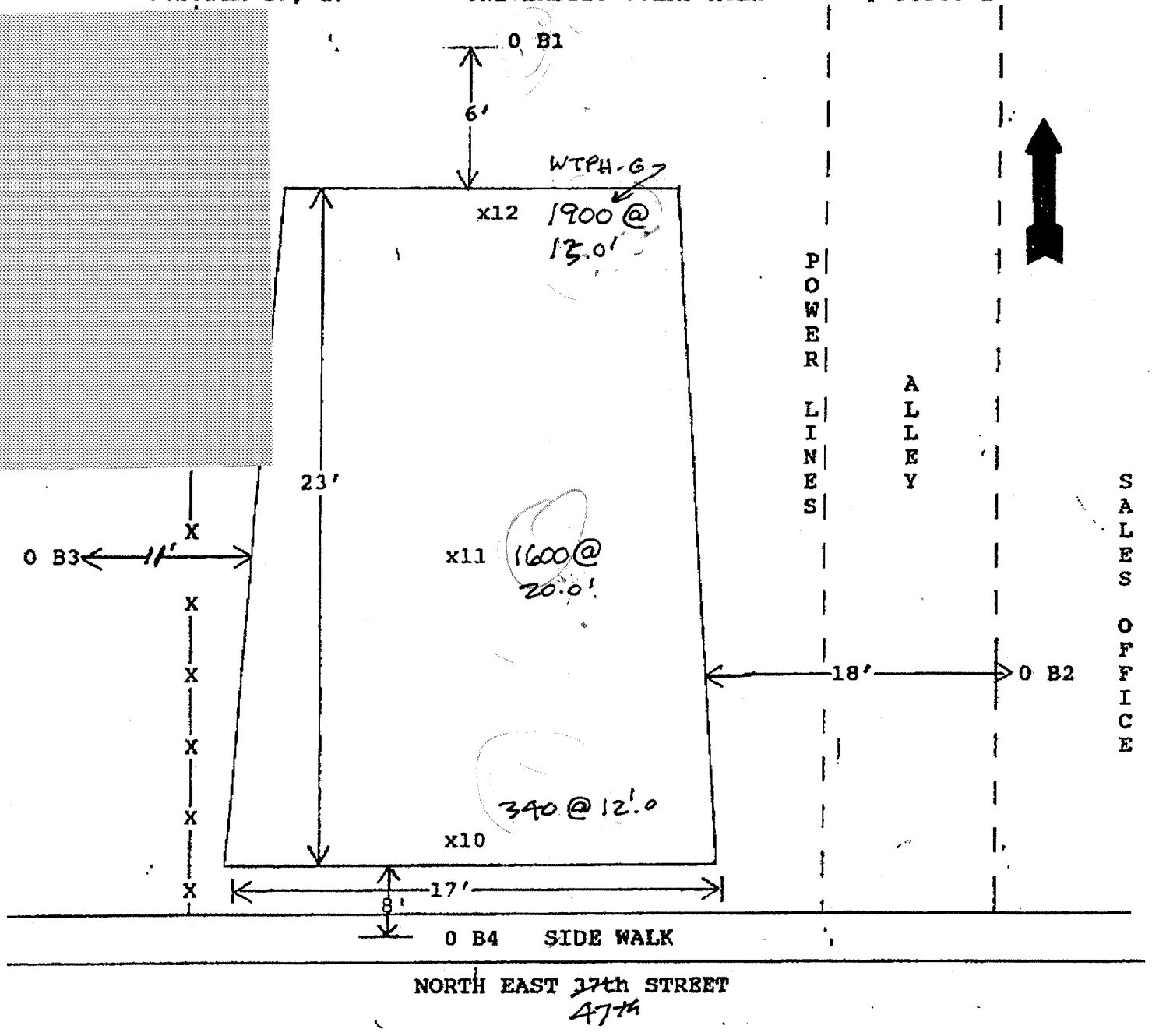
NOTES TO TABLE A

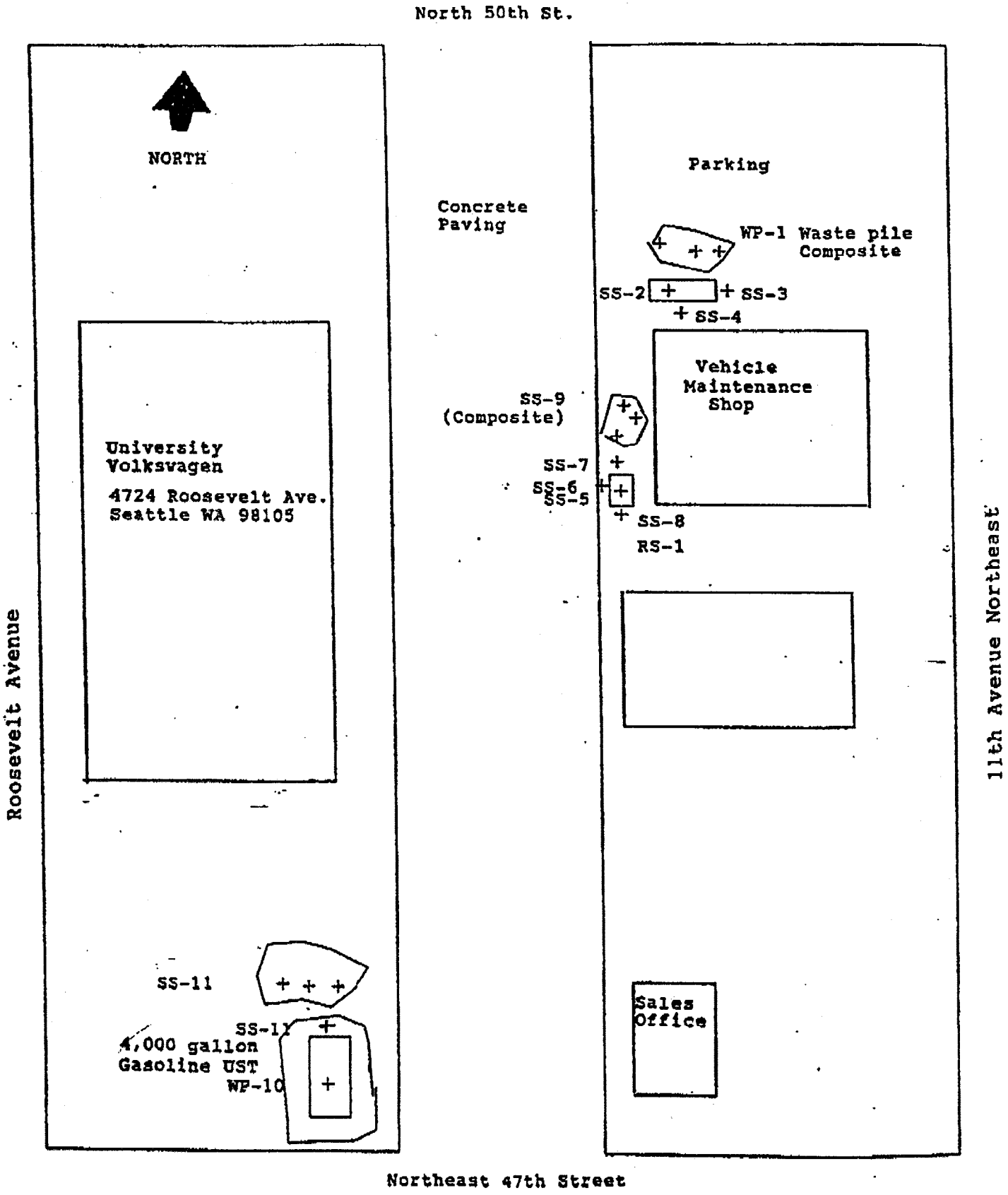
* Compound Specific
1) TPH denotes total petroleum hydrocarbons.
2) ND denotes none detected. Refer to laboratory reports for dectection limits.
3) ppm denotes parts per million.
4) Cleanup levels are Method A cleanup guidelines as specified in the Model Toxics Control Act, MTCA, where published.
5) B,T,E and X denote benzene, toluene, ethylbenzene and xylenes.

Lab Analysis

OCTOBER 27, 1994 UNIVERSTIY VOLKSWAGEN # 93380-2

Site Plan




North 50th St.
NORTH
Parking
Concrete Paving
WP-1 Waste pile Composite
SS-2
SS-3
SS-4
Vehicle Maintenance Shop
SS-9 (Composite)
SS-7
SS-6
SS-5
SS-8
RS-1
University Volkswagen
4724 Roosevelt Ave.
Seattle WA 98105
Roosevelt Avenue
11th Avenue Northeast
SS-11
SS-12
4,000 gallon Gasoline UST
WP-10
Sales Office
Northeast 47th Street

University Volkswagen Underground Storage Tank Removal
Sample Log

Sample #	Date	Location	Methods	Analyses-PPM
WP-1	9/22/93	Waste Oil tank Composite of stockpile	WTPH-418.1	35
SS-2	9/22/93	Waste Oil tank pit center of pit 11' down	WTPH-418.1	32
SS-3	9/22/93	Waste Oil tank pit east wall 6' deep	WTPH-418.1	20
SS-4	9/22/93	Waste Oil tank pit south wall 7' deep	WTPH-418.1	26
SS-5	9/23/93	Lube Oil tank pit 10' down	WTPH 418.1	58
SS-6	9/23/93	Lube Oil tank pit west wall 4' deep	WTPH-418.1	18
SS-7	9/23/93	Lube Oil tank pit north wall 4' deep	WTPH-418.1	19
SS-8	9/23/93	Lube Oil tank pit south wall 3' deep	WTPH-418.1	49,000
SS-9	9/23/93	Lube Oil tank pit composite of spoil pile	WTPH-418.1	800
RS-1	12/13/93	Lube Oil tank pit Resample south wall after overexcavation	EPA-418.1	40
WP-10	9/23/93	Gasoline tank pit bottom of pit 10' deep	WTPH-G Benzene Toluene Ethyl Benzene Xylenes Lead	57 .20 .96 1.5 8.0 4.8
SS-11		Gasoline tank pit north wall 3' deep	WTPH-G Benzene Toluene Ethyl Benzene Xylenes	5,100 21 280 110 620
SS-11	11/12/93	Gasoline tank pit grab sample profile for disposal	See Appendix B Laboratory Results	

SOUND ANALYTICAL SERVICES, INC.

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DATA QUALIFIER FLAGS

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final exract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

E: The concentration of this analyte exceeded the instrument calibration range.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

N: See analytical narrative.

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NORTHMARK BUILDING
200 SOUTH 333RD STREET - SUITE 120
FEDERAL WAY, WASHINGTON 98003

OFFICE: 206/838-7261
FAX: 206/927-2610

CHAIN OF CUSTODY RECORD

Page 1 of 1

Project# 93580-2
Project Name UNIVERSITY VW
Client UVW
Results to Rob Will / Cat HEB

Sample #	Location	Sample Description	Date	Time	Sample Type	Analysis Required
10	SOUTH WALL	AT 12.'	9-26	3P	Soil	WTPH-G/BETX
11	BOTTOM EXCAVATION	AT 20'	9-26	3:15	"	WTPH-G/BETX
12	NORTH WALL	AT 15'	9-26	5:35	"	WTPH-G/BETX

Sample Type: A=Air B=Bulk S-Soil W-Water Other-Describe

Special Instructions INVOICE UNIVERSITY VW AS B-fore

SIGNATURES: (Name, Company, Date and Time) Laboratory Name: SAS

1. Relinquished by: BENW/ HEBeard 9-27-94 2:15 2. Relinquished by:

Received by: Dan Nguyen 9-27-94 2:15 Received by:

Delivered by: Hand ✓ UPS _____ Airborne _____ Fed X _____ Other _____

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: October 10, 1994

TO: University Volkswagon

PROJECT: 93380-2

LABORATORY NUMBER: 43467

Enclosed are the original and one copy of the Tier II data deliverables package for Laboratory Work Order Number 43467. Three samples were received for analysis at Sound Analytical Services, Inc., on September 27, 1994.

Should there be any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Andrew J. Riddell

for Thomas Boyden
Project Manager

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: University Volkswagon Date: October 10, 1994

Report On: Analysis of Soil Lab No.: 43467

IDENTIFICATION:
Samples received on 09-27-94
Project: 93380-2

ANALYSIS:

Lab Sample No. 43467-1 Client ID: 10

WTPH-G with BTEX by EPA Method 8020
Date Extracted: 10-5-94
Date Analyzed: 10-5-94
Units: mg/kg

Parameter	Result	PQL	Flag
Gasoline (C7 - C12)	340	11	X1
Benzene	ND	0.54	
Toluene	0.70	0.54	
Ethyl Benzene	1.6	0.54	
Xylenes	14	0.54	

SURROGATE RECOVERY, %

Trifluorotoluene	NR	X8

X1 - Aged gas or heavier oil
NR - Not Reported
ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

University Volkswagon
Project: 93380-2
Lab No. 43467
October 10, 1994

Lab Sample No. 43467-2 Client ID: 11

WTPH-G with BTEX by EPA Method 8020
Date Extracted: 10-5-94
Date Analyzed: 10-5-94
Units: mg/kg

Parameter	Result	PQL	Flag
Gasoline (C7 - C12)	1,600	21	X1
Benzene	ND	1.1	
Toluene	45	1.1	
Ethyl Benzene	21	1.1	
Xylenes	170	1.1	
SURROGATE RECOVERY, %			
Trifluorotoluene	NR		X8

X1 - Aged gas or heavier oil
NR - Not Reported
ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

University Volkswagon
Project: 93380-2
Lab No. 43467
October 10, 1994

Lab Sample No. 43467-3 Client ID: 12

WTPH-G with BTEX by EPA Method 8020
Date Extracted: 10-5-94
Date Analyzed: 10-6-94
Units: mg/kg

Parameter	Result	PQL	Flag
Gasoline (C7-C12)	1,900	22	X1
Benzene	ND	1.1	
Toluene	16	1.1	
Ethyl Benzene	19	1.1	
Xylenes	170	1.1	
SURROGATE RECOVERY, %			
Trifluorotoluene	NR		X8

X1 - Aged gas or heavier oil
NR - Not Reported
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SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

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QUALITY CONTROL REPORT

WTPH-G with BTEX by EPA Method 8020

Client: University Volkswagon
Lab No: 43467qc
Units: mg/kg

Date Extracted: 10-5-94
Date Analyzed: 10-5-94

METHOD BLANK

Blank No. 94100506

Parameter	Result	PQL
Gasoline	ND	1.0
Benzene	ND	0.05
Toluene	ND	0.05
Ethyl Benzene	ND	0.05
Xylenes	ND	0.05
SURROGATE RECOVERY%		
Trifluorotoluene	92	

ND = Not Detected
PQL = Practical Quantitation Limit

DUPLICATE

Dup No. 43631-1 Batch QC

Parameter	Sample Result	Duplicate Result	RPD
Gasoline	693	677	2.3
Benzene	ND	ND	NC
Toluene	0.155	0.159	2.5
Ethyl Benzene	0.759	0.712	6.4
Xylenes	11.4	10.4	9.2

RPD = Relative Percent Difference
NC = Not Calculated

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

BTEX by EPA Method 8020

Client: University Volkswagon
Lab No: 43467qc
Units: mg/kg

Date Extracted: 10-5-94
Date Analyzed: 10-5-94

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

MS/MSD No. 43631-1 Batch QC

Parameter	Sample Result	MS Amount	MS Result	MS %R	MSD Amount	MSD Result	MSD %R	RPD
Benzene	ND	1.01	0.750	74.3	1.08	0.779	72.1	3.0
Toluene	0.155	1.01	0.999	83.6	1.08	1.08	85.7	2.5
Ethyl Benzene	0.759	1.01	1.77	100	1.08	1.94	109	8.6
Xylenes	11.4	3.03	12.6	39.6	3.24	14.7	102	88
Flag				X7				X7a

%R = Percent Recovery
MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

BLANK SPIKE

BS No. 94100503

Parameter	BS Result	BS Amount	BS %R
Benzene	43.0	45.4	94.7
Toluene	43.7	45.4	96.3
Ethyl Benzene	48.7	45.4	107
Xylenes	143	136	95.1

%R = Percent Recovery
BS = Blank Spike

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Project# 93380-2
Project Name University VW
Client UVW
Results to Rob Will / Ecy HEB

Sample #	Location	Sample Description	Date	Time	Sample Type	Analysis Required
10	South wall	at 12.'	9-26	3P	Soil	WTPH-G/BETX
11	Bottom Excavation	at 20'	9-26	3:15	"	WTPH-G/BETX
12	North wall	at 15'	9-26	3:35	"	WTPH-G/BETX

Sample Type: A=Air B=Bulk S-Soil W-Water Other-Describe

Special Instructions Invoice University VW as B-tex

SIGNATURES: (Name, Company, Date and Time) Laboratory Name: SAS

1. Relinquished by: BENW/ HEBeach 9-27-94 2:15 2. Relinquished by: _____

Received by: Dan Nguyen 9-27-94 2:15 Received by: _____

Delivered by: Hand ✓ UPS _____ Airborne _____ Fed X _____ Other _____

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: October 10, 1994

TO: University Volkswagon

PROJECT: 93380-2

LABORATORY NUMBER: 43467

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Sincerely,

Andrew J Riddell

FOR Thomas Boyden
Project Manager

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: University Volkswagon Date: October 10, 1994

Report On: Analysis of Soil Lab No.: 43467

IDENTIFICATION:
Samples received on 09-27-94
Project: 93380-2

ANALYSIS:

Lab Sample No. 43467-1 Client ID: 10

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Date Extracted: 10-5-94
Date Analyzed: 10-5-94
Units: mg/kg

Parameter	Result	PQL	Flag
Gasoline (C7 - C12)	340	11	X1
Benzene	ND	0.54	
Toluene	0.70	0.54	
Ethyl Benzene	1.6	0.54	
Xylenes	14	0.54	
SURROGATE RECOVERY, %			
Trifluorotoluene	NR		X8

X1 - Aged gas or heavier oil
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SOUND ANALYTICAL SERVICES, INC.

University Volkswagon
Project: 93380-2
Lab No. 43467
October 10, 1994

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Date Extracted: 10-5-94
Date Analyzed: 10-5-94
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Parameter	Result	PQL	Flag
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Toluene	45	1.1	
Ethyl Benzene	21	1.1	
Xylenes	170	1.1	
SURROGATE RECOVERY, %			
Trifluorotoluene	NR		X8

X1 - Aged gas or heavier oil
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University Volkswagon
Project: 93380-2
Lab No. 43467
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Date Extracted: 10-5-94
Date Analyzed: 10-6-94
Units: mg/kg

Parameter	Result	PQL	Flag
Gasoline (C7 - C12)	1,900	22	X1
Benzene	ND	1.1	
Toluene	16	1.1	
Ethyl Benzene	19	1.1	
Xylenes	170	1.1	
SURROGATE RECOVERY, %			
Trifluorotoluene	NR		X8

X1 - Aged gas or heavier oil
NR - Not Reported
ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

WTPH-G with BTEX by EPA Method 8020

Client: University Volkswagon
Lab No: 43467qc
Units: mg/kg

Date Extracted: 10-5-94
Date Analyzed: 10-5-94

METHOD BLANK

Blank No. 94100506

Parameter	Result	PQL
Gasoline	ND	1.0
Benzene	ND	0.05
Toluene	ND	0.05
Ethyl Benzene	ND	0.05
Xylenes	ND	0.05
SURROGATE RECOVERY%		
Trifluorotoluene	92	

ND = Not Detected
PQL = Practical Quantitation Limit

DUPLICATE

Dup No. 43631-1 Batch QC

Parameter	Sample Result	Duplicate Result	RPD
Gasoline	693	677	2.3
Benzene	ND	ND	NC
Toluene	0.155	0.159	2.5
Ethyl Benzene	0.759	0.712	6.4
Xylenes	11.4	10.4	9.2

RPD = Relative Percent Difference
NC = Not Calculated

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

BTEX by EPA Method 8020

Client: University Volkswagon
Lab No: 43467qc
Units: mg/kg

Date Extracted: 10-5-94
Date Analyzed: 10-5-94

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

MS/MSD No. 43631-1 Batch QC

Parameter	Sample Result	MS Amount	MS Result	MS %R	MSD Amount	MSD Result	MSD %R	RPD
Benzene	ND	1.01	0.750	74.3	1.08	0.779	72.1	3.0
Toluene	0.155	1.01	0.999	83.6	1.08	1.08	85.7	2.5
Ethyl Benzene	0.759	1.01	1.77	100	1.08	1.94	109	8.6
Xylenes	11.4	3.03	12.6	39.6	3.24	14.7	102	88
Flag				X7				X7a

%R = Percent Recovery
MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

BLANK SPIKE

BS No. 94100503

Parameter	BS Result	BS Amount	BS %R
Benzene	43.0	45.4	94.7
Toluene	43.7	45.4	96.3
Ethyl Benzene	48.7	45.4	107
Xylenes	143	136	95.1

%R = Percent Recovery
BS = Blank Spike