

BISON ENVIRONMENTAL NORTHWEST, INC.

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

RECEIVED

May 10, 1995

Mr. Gordon Tang 17223 32nd Avenue South, SeaTac, Washington 98188 MAY 1 0 1995

DEPT. OF ECULUAY

Re: Phase II Environmental Site Assessment

Tang Property

16020 32nd Avenue South

SeaTac, Washington

Project Number 95532-1

References: 1) Bison Environmental Northwest, Inc., March 1995
"Underground Storage Tank Removal, Site Assessment
Report, Tang Property, Project No. 95532"

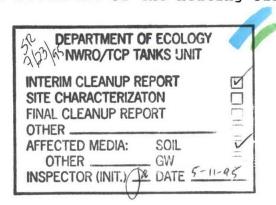
2) Bison Environmental Northwest, Inc., April 1995 "Underground Storage Tank Removal, Site Assessment Report, Tang Property, Project No. 95532-2"

Dear Mr. Tang:

In response to your recent request, Bison Environmental Northwest, Inc., is pleased to provide this Phase II Environmental Site Assessment (ESA) report for your property in SeaTac, Washington.

As discussed in the referenced reports, the site had been used by a heating oil distributor, and five underground storage tanks (USTs) were present on the site. The tanks were reportedly installed around 1950, and were closed during March and April of 1995. The USTs consisted of a 500-gallon gasoline tank, and four heating oil tanks with capacities ranging from 10,000 to 12,000 gallons.

Three of the four heating oil USTs were removed from a common excavation during March of 1995. The fourth heating oil tank was located directly north of the excavation. This tank was closed in place to avoid structural damage to a Taco Time restaurant which is located on the neighboring property to the north. The gasoline UST was located at a later date, and removed during April of 1995. This tank was located southwest of the heating oil USTs.



Independent Action Report Update

Site Name: Thug Property
Inc. #: 567/ Date of Report: May 10, 95
County: Kuin Date Report Rec'd: May 10, 95
Reviewed by: Joe Hickey
Comments (please include: free prod., tank info., contaminant migration, GW depth & flow, conc. trends, PCS treated?):
3 buck heating oil storage tanks
were removed in Mar. 95. Another
was closed in place because it was
under a structure. PCS was
excavated during the tank removal,
but it was but back in the excava-
tion. More PCS exists than what
was dieg out, possibly in excess of
760 yds. It's likely some PCS
is under the structure, and it's
3 o saible that there has been off-
site impacts.
,
No. 19. William Control of the Contr

Site assessment at the time of UST closure was conducted by our firm. Laboratory analysis of soil samples collected during closure reported diesel fuel concentrations of 1,000 parts per million (ppm) in the overburden stockpile and 330 ppm in the northwest corner of the heating oil UST excavation. These concentrations exceed the 200 ppm "Method A" cleanup level for diesel fuel in soil as specified in the Model Toxics Control Act (MTCA). The overburden material was returned to the excavation shortly after UST closure for safety reasons.

No concentrations of diesel fuel in excess of 200 ppm were reported in the remaining soil samples collected from the heating oil UST excavation. Soil samples collected from the gasoline UST excavation were analyzed for gasoline, benzene, toluene, ethylbenzene, xylenes, and lead. No concentrations in excess of MTCA "Method A" cleanup levels for these contaminants were reported in any of the samples.

This study was conducted to provide further information on the extent of the contamination identified in the northern portion of the heating oil UST excavation.

SCOPE OF WORK

The scope of work for this project was outlined in our proposal letter dated March 15, 1995, and included:

- Drilling 3 test borings on the property.
- Collecting soil samples from the borings.
- Laboratory analysis of selected samples.
- Preparation of this report summarizing our findings.

METHODOLOGY

The test borings were drilled on April 5, 1995, using a trailer-mounted, B-24 hollow-stem auger drill rig provided and operated by Boretech, Inc. of Bellevue, Washington. Henry Perrin of Bison Environmental Northwest was on site to observe the drilling, log subsurface conditions, and collect soil samples. A brief description of the drilling and sampling process follows.

The auger was advanced to the desired sampling depth. A split spoon sampler and connecting rods were then lowered through auger, and driven 18-inches into the soil using a 140-pound hammer in accordance with ASTM designation D-1586. The sampler was then removed from the auger, opened, and the contents inspected.

Soils were classified according to the Unified System (ASTM Designation D-2487). Sampling protocols followed during this project were in accordance with WDOE and EPA guidelines, and are summarized below.

Samples were collected at intervals of roughly 2.5 feet, 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. To prevent cross-contamination, the split spoon was cleaned and rinsed between samples using laboratory-grade detergent and distilled water.

After each boring was completed, the cuttings produced by drilling were returned to the bore hole, and the surface was sealed with concrete.

Samples were taken to OnSite Environmental of Redmond, Washington. "Worst case" samples from two of the borings were selected for preliminary analysis based on indications of contamination observed during sampling. Since at least two different petroleum products were stored on the site, the two samples were analyzed using the WTPH-HCID method. This method is a qualitative analysis used to determine which types of petroleum products, if any, are present in a sample.

Based on the presence of diesel fuel as reported by the WTPH-HCID analysis, further quantitative analysis was conducted for diesel fuel range hydrocarbons using the WTPH-D method. This analysis was conducted on four samples, including the two worst case samples, and was intended to provide information on the physical extent and severity of the diesel contamination.

RESULTS

Surface

The site is currently vacant, and was reportedly last occupied by an automotive towing company. A single-story building which is roughly 500 square feet in size is present in the northwest portion of the site. Most of the remaining area is asphalt or gravel surfaced.

As indicated in the site plan (Appendix A), the three removed heating oil USTs were located on the northeast portion of the property. The fourth heating oil tank, which was closed in place, is located directly north of the removed USTs. Approximately one-half of this tank is located on the adjacent Taco Time property. The gasoline UST was located south of the heating oil USTs.

Land use in the surrounding area is a combination of retail and residential development. The property is bordered to the north by a Taco Time restaurant, and to the northeast by an apartment building. To the south is South 161st Street, followed by a single-family residence. To the west is 32nd Avenue South, followed by Pacific Highway South and retail development.

Embankments along the southern and eastern property lines slope downward onto the property, and topography in the general area slopes gently to moderately to the north and west.

Subsurface Conditions

Subsurface soils encountered during this study were similar at all explored locations, consisting of an asphalt and subgrade layer underlain by silts and fine grained sands, with medium-grained sands beginning at depths of roughly 16 feet.

Odors and some blue-gray discoloration characteristic of petroleum hydrocarbon contamination were noted in borings B1 and B2 beginning at depths of 3 to 5 feet, and extending down to depths of 10 to 11 feet. Odors were also noted in a sample collected from near the bottom of boring B3 at a depth of 15.5 feet, however these were thought to be due to natural organic decay and the boring was terminated at a depth of 16.5 feet.

Please refer to Appendix A for a detailed description of soil conditions encountered at each test boring location. The boring locations are also included in Appendix A.



Laboratory Results

The results of laboratory analysis of samples collected during this study are summarized in the following table. The laboratory report documenting analysis is included in Appendix B.

TABLE A: ANALYTICAL RESULTS

Sample Number	Location	Analysis	Analyte	Results	Cleanup Level
B1-2	B1 @ 8.5'	WTPH-HCID WTPH-D	Gas Diesel Oils Diesel	ND Detected ND 670 ppm	100 ppm 200 ppm 200 ppm 200 ppm
B1-4	B1 @ 15.5'	WTPH-D	Diesel	ND	200 ppm
B2-2	B2 @ 8'	WTPH-D	Diesel	420 ppm	200 ppm
B3-4	B3 @ 15.5'	WTPH-HCID WTPH-D	Gas Diesel Oils Diesel	ND Detected ND 1600 ppm	100 ppm 200 ppm 200 ppm 200 ppm

NOTES:

- 1) ppm indicates parts per million.
- 2) Cleanup levels are Method A cleanup levels as specified in the Model Toxics Control Act, WAC 173-340.
- 3) Results in bold type exceed cleanup levels.
- 3) ND denotes none detected. Refer to laboratory report for analytical detection limits.

CONCLUSIONS

Based on the results of this study and our previous studies, the following conclusions are offered:

- Vertically, the diesel fuel contamination identified northwest of the heating oil UST excavation appears to be limited to a layer which begins at a depth of 3 to 5 feet and extends to roughly 10 feet. Diesel fuel contamination along the northeast side of this excavation appears to extend to depths greater than 15.5 feet.
- Laterally, the extent of diesel contamination has not been fully defined. However, it appears likely that the area of contaminated soil extends to the west beneath the existing building on the site, and beyond the property line to the east and north. It is also likely that contaminated soil is present beneath the Taco Time building located on the adjacent property to the north.
- The scope of work for this project was limited to drilling three test borings on the site. Given the extent of contamination encountered, further exploration, either by drilling or excavating test pits, would be required to provide an accurate estimate of the quantity of contaminated soil.

However, it appears that at least 300 cubic yards of contaminated soil are present on the subject property to the west of the excavation. It is likely that at least 100 cubic yards are present on the property to the east of the excavation. In addition to this material, on the order of 300 cubic yards of contaminated overburden are present in the excavation. The total figure of 700 cubic yards should be considered a "low end" estimate, and the actual quantity of contaminated soil present on the property may be considerably higher. This estimate does not include contaminated soil which may be present on adjacent properties to the north and east.

RECOMMENDATIONS

We recommend that remediation of this site begin as soon as possible. Delaying remedial activities will result in the further spread of contamination, thereby increasing future cleanup costs.

The selected remedial approach for this site will depend upon a number of factors, including time and budget constraints, issues related to adjacent properties, and future plans for the property. Excavation of the contaminated soil, as opposed to "in situ" (in place) treatment, would probably be most effective given the soil types and type of contaminant.

Once the contaminated soil has been excavated, it can be treated on site by landfarming, or transported to an off-site facility for treatment or disposal. Landfarming is generally less expensive, but requires significant time (usually 3 months to 2 years) and space. There is probably adequate space on the property to conduct a landfarming operation, however, this might prevent use of the site for other purposes.

A number of facilities in the State of Washington are licensed to accept petroleum contaminated soil. Trucking the contaminated soil to one of these facilities would provide a relatively fast but more expensive solution.

As previously noted, it is likely that contaminated soil is present beneath the on-site building. Alternatives to address this situation include 1) demolition of the structure followed by remedial excavation, 2) leaving contaminated soil in place until such a time as the structure is demolished, and 3) relocating or temporarily supporting the structure during remedial excavation. The selected alternative would depend upon future plans for the property. However, it is likely that the third option would not be cost-effective. If the second option is selected, we recommend further subsurface exploration around the structure, and excavation of all contaminated soil on the property which can be removed without causing structural damage.



LIMITATIONS

This report has been prepared for the exclusive use of the client and their representatives for specific application to this site. The work for this project was conducted in a manner consistent with generally accepted environmental science practices for consultants acting under similar conditions 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, 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. Should you have any questions or if there is additional information that you require, please do not hesitate to contact us.

Sincerely,

Henry Perrin

Environmental Engineer

WDOE-registered UST Site Assessor

William Shuck

President

Attachments:

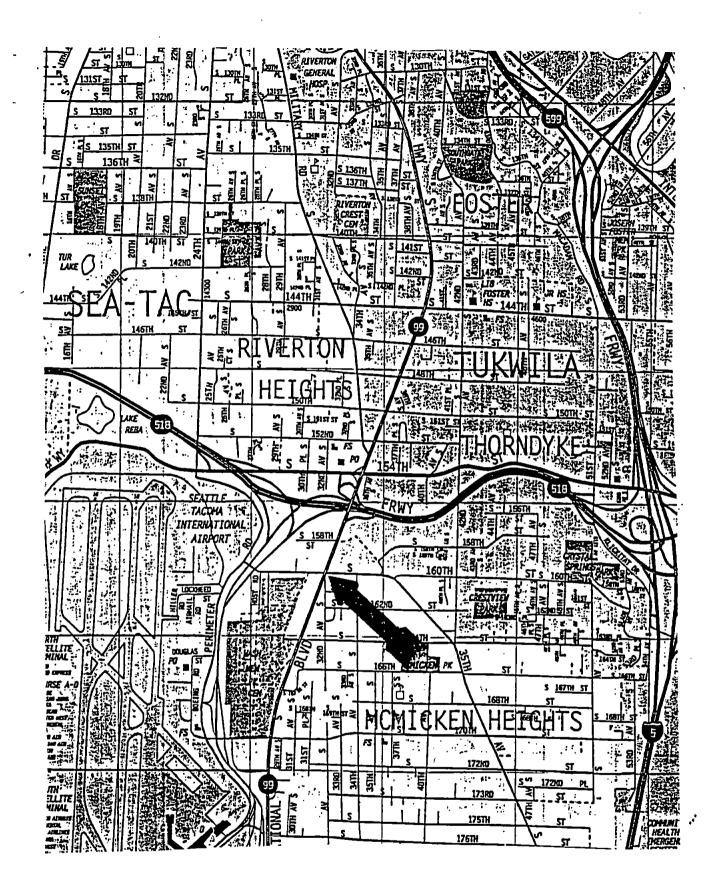
Appendix A: Site Location, Site Plan, and Soil Logs (3)

Appendix B: Laboratory Report (16)

cc: Washington Department of Ecology, NWRO

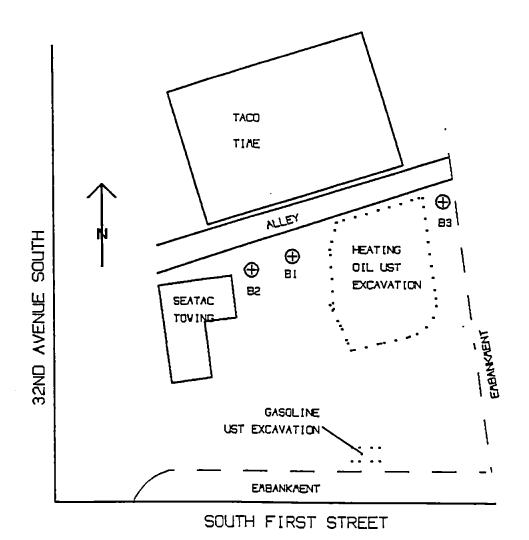
APPENDIX A

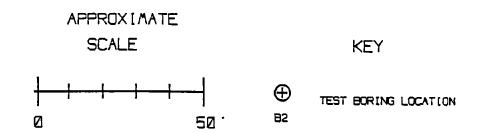
Site Location, Site Plan and Soil Logs



SITE LOCATION Tang Property SeaTAc, Washington Bison Environmental Northwest, Inc. Project Number 95532-1 May 1995







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SITE PLAN
Tang Property
SeaTAc, Washington

Bison Environmental Northwest, Inc.
Project Number 95532-1
May 1995

THE STATE OF THE S

DEPTH LET	SMPLE	d Out	KODÍ GROUNÍ	WATER	SOIL DESCRIPTION
0 5		10		SA	ASPHALT SURFACE LIGHT BROWN AND GRAY, SILTY FINE- GRAINED SAND. MOIST, LOOSE - MODERATE DIESEL ODOR
	2	20		۸۱	LIGHT BRYON AND GRAY, SLIGHTLY SANDY PLASTIC SILT, MOIST, VERY STIFF - MODERATE DIESEL ODOR
15	3A 3∃ 4	23			LIGHT BROWN, SILTY FINE-GRAINED SAND ADIST, DENSE
20	5	69		SA	- BECOMES FINE TO MEDIUM GRAINED
25					BORING TERAINATED AT 21.5 FEET B.G. SOIL APPEARS CONTAMINATED FROM 3 TO 11 FEET
30					NO GROUNDYATER ENCOUNTÉRED
35					
40					

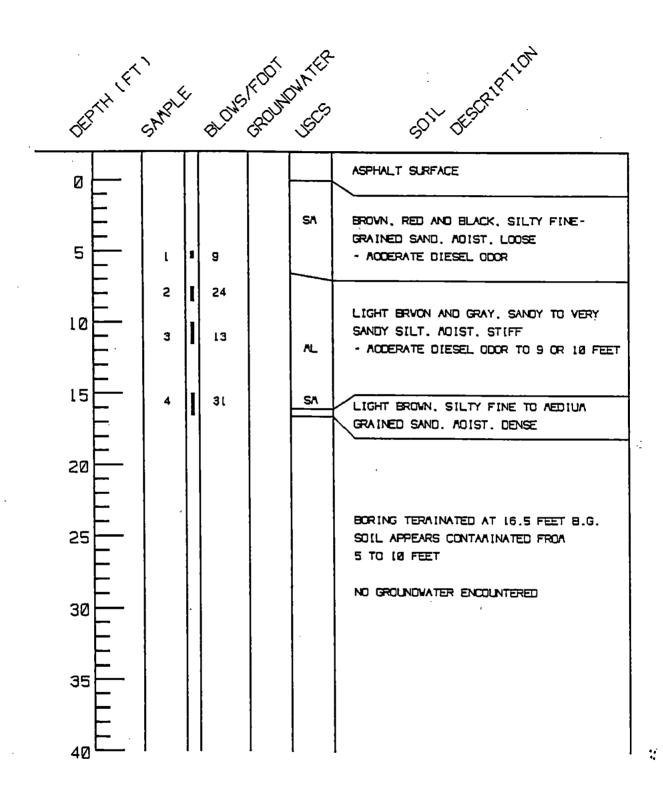
SOIL LOG: TEST BORING B1

Tang Property SeaTAc, Washington

Bison Environmental Northwest, Inc. Project Number 95532-1
May 1995



TEST BORING B2



SOIL LOG: TEST BORING B2

Tang Property

SeaTAc, Washington

Bison Environmental Northwest, Inc.

Project Number 95532-1

May 1995



TEST BORING B3

DEPTH LET	SMPLE B	Jue Galingun	SES SOIL DESCRIPTION
0			ASPHALT SURFACE
5 1 1 1	ι <mark>1</mark> a	NO AL	LIGHT BROWN, VERY SANDY SILT, MOIST, VERY STIFF
. E	2 1	6	LIGHT BROWN. SILTY FINE TO MEDIUM
10	з 📗 а	9 5	GRAINED SAND ADIST DENSE
15	4	j3	- AUSTY ODOR IN SAAPLE 4 (LS TO (6.5 FEET)
20			
25			BORING TERMINATED AT 16.5 FEET B.G.
30			NO GROUNDVATER ENCOUNTERED
35			
40			

SOIL LOG: TEST BORING B3

Tang Property SeaTAc, Washington

Bison Environmental Northwest, Inc. Project Number 95532-1 May 1995



APPENDIX B Analytical Results



April 19, 1995 Lab Traveler #:04-011

Henry Perrin Bison Environmental Northwest Inc. 200 S 333rd Street, Suite 120 Federal Way, WA 98003

Dear Henry:

Enclosed are the results of the analyses of samples submitted on April 7, 1995 from Project 95532-1.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this report, please feel free to call me.

Sincerely,

Wendý Linn McLeod Project Chemist

Enclosures

Date Extracted: Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Client ID	Lab ID	Dilution	Total Petroleum	o-terphenyl	Flags Method
		Factor	Hydrocarbons	Surrogate Rec.	PQL
B1-2	04-011-2	1.0	670	86%	25

Project: 95532-1

Date Extracted: 04-07-95 Date Analyzed: 04-07-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: MB0407S1. Client ID: Batch QA

	Dilution Factor	Total Petroleur Hydrocarbons	•	Surrogate Recovery	PQL
Method Blank	1.0	ND		88%	25

Project: 95532-1

DUPLICATE QUALITY CONTROL

Date Extracted:

04-07-95

Date Analyzed:

04-07-95

Matrix: Soil

Units: mg/Kg (ppm)

Client ID: Batch QA

Lab ID: 04-006-5

Dilu Fac			Flags PQL
Sample 1	.0 111	81%	25
Duplicate 1.	.0 74.3 40.0%	89%	25 K

K-Sample duplicate data out of control due to sample inhomogeniety. Sample reextracted and reanalyzed with similar results.

Project: 95532-1

SB/SBD QUALITY CONTROL

Date Extracted: 04-07-95 Date Analyzed: 04-07-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: SB0407S1 Client ID: Batch QA

		l Petroleum Irocarbons	Percent Recovery	Surrogate Recovery	Flags	PQL
Spike Blank @ 100 ppm	1.0	102	102%	106%		25
Spike Blank Duplicate	1.0	95.6	96%	100%		25
	5.4	6 1%			•	

Date Extracted: 04-12-95 Date Analyzed: 04-12-95

Matrix: Soil

Units: mg/Kg (ppm)

Client ID Lab ID	Dilution Total Petroleum	o-terphenyi Flags Method
	Factor Hydrocarbons	Surrogate Rec. PQL
B3-4 04-011-15	1.0 1600	F 25

F-Surrogate recovery data not available due to the high concentration in the sample.

Project: 95532-1

METHOD BLANK QUALITY CONTROL

Date Extracted: 04-12-95 Date Analyzed: 04-12-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: MB0412S1 Client ID: Batch QA

		Dilution	Total Petroleum	Flags	Surrogate	PQL
		Factor	Hydrocarbons		Recovery	
Method Blank	, ,	1.0	ND		92%	25

Date of Report: April 19, 1995 Samples Submitted: April 7, 1995

Lab Traveler: 04-011 Project: 95532-1

WTPH-D DUPLICATE QUALITY CONTROL

Date Extracted: 04-12-95 Date Analyzed: 04-12-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: 04-011-15 Client ID: Batch QA

	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery	Flags	PQL
Sample Duplicate	1.0 1.0	1440 1420	F		25 25
RPD		1.7%			

F-Surrogate recovery data not available due to the high concentration in the sample.

Project: 95532-1

SB/SBD QUALITY CONTROL

Date Extracted: 04-12-95 Date Analyzed: 04-12-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: SB0412S1 Client ID: Batch QA

	Dilution Factor	Total Petroleum Hydrocarbons	Percent Recovery	Surrogate Recovery	Flags
Spike Blank @ 100 ppm	1.0	104	104%	109%	
Spike Blank Duplicate	1.0	96.6	97%	101%	
RPD		7.7%			

Date Extracted: 4-7-95 Date Analyzed: 4-7-95

Matrix: Soil

Client ID	GC Characterization		o-terphenyl Surrogate
			Recovery
B1-2	<20 ppm Gasoline range l	nydrocarbons	103%
	Diesel range hydrocarb	ons	
	<100 ppm Oil range hydro	carbons	
B3-4	<20 ppm Gasoline range l	ıvdrocarbons	106%
	Diesel range hydrocarb		
	<100 ppm Oil range hydro		

Method Blank	٠.	 <20 ppm Gasoline range hydrocarbons		91%
e, •	•	<50 ppm Diesel range hydrocarbons	7.	
		<100 ppm Oil range hydrocarbons		

Date Extracted: 4-17-95 Date Analyzed: 4-17-95

Matrix: Soil

Units: mg/Kg (ppm)

Client ID	Lab ID	Dilution	Total Petroleum o-terphenyl	Flags	Method
		Factor	Hydrocarbons Surrogate Rec		PQL
B1-4	04-011-5	1.0	ND 75%		25
B2-2	04-011-8	1.0	420 84%		25

Date Extracted: 4-17-95 Date Analyzed: 4-17-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: MB0417S1 Client ID: Batch QA

	Dilution Factor	Total Petroleum Hydrocarbons	Flags	Surrogate PQL Recovery
Method Blank	1.0	ND		81% 25

Project: 95532-1

DUPLICATE QUALITY CONTROL

Date Extracted: Date Analyzed: 4-17-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: 04-041-10 Client ID: Batch QA

	Dilution Total Petroleum Factor Hydrocarbons	Surrogate Flags Recovery	PQL
Sample	1.0 ND	91%	25
Duplicate RPD	1.0 ND NA	101%	25

SB/SBD QUALITY CONTROL

Date Extracted: 04-17-95 Date Analyzed: 4-17&18-95

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: SB0417S1 Client ID: Batch QA

	Dilution Factor	Total Petroleum Hydrocarbons	Percent Surrog Recovery Recov	• ,	PQL
Spike Blank @ 100 ppm	1.0 1.0	84.6 87.8	85% 94% 88% 117°	-	25 25
Spike Blank Duplicate	1.0	3.8%	0070		20

Date Analyzed: 4-7&12-95

Client ID	il ex Landa e Landa e			% Moist	ıre
B1-2				17	-
B3-4				. 10	•
B1-4				23	٠.
B2-2		· ·		13	

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13 14

CHAIN OF CUSTODY RECORD

NORTHMARK BUILDING 200 BOUTH 333RD STREET - BUITE 120		Page	1 of 95532-1		
FEDERAL WAY, WASHINGTON 98003		ilts to	lary R	M	
•	WL	M			
mple # Location	Sample Description	Date		Sample Type	Analysis Required
Si-1 BI 0 6		4/5	#30 5/40	3	WINHOD HOLD
1-2 BI A) 85	<u> </u>		940	 -	WITH-HOLD
1-3A 11 10-			lt io	 	Holo
31-30 11 11			1610		
1-4 11 15.5	1		1026		*WTPH-D
31-5 11 20,5			1040		
32-1 B2 a) 5			11.5		49
B1-2 B2 N 8	4		1115		WTPH-D
62-3 " a) 12.5			1120		
82-65 BZ (mth N)			1125	<u>.:</u>	
BZ-4 BZ W/6'			1140		
B3-1 69 2.55		4	1240	1	
33-7 B3 W 8	·		1525		<i> </i>
35-3 B3 W 10.5	·	<u></u>	100		1
	e: A=Air B=Bulk S	-Soil W-Wat	ter	Other-Descr	ibe WIPH-HCID
ecial Instructions 1					
					
GNATURES: (Name, Company,	Date and Time) L	aboratory Nam	ne: 0,0	;;/e	
	1/// 11/11/10	530 / 2. Rel			
Relinquished by: BENW/	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \)) . Kel	rriidarsii	· //	21 1/2h
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