ROBINSON NOBLE SALTBUSH INC. Established 1947
GROUNDWATER & ENVIRONMENTAL SCIENTISTS

December 8, 2008

Russell Post
Environmental Compliance Manager
Tacoma Public Utilities
3628 South 35th Street
Tacoma, WA 98409-3192

Re: **Adams Street Substation Soil Investigation**

Dear Mr. Post:

Robinson, Noble & Saltbush, Inc. is pleased to present this letter report documenting the concrete slab and soil investigation of the substation located on North 19TH Street in Tacoma, Washington. This investigation is being performed at the request of Tacoma Public Utilities in order to assess the presence/absence of contamination as a result of the property's past use as an electrical substation.

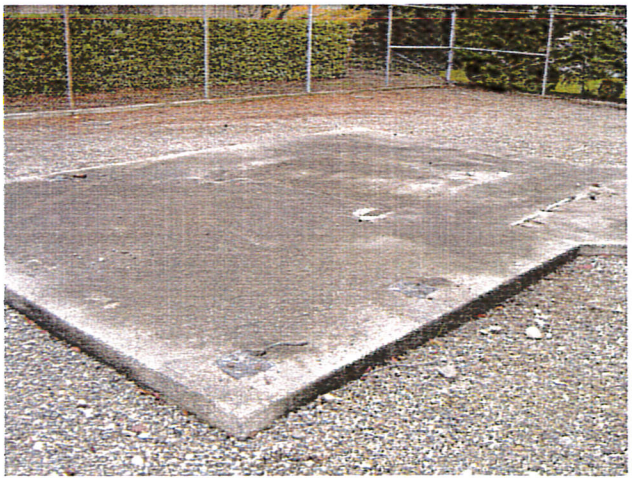


**Figure 1: Former Adams Street Substation**

The subject property is located at 3713 North 19TH Street in Tacoma, Washington, with a postal zip code of 98406. The subject property is located at Township 21 North, Range 02 East, Section 36 and is noted by the Pierce County Assessor-Treasurer's office as parcel number 7475021883. Figure 1 displays the general condition of the subject site. No structures or power equipment remain on the site. The only remnants of the former substation are salt wells and a cement slab that the power equipment was mounted upon. Figure 2 shows a typical salt well on the site. Figure 3 is a site detail map with the salt well, cement slab, and sample locations.

**Figure 2: On-site Salt Well**

On November 10, 2008, Robinson, Noble & Saltbush, Inc. personnel collected investigatory samples from the concrete slab, salt wells, and the perimeter of the concrete slab. The slab sample consisted of a three-point composite sample, taken from the middle portion of the slab. It was collected using a rotary-hammer drill with a masonry drill bit to drill three-quarter inch diameter holes, one-inch deep, into the

3011 South Huson Street, Suite A Tacoma, Washington 98409 • (253) 475-7711 • Fax: (253) 472-5846
e-mail: mail@robinson-noble.com

surface of the concrete slab. The concrete dust generated from the drill bit at each sample point was collected with a stainless-steel spoon and mixed in a stainless-steel bowl. The composite sample was then placed in a laboratory-supplied, four-ounce glass jar with a Teflon®-lined plastic lid. Upon completion of sampling the concrete slab, the salt wells were sampled next.

There are 26 salt wells positioned on the perimeter of the site. Each salt well has a concrete casing that is approximately three feet deep by one foot in diameter. All but seven of the salt wells have an open bottom. The wells without open bottoms have metal plates capping the bottoms. These plates could not be removed and prevented the retrieval of soil samples at these wells. The remaining wells were sampled using composite samples. Four, four to five-point, composite sample groups were collected (Figure 3). A sample from each well in a composite group was taken with a hand auger and thoroughly mixed in a stainless-steel bowl with stainless-steel sampling spoons with the other samples from the group. A portion of each composite soil sample was placed in a laboratory-supplied, four-ounce glass jar with a Teflon®-lined plastic lid. Soil types collected from the salt wells was generally silty sand and gravel. The hand auger and sample-mixing bowl were decontaminated using Alconox and water before sampling each composite group. New stainless-steel spoons were used for each composite sample.

A similar sampling procedure was used to take samples from the perimeter of the concrete slab. A total of eight, four-point composite samples were taken around the concrete slab. Stainless steel spoons were used to take samples approximately four to five inches below ground surface (beneath the upper three to four inches which was gravel fill material). All of the samples from a composite group were mixed in a stainless steel bowl with stainless-steel spoons. A portion of each composite sample was placed in a laboratory-supplied, four-ounce glass jar with a Teflon®-lined plastic lid. Soils sampled from around the slab were also silty sand and gravel. The sample-mixing bowl was decontaminated with Alconox and water between collecting each composite sample and a new sampling spoon was used for each composite.

The analytes of concern for the soil in the salt wells and around the concrete slab were mineral oil and polychlorinated biphenyls (PCBs). Only PCBs were analyzed for the concrete slab. The complete laboratory analytical results for this investigation are attached to this document.

None of the samples collected from the site yielded concentration values above the Practical Quantitation Limits (PQL) of 40 mg/kg for mineral oil and 0.5 mg/kg for PCBs. Laboratory generated QA/QC samples performed to ensure precision and accuracy of its test equipment and the analytical method indicate that the results for all the samples are valid.

If you have any questions or require further assistance, please feel free to contact us by phone at (253) 475-7711 or email to jhildenbrand@robinson-noble.com.

Respectfully submitted,
**Robinson, Noble & Saltbush, Inc.**

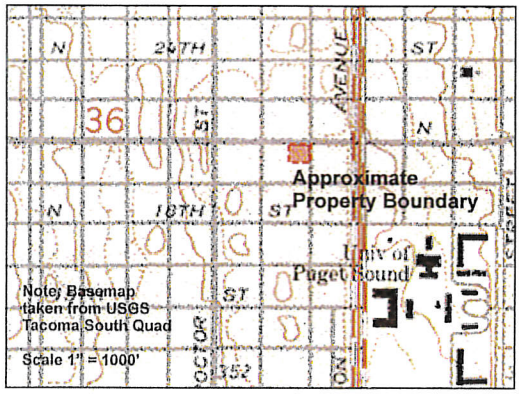
Matthew K. Rakow
Project Geologist

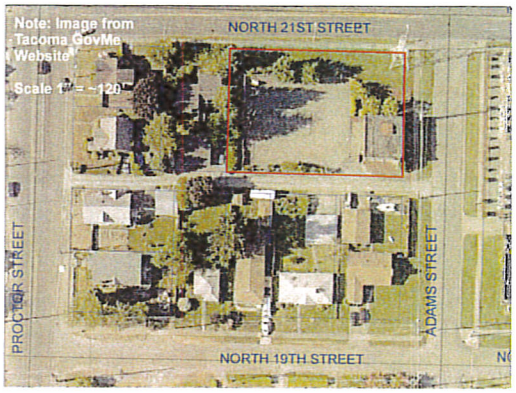
John Hildenbrand
Associate Environmental Scientist
Environmental Services Manager

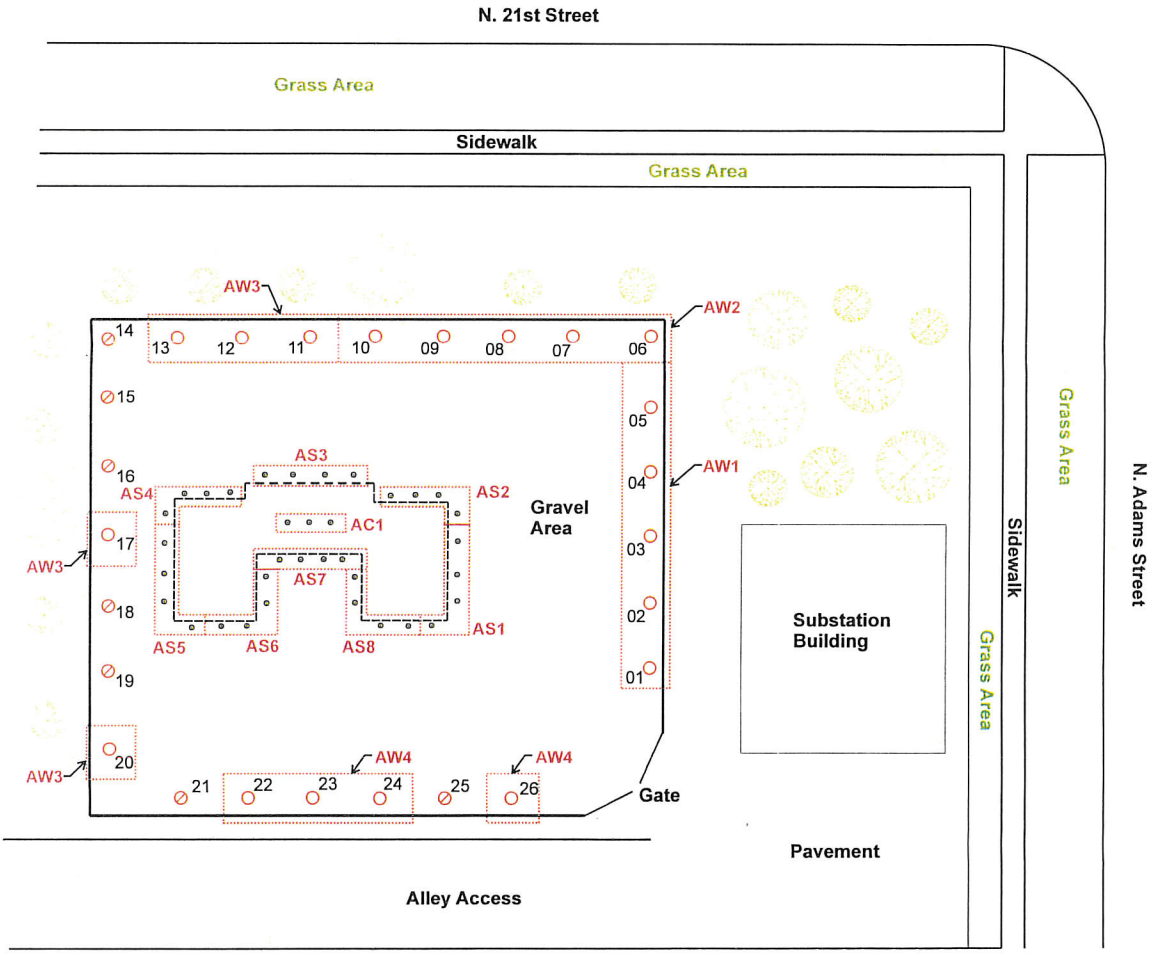
attachments Figure 3: Site and Sample Location Map

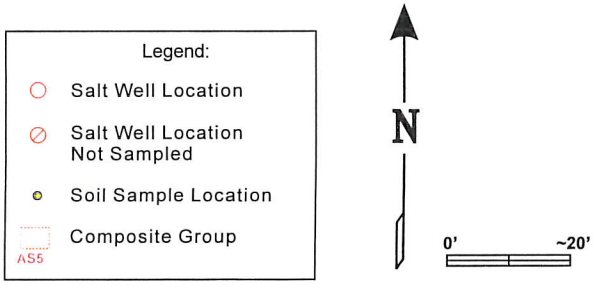
Laboratory Test Results (Libby Environmental)

*The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted environmental and hydrogeologic practices and are the result of analysis by Robinson, Noble & Saltbush, Inc. staff. This report, and any attachments to it, is for the exclusive use of Tacoma Public Utilities and their representatives. Unless specifically stated in the document, no warranty, expressed or implied, is made.*







| | | | |
|---|---|---|---|
| ROBINSON NOBLE | PM: TWS<br>December 2008<br>1922-094A | Pierce County<br>T 21 N/R 02 E - 36 | Figure 3<br>Site and Sample Location Map<br>Tacoma Public Utilities: Adams Street Substation Investigation |

# ATTACHMENTS

# Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518


December 3, 2008

John Hildenbrand
Robinson, Noble & Saltbush, Inc.
3011 Huson Street South
Suite A
Tacoma, WA 98409

Dear Mr. Hildenbrand:

Please find enclosed the analytical data report for the TPU Adams Street Substation Project located in Tacoma, Washington. Soil and concrete samples were received and analyzed for Polychlorinated Biphenyls by EPA Method 8082 and Mineral Oil by NWTPH-Dx/Dx Extended on November 12 & 14, 2008.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed. All soil samples are reported on a dry weight basis.

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

Sincerely,

Sherry L. Chilcutt
*President*
*Libby Environmental, Inc.*


Phone (360) 352-2110 * Fax (360) 352-4154 * libbyenv@aol.com

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

TPU Adams Street Sub Station PROJECT
Tacoma, Washington
Robinson, Noble & Saltbush
Client Project #1922-094A

**Analyses of Mineral Oil (NWTPH-Dx/Dx Extended) in Soil**

| Sample Number | Date Analyzed | Surrogate Recovery (%) | Mineral Oil (mg/kg) |
|---|---|---|---|
| Method Blank | 11/12/2008 | 92.3 | nd |
| TPU-AW1 | 11/12/2008 | 101 | nd |
| TPU-AW2 | 11/12/2008 | 104 | nd |
| TPU-AW3 | 11/12/2008 | 82.6 | nd |
| TPU-AW4 | 11/12/2008 | 91.2 | nd |
| TPU-AS1 | 11/12/2008 | 98.0 | nd |
| TPU-AS2 | 11/12/2008 | 91.0 | nd |
| TPU-AS3 | 11/12/2008 | 74.3 | nd |
| TPU-AS4 | 11/12/2008 | 93.1 | nd |
| TPU-AS5 | 11/12/2008 | 94.3 | nd |
| TPU-AS6 | 11/12/2008 | 91.7 | nd |
| TPU-AS7 | 11/12/2008 | 111 | nd |
| TPU-AS8 | 11/12/2008 | 93.8 | nd |
| TPU-AS8 dup | 11/12/2008 | 89.6 | nd |
| Practical Quantitation Limit | | | 40 |

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Deanna Donovan

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98109

T: 206.352.3790
F: 206.352.7178
Email: info@fremontanalytical.com

# Analysis of PCB's (Polychlorinated Biphenyls) by EPA 8082

**Project: TPU-Adams St. Sub Station**
**Client: Libby Environmental**
**Client Project #: N/A**
**Lab Project #: CHM081112-2**

| EPA 8082 (mg/kg) | MRL | Method Blank | LCS | AW1 | AW2 | AW3 | AW4 | AS1 |
|---|---|---|---|---|---|---|---|---|
| Date Extracted | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 |
| Date Analyzed | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 |
| Matrix | | | | Soil | Soil | Soil | Soil | Soil |
| Aroclor 1016 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1221 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1232 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1242 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1248 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1254 | 0.5 | nd | | nd | nd | nd | nd | nd |
| Aroclor 1260 | 0.5 | nd | 81% | nd | nd | nd | nd | nd |
| **Surrogate Recovery** | | | | | | | | |
| Surr 1 (TCMX) | | 100% | 75% | 90% | 88% | 87% | 101% | 85% |
| Surr 2 (DCBP) | | 94% | 92% | 91% | 106% | 90% | 92% | 88% |

"nd" Indicates no detection at the listed reporting limits
"int" Indicates that interference prevents determination
"C" Indicates coelution with Sample Peaks
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 65% to 135%
Surrogates Concentration = 25 µg/L
Spike Concentration = 1.0 mg/kg

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98109

T: 206.352.3790
F: 206.352.7178
Email: info@fremontanalytical.com

# Analysis of PCB's (Polychlorinated Biphenyls) by EPA 8082

**Project: TPU-Adams St. Sub Statio**
**Client: Libby Environmental**
**Client Project #: N/A**
**Lab Project #: CHM081112-2**

| EPA 8082 (mg/kg) | MRL | AS2 | AS3 | AS4 | AS5 | AS6 | AS7 |
|---|---|---|---|---|---|---|---|
| Date Extracted | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 |
| Date Analyzed | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 |
| Matrix | | Soil | Soil | Soil | Soil | Soil | Soil |
| Aroclor 1016 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1221 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1232 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1242 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1248 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1254 | 0.5 | nd | nd | nd | nd | nd | nd |
| Aroclor 1260 | 0.5 | nd | nd | nd | nd | nd | nd |
| **Surrogate Recovery** | | | | | | | |
| Surr 1 (TCMX) | | 89% | 108% | 103% | 84% | 98% | 86% |
| Surr 2 (DCBP) | | 89% | 103% | 105% | 103% | 104% | 106% |

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"MRL" Indicates Method Reporting Limit
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Acceptable RPD is determined to be less than 30%
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LCS, LCSD, MS, MSD = 65% to 135%
Surrogates Concentration = 25 µg/L
Spike Concentration = 1.0 mg/kg

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# Analysis of PCB's (Polychlorinated Biphenyls) by EPA 8082

**Project: TPU-Adams St. Sub Statio**
**Client: Libby Environmental**
**Client Project #: N/A**
**Lab Project #: CHM081112-2**

| EPA 8082 (mg/kg) | MRL | AS8 | AS8 Duplicate | AC1 | AC1 Duplicate | AS7 MS | AS7 MSD | RPD |
|---|---|---|---|---|---|---|---|---|
| Date Extracted | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | % |
| Date Analyzed | | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | 11/14/08 | |
| Matrix | | Soil | Soil | Concrete | Concrete | Soil | Soil | |
| Aroclor 1016 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1221 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1232 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1242 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1248 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1254 | 0.5 | nd | nd | nd | nd | | | |
| Aroclor 1260 | 0.5 | nd | nd | nd | nd | 122% | 107% | 13% |
| **Surrogate Recovery** | | | | | | | | |
| Surr 1 (TCMX) | | 104% | 80% | 84% | 85% | 99% | 84% | |
| Surr 2 (DCBP) | | 101% | 87% | 97% | 97% | 107% | 98% | |

"nd" Indicates no detection at the listed reporting limits
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"J" Indicates estimated value
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Acceptable RPD is determined to be less than 30%
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Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 65% to 135%
Surrogates Concentration = 25 µg/L
Spike Concentration = 1.0 mg/kg

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506

Ph: 360-352-2149
Fax: 360-352-4154

Client: Libby Environmental
Address: Sea Airport
Phone:
Fax:
Client Project #:

Date: 11/11/08
Page: 1 of 1
Project Manager: Sherry Olcott
Project Name: TRV - Adams St. Sub Station
Location:
Collector:
Date of Collection: 11/10/08

| | Sample Number | Depth | Time | Sample Type | Container Type | VOA 8021B | VOA 8021B BTEX ONLY | VOA 8260 | SEMI VOL 8270 | NWTPH-HCID | NWTPH-Gx | NWTPH-Dx | NWTPH-Dx Ext. | PAH 8270 | PCB's 8082 | MTCA 5 Metals | Insert Note # Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AW1 | | | Soil | 4oz Jar | | | | | | | | | X | | | |
| 2 | AW2 | | | | | | | | | | | | | | | | |
| 3 | AW3 | | | | | | | | | | | | | | | | |
| 4 | AW4 | | | | | | | | | | | | | | | | |
| 5 | AS1 | | | | | | | | | | | | | | | | |
| 6 | AS2 | | | | | | | | | | | | | | | | |
| 7 | AS3 | | | | | | | | | | | | | | | | |
| 8 | AS4 | | | | | | | | | | | | | | | | |
| 9 | AS5 | | | | | | | | | | | | | | | | |
| 10 | AD6 | | | | | | | | | | | | | | | | |
| 11 | AD7 | | | | | | | | | | | | | | | | |
| 12 | AD8 | | | | | | | | | | | | | | | | |
| 13 | AC1 | | | Concrete | ↓ | | | | | | | | | ↓ | | | |
| 14 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | |

Relinquished by: [signature] Date/Time: 11/11/08
Received by: [signature] Date/Time: 11/11/08
Relinquished by: [signature] Date/Time: 11/11/08
Received by: [signature] Date/Time: 11/11/08

Sample Receipt:
Good Condition: Y
Temp: Y
Sufficient: Y
Total Number of Containers: 13

Turnaround: TAT 24HR 48HR 5-Day

Remarks: Results By Monday (11/17)

# Libby Environmental, Inc.

# Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: RNS

Address: 3011 S. Huson St Suite A Tacoma, WA

Phone: 253-475-7711 Fax: 253-472-5846

Client Project # 1922-094A

Date: 11/10/08 Page: 1 of 1

Project Manager: John Hildenbrand

Project Name: TPH - Adams St Sub Station

Location: Tacoma

Collector: MKR, SLL Date of Collection: 11/10/08

| Sample Number | Depth | Time | Sample Type | Container Type | VOA 8021B | VOA 8021B BTEX Only | VOA 8260 | SEMI VOL 8270 | NWTPH-HCID | NWTPH-Gx | NWTPH-Dx Mod. | NWTPH-Dx Ext. | PAH 8270 | PCB's 8082 | MTCA 5 Metals | | | Field Note/# Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 TPH - AW1 | 0.3' | 10:27 | Soil | 4oz | | | | | | | X | | | X | | | | |
| 2 TPH - AW2 | 0.3' | 11:55 | | | | | | | | | | | | | | | | |
| 3 TPH - AW3 | 0.3' | 11:55 | | | | | | | | | | | | | | | | |
| 4 TPH - AW4 | 0.3' | 10:55 | | | | | | | | | | | | | | | | |
| 5 TPH - AS1 | 0.2' | 13:25 | | | | | | | | | | | | | | | | |
| 6 TPH - AS2 | 0.2' | 13:22 | | | | | | | | | | | | | | | | |
| 7 TPH - AS3 | 0.2' | 13:35 | | | | | | | | | | | | | | | | |
| 8 TPH - AS4 | 0.2' | 13:35 | | | | | | | | | | | | | | | | |
| 9 TPH - AS5 | 0.2' | 13:45 | | | | | | | | | | | | | | | | |
| 10 TPH - AS6 | 0.2' | 13:50 | | | | | | | | | | | | | | | | |
| 11 TPH - AS7 | 0.2' | 14:00 | | | | | | | | | | | | | | | | |
| 12 TPH - AS8 | 0.2' | 14:00 | | | | | | | | | | | | | | | | |
| 13 TPH - AC1 | 0.08' | 10:20 | Concrete | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date / Time | Received by | Date / Time |
|---|---|---|---|
| [illegible] | 11/10/08 5:10 | [illegible] | 11/10/08 5PM |
| Relinquished by: | Date / Time | Received by | Date / Time |
| Relinquished by: | Date / Time | Received by | Date / Time |

Sample Receipt:

| | |
|---|---|
| Good Condition? | |
| Cold? | |
| Seals Intact? | |
| Total Number of Containers | |

Remarks:

SD

TAT 24HR 48HR (5-Day)

Distribution White - Lab, Yellow - File, Pink - Originator