PBS | Engineering + Environmental

Remedial Investigation

Former Welch's Facility
10 East Bruneau
Kennewick, Washington 99336

Prepared for:
Welch's Foods, Inc.
401 Avenue B
Grandview, Washington 98930

April 2008
Project No.: 61499.00

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EXECUTIVE SUMMARY

This report summarizes the environmental work performed at the 10 East Bruneau Avenue, Kennewick, Washington (subject property or Site), and presents the results of the current Remedial Investigation (RI) and PBS' findings and conclusions. The study is designed to provide environmental information concerning the subject property to evaluate compliance in accordance with an Agreed Order (AO) between Welch's Foods and the Washington State Department of Ecology (WDOE).

The results of the RI provide a summary of work at the site, to date, and a framework for the future Feasibility Study (FS). No further contamination was detected in soil or groundwater during the field portion of the RI work. Groundwater flow direction was determined by the RI to be northerly at a low winter gradient. Based on analytical results, released oil at the unconfined aquifer surface has travelled no more than 70 feet north of the contaminant release location; a small percentage of the total distance groundwater has travelled. Release quantities have been estimated based on the RI and analytical data.

Following the Interim Remedial Action at the site conducted in 2006, remaining risk appears unchanged. Additional risk assessment and recommendations concerning future work at the site are forthcoming through the Feasibility Study (FS).

2.2 Phase II Environmental Assessment

In July 2006, PBS conducted a Phase II on the subject property by completing environmental oversight of seven soil borings to groundwater with soil and water samples collected for analysis (Project #61396.00). Soil borings were completed adjacent to the UST, lines and the shop area to the east. No contamination was observed near the tank. Groundwater and soil contamination (in heavy oil) was detected along the UST lines to the east of the tank. Further work was recommended to characterize and cleanup the contamination (see Appendix D).

2.3 Interim Soil Excavation Remedial Action

In response to the presence of heavy oil contamination from the Phase II, in August and September 2006, PBS oversaw excavation along the UST fuel lines to the Boiler Building (Project #61405.00). No contamination was detected and it was later determined that the source of the leakage was immediately to the south of the lines at the location of two former 12,000 gallon bunker fuel USTs removed in the mid 1980s. Interim remedial action excavation proceeded at the location of the former USTs, with contaminated soil removed and hauled to an offsite disposal facility during that project (see Appendix D). This interim action resulted in removing a significant amount of oil from the soil and upper groundwater table zone to reduce the amount of oil available for further oil movement with groundwater.

2.4 UST Decommissioning and Site Assessment

A Limited Underground Storage Tank (UST) Assessment was performed in September 2007, concurrent with the closure of one 50,000 gallon bunker fuel UST at 10 East Bruneau Street, Kennewick, Washington (Project #61768.00). This project was required by the real estate agreement between Welch's Foods and J. Lieb and is not a portion of the AO. Information concerning this project is added to the RI report, because if leakage had occurred, the scope of work concerning the RI could have been affected. Previous assessment immediately adjacent to the UST (see Section 2.2, above) suggested that no leakage from the UST had occurred. The decommissioning/closure was performed by K. Kaser Company, with PBS environmental oversight.

The UST formerly contained bunker fuel, which was pumped out prior to decommissioning. Natural gas lines close to the tank were removed to support the UST decommissioning project. Soil sampling was completed around the tank base and in the stockpiled soil. Samples were laboratory analyzed for heavy oil, with results indicating that no release of fuel into the soil had occurred. The UST was closed and removed from the site for disposal on September 21, 2007. The tank basin was backfilled with clean onsite soil and offsite structural fill after the project was completed (see Appendix D).

3.0 PURPOSE AND SCOPE

The purpose of the RI was to provide additional soil and groundwater data to allow a more accurate assessment of the risk posed to human health and the environment by the contamination at 10 East Bruneau Avenue. This investigation provides further environmental information in support of Agreed Order FS #89931898 (AO) between Welch's Foods and the Washington State Department of Ecology (WDOE) and further supports a future feasibility study (FS) toward remedial action at the Site.

The scope of work for the current investigation consisted of the following:

1. Collecting soil samples concurrently with the establishment of three monitoring wells on the subject property near the area of the reported contamination using air rotary techniques.

2. Analyzing the samples for heavy oil-fraction petroleum hydrocarbons as well as a full suite of constituents as required by the AO.

3. Interpreting the findings with respect to Washington cleanup levels for petroleum-contaminated sites (WAC 173-340).

4. Providing a report that includes all information requirements listed in the AO.

5. Providing information for the future completion of a FS.

4.0 FIELD METHODS

On January 23 and 24, 2008, PBS oversaw the completion of three borings and construction of three monitoring wells on the subject property. The wells were completed using a track-mounted, air rotary drill operated by Michalson Drilling, Richland, Washington. Locations of the borings are shown on Figure 2. A request for utilities locate was made and locations were inspected prior to start of work. In addition, a private locate was completed on the site by A-1 Locating of Richland, Washington.

Prior to beginning drilling, the drillers, PBS and affected J. Lieb personnel reviewed the Health and Safety Plan (HASP) for the project (see Appendix E). The HASP provided information concerning the location of the nearest hospital, personal protective equipment requirements, toxicity characteristics of the contaminant and contact information. The HASP was completed prior to this project and approved by WDOE as required by the AO.

Also in accordance with the AO, a Sampling and Analysis Plan (SAP) was completed. The SAP provides detailed information on the location and depth of the wells, well construction specifics, analytical procedures, contaminated soil cuttings and groundwater handling procedures, a schedule and contact list (see Appendix F). The SAP was also approved by WDOE prior to beginning the project. A schedule change was approved by WDOE, with that approval provided in Appendix F.

As provided in the SAP, all sampling equipment was decontaminated between borings and during soil and water sampling using a detergent (*Alconox*) wash and tap water rinse. All collected samples were placed in an ice chest that was cooled to approximately 4° Centigrade for the duration of the fieldwork. The samples were delivered to Friedman and Bruya Laboratory, Seattle, Washington, and CLS Laboratory, Pasco, Washington under chain of custody documentation within the required holding times for the analytical methods. Analytical results are provided in Section 5.1

Graphic logs of subsurface soil conditions are presented in Appendix B. Copies of all laboratory reports and sample chain-of-custody forms are presented in Appendix C. Results of testing are discussed below, and are also included in Tables 1 and 2.

4.1 Well Installation Procedures

One major purpose of the onsite drilling was the construction of monitoring wells. Wells were constructed in accordance with WDOE monitoring well construction regulations provided in WAC Chapter 173-160 and 173-162. A total of three monitoring wells (MW-1

through MW-3) were completed in the area of the release described in Section 2.3 above. The flush mounted wells were placed as indicated in the SAP and completed to approximately 27 feet below ground surface (bgs). Groundwater was indicated to be located approximately 20 feet bgs (see well logs, Appendix B).

Wells were constructed with 2" PVC casings to a depth of at least 6 feet below the surface of the unconfined groundwater table elevation. With the use of 10 feet of screened casing, approximately 4 feet of screen was placed above the unconfined water table. One well (MW #1) was constructed upgradient of the location of the contamination, with two wells (MW #2 and MW #3) constructed downgradient to the northwest and northeast, respectively. Wells were constructed in such a configuration that the top of casing could be surveyed and the surface of the groundwater table could be determined, along with groundwater flow direction and gradient. Well surveying was completed by PBS, with an accuracy of 0.01 feet vertical accuracy measured against a relative datum (see Appendix G).

4.2 Soil Sampling Procedures

All recovered soils were headspace-screened for volatile organic compounds using a portable Mini-RAE photoionization detector (PID). Soil samples were collected with a drive sampler and placed into 4-ounce glass sample jars with Teflon lid liners. The SAP called for collecting two soil samples per well at approximately 15 and 20 feet bgs; because of heavy cobbles that would not fit in a split spoon, it was not possible to collect any samples from 20 feet bgs.

4.3 Water Sampling Procedures

Quarterly groundwater monitoring began on February 1, 2008 after the wells had been constructed. All three wells were monitored and sampled. Prior to sampling monitoring wells, water table elevations were recorded by PBS with an electronic water level indicator. PBS used bailers and a 12 volt submersible pump to purge and sample the monitoring wells. Prior to sampling, each well was purged with an estimated 3 well casing volumes of water removed. Concurrently with purging, the groundwater parameters of conductivity, pH, and temperature were recorded with a water quality meter, until parameters stabilized. Laboratory-manufactured conductivity and pH standard solution values were recorded during purging to check data accuracy. All waste water generated from sampling and purging was held on the property, in 5-gallon buckets, for later sampling and disposal (see SAP - Appendix F).

4.4 Quality Assurance

Sample QA/QC included collecting one duplicate groundwater sample and soil sample which were submitted to the laboratory blind-labeled. Well #23 represents a second blind-labeled QA/QC sampling of Well #3, from water and soil samples taken at the same time as the Well #3 sample collections. All results for were non-detect (see Table #1). Excessive deviation between the initial and blind labeled results would be expected to trigger further QA/QC procedures. The laboratory's daily batch quality control testing was also reviewed for data quality (see SAP Appendix F).

4.5 Investigation-Derived Wastes

A total of six 55-gallon drums were left near a loading dock on the south side of Bruneau Street on the J. Lieb site. The drums (containing drill cuttings) are sealed and labeled. Analytical results suggest that those drummed soils are clean.

5.0 FINDINGS

5.1 Analytical Results

Soil samples were collected during well installation, with groundwater samples collected after the wells were developed and purged. Soil and groundwater analytical procedures were performed as indicated in Section VII (3) of the AO and as listed below. Testing was designed to determine whether the following hazardous substances have been released: benzene, toluene, ethyl benzene, xylenes (BTEX), other petroleum products, carcinogenic polycyclic aromatic hydrocarbons (PAHs), and napthalenes. Petroleum products were tested through Northwest total petroleum hydrocarbons – diesel method (NWTPH-Dx and NWTPH-Dx Extended). The list of constituents and analytical procedures is provided below:

Constituent	Proposed Analytical Procedures
Petroleum Products (Oil)	EPA Method 8015M (NWTPH-Dx)
Petroleum Products (heavy oil)	EPA Method 8015M (NWTPH-Dx Extended)
Benzene	EPA Method 8021B
Toluene	EPA Method 8021B
Ethyl benzene	EPA Method 8021B
Xylenes	EPA Method 8021B
PAHs	EPA Method 8270C
Napthalenes	EPA Method 8270 SIM

The results of analytical testing indicated the compounds analyzed did not exceed laboratory detection limits in any of the soil or groundwater tested at the location of the monitoring wells. No significant flags were observed on the laboratory data. See analytical results provided in Table #1; attached to the report.

Further discussion concerning the known presence of contamination on the site (including the earlier assessments and interim remedial action) is provided in Section 5.5, below.

5.2 Soil

The soils encountered consisted of sand, gravel, cobbles and boulders, with minor silt (see Logs, Appendix B). A surface layer of asphalt was present at MW #2 and #3, with a soil surface at MW #1. Saturated soils were encountered at depths of 19 to 21 feet bgs. There were no field observations, photoionization detector or analytical indications of soil contamination in any of the well borings associated with the RI. Further discussion of known contamination is provided in Section 5.5, below. The laboratory results for soil are presented in Table 1.

5.3 Groundwater

The groundwater samples were collected following completion of the wells on February 1, 2008 by the method described in Section 4, above. No sheen or petroleum odor was observed in any of the wells constructed for this project. Table #1 provides information concerning groundwater contaminants. A review of the earlier Phase II report indicates that contamination is present on top of groundwater at the former location of Boring #4 (see site plan) immediately north of the old tanks and the point of contaminant release. Lesser contamination was detected in Boring #7, just southeast of the former locations of the tanks.

Groundwater table elevations were taken and the wells were surveyed in support of calculating groundwater flow direction (Appendix G). The depth to groundwater was approximately 1–foot deeper than during the summer season when the Phase II was completed on the site. This information suggests that some irrigation water loss from canals to the unconfined aquifer occurs during the irrigation season (April to October), increasing groundwater table elevation during that period.

January 2008 groundwater flow direction was calculated and indicated to be approximately North, 4 degrees East at a gradient of 0.07 feet/100 feet. A steepening of the gradient is expected during the late spring season when irrigation water again begins to elevate the water table. No pump tests or slug tests have been completed, but, based on the fact that the soil in the upper water table zone is clean sandy gravel, some judgment concerning hydraulic conductivity can be provided. Qualitative information for similar materials suggests the aquifer hydraulic conductivity approximates 100 feet/day. Using the estimated hydraulic conductivity, known aquifer surface slope and Darcy's Law calculations, the velocity of groundwater flow in the non-irrigation season is estimated at 14 days/foot. This figure is expected to be a low end and the gradient will steepen in the spring allowing faster groundwater flow (Appendix G).

5.4 Focused Evaluation

A summary of the previous environmental investigation and interim remedial action is provided in Section 2 of this report. Information for this section is derived from the recent RI boring and monitoring well work, as well as the Phase II (PBS Project #61396.00) and the Interim Remedial Action (PBS Project #61405.00). Results of the UST decommissioning project (PBS Project #61786.00) indicated no added soil or groundwater contamination from that sector.

Field observation suggests that the flow velocity of the released oil is markedly slower than the movement of groundwater. With a low end groundwater flow velocity of 14 days per foot and 20 years of time (since the mid 1980s when the two 12,000-gallon USTs were removed) groundwater flow would have travelled 500 feet or further. The downgradient groundwater flow from the release would have then travelled far beyond Boring #5 and Monitoring Wells #2 and #3.

Appendix H calculation approximate that a total of approximately 2,577 gallons of oil may have been released to the soil and groundwater from the tanks, based on the maximum contamination level at 20,900 milligrams combined oil and diesel grade product per kilogram of soil. The stated contaminant level reflects the highest soil contamination level detected in the oil impacted soil prior to hauling it to a landfill during the interim remedial action.

Water is a polar molecular substance and oil is non-polar. The specific gravity of the product is 0.97, which suggests it floats on water (field observations from the borings and interim excavation support this information). The non-polar oil is hydrophobic with respect to water and tends to form round globs of oil in water. Further, the hydrophobic oil tends to form a bond with the soil and rock, with the soil providing a "refuge" from the polar water. Based on oil specific gravity these actions take place in the upper portion of the unconfined aquifer.

In effect, the soil forms a sieve, binding the oil away from the water and restricting the distance the oil has migrated. Although the oil obviously travelled north of Boring #4, RI information indicates it could have travelled no further than 70 feet north of the release site. At a high end estimate, the oil has travelled less than 14% of the distance water has travelled in a similar time frame.

Of course any water soluble components of the oil (for example BTEX) would travel as fast as the water; RI analytical results for volatile and semi-volatile substances indicated that currently, no such soluble substances were detected (see Table #1). No soluble substances were detected in the earlier Phase II either.

The earlier interim remedial action was designed, in part, to lessen the free head of oil over water and reduce the possibility of further oil migration. During the interim remedial action approximately 2,261 gallons of oil (not including soil) was removed from the site, significantly reducing risk and the probability that oil is continuing to advance in the groundwater system. A year of quarterly monitoring and groundwater flow direction analysis could be considered in all three wells to help establish if the oil is soil bound and no further oil movement is occurring.

5.5 Conclusions

The results of the RI provide a summary of work at the site to date and a framework for the future FS. No further contamination was detected in soil or groundwater during the field portion of the RI work. Groundwater flow direction was determined by the RI to be northerly at a low winter gradient. Released oil at the unconfined aquifer surface has travelled no more than 70 feet north of the contaminant release location; a small percentage of the distance groundwater has travelled. Release quantities have been estimated based on the RI and analytical data.

5.6 Interim Risk Evaluation

At this time only a qualitative statement concerning risk is provided by PBS, because if an immediate further environmental concern were detected during the RI, interim action could be prudent to head off contaminant uptake by any receptors.

No indication of risk, beyond what was provided in the Phase II and Interim Remedial Action, is provided. As discussed in the Phase II, the adjacent water well on the property is plumbed into a confined aquifer at +400 feet below ground surface, with a positive (artesian) pressure at the well head disallowing any contaminant entry into that system. No other nearby wells were noted. A small amount of contamination is present under the railway right-of-way to the south (Boring #7, approximately 7 feet south of the former leaking tanks); with groundwater flow to the north, little further risk in that direction is indicated. The contaminant is non-volatile so no area basement air-quality contamination intrusion is suspected. Non-human ecological risk appears to be low because no surface contamination is present and the contaminant has not travelled as far as the Columbia River in groundwater.

The Conceptual Site Model and other more detailed components of risk will be addressed during the FS portion of the project. The concept of risk has a direct bearing on the feasibility, cost and type of remedial pathway chosen for the FS, with a focused risk assessment scheduled for that study.

6.0 LIMITATIONS

PBS has prepared this report for use by Welch's Foods and the Washington State Department of Ecology in support of the AO. This report is for the exclusive use of the client and WDOE and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced in total or in part without the expressed written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The site as a whole may have other contamination that was not characterized by this study. The findings and conclusions of this report are not scientific certainties but, rather, probabilities based on professional judgment concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent that the site or adjoining land contain no hazardous waste, oil, or other latent conditions beyond that detected or observed by PBS.

PBS ENGINEERING + ENVIRONMENTAL

Paul Danielson, LHG.
Project Manager

Date: 4-7-08

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Hydrogeologist
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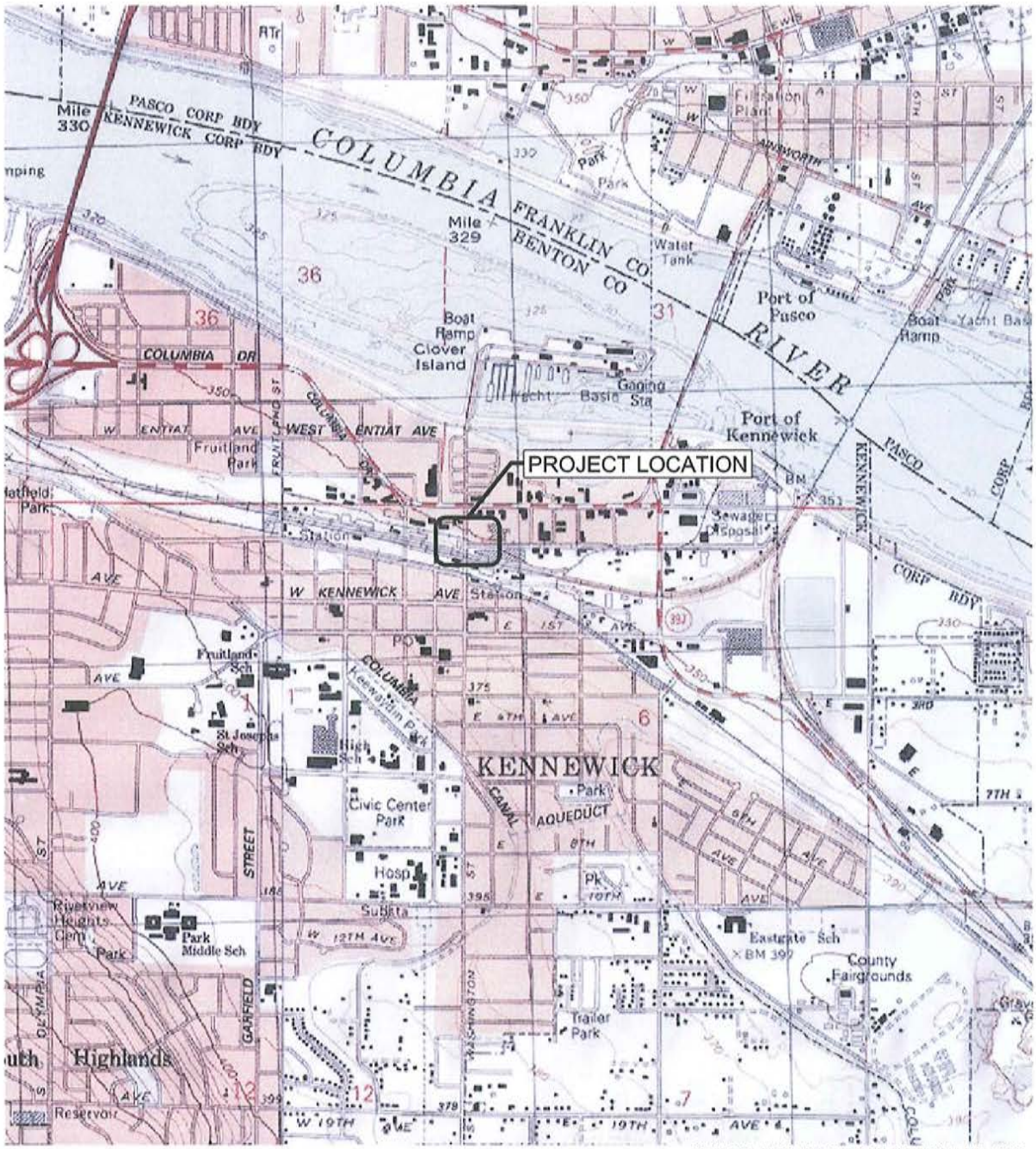
Licensed Geologist
Paul E. Danielson

Dulcy A. Berri, R.G.
Principal/Senior Hydrogeologist

State of Washington
Hydrogeologist
157
Licensed Geologist
DULCY A. BERRI

FIGURES



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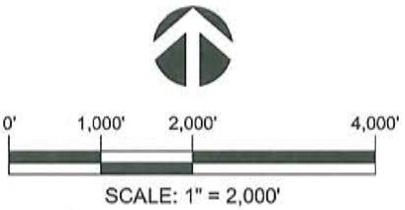

SCALE: 1" = 2,000'

PREPARED FOR: WELCH'S FOODS

PBS

PROJECT #: 61499.000

DATE: SEPT. 2007

SITE VICINITY MAP

10 EAST BRUNEAU AVENUE
KENNEWICK, WASHINGTON

FIGURE 1

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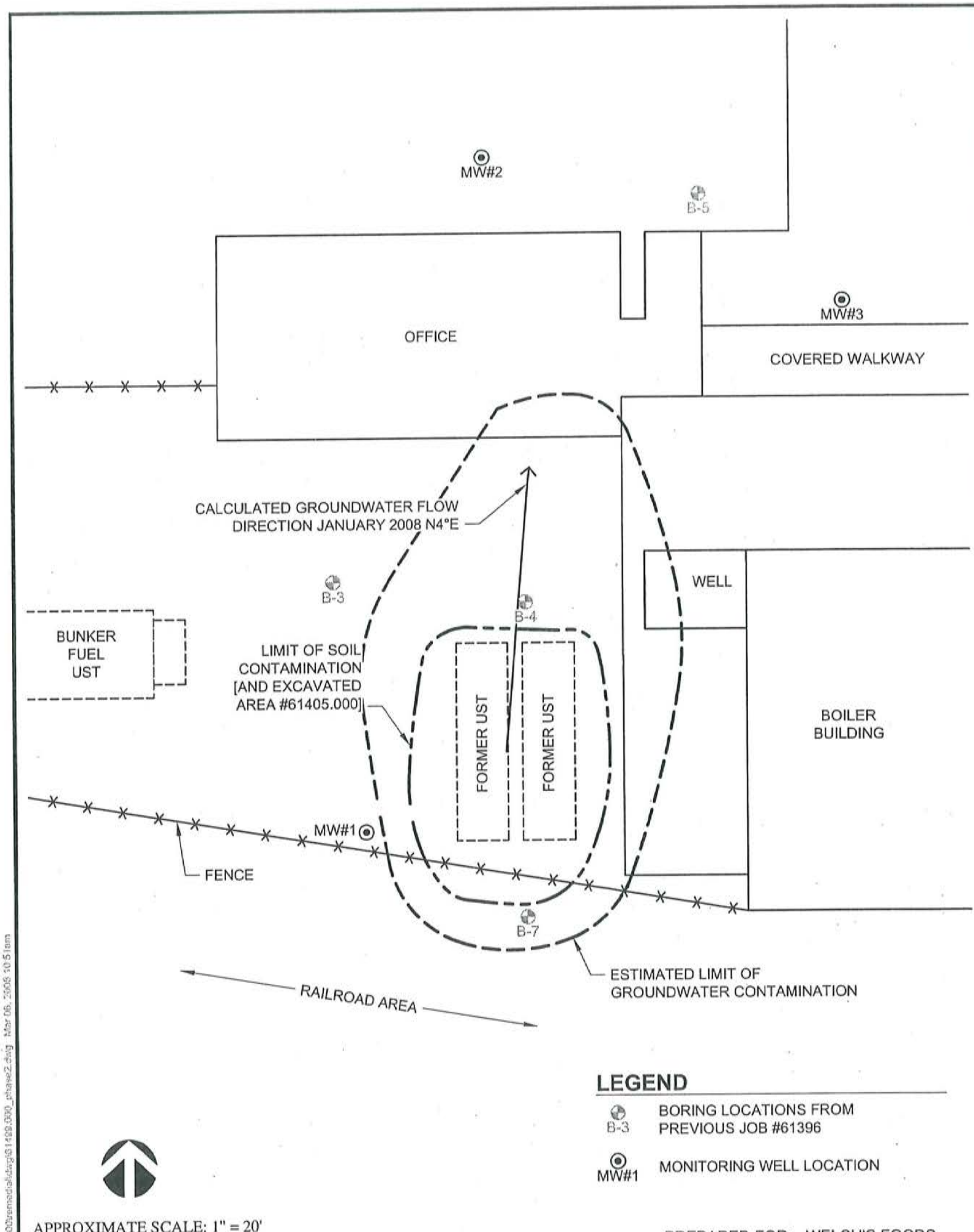

PREPARED FOR: WELCH'S FOODS

PBS	PROJECT # 61499.000	REMEDIAL INVESTIGATION	FIGURE
	DATE MARCH 2008	10 EAST BRUNEAU AVENUE KENNEWICK, WASHINGTON	2

TABLES

Table 1
Remedial Investigation Analytical Results, 10 East Bruneau, Kennewick, Washington

Chemical Constituent	Analytical Results							
	MW-1		MW-2		MW-3		MW-23	
	Water	Soil	Water	Soil	Water	Soil	Water	Soil
Benzene	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	
Ethylbenzene	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	
Toluene	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	<0.02	<0.5 ug/L	
Xylenes	<0.5 ug/L	<0.06	<0.5 ug/L	<0.06	<0.5 ug/L	<0.06	<0.5 ug/L	
Acenaphthene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Acenaphthylene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Anthracene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Benz a anthracene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Benzo b fluoranthene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Benzo g,h,i perylene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Benzo k fluoranthene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Chrysene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Dibenz a,h anthracene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Fluoranthene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Fluorene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Indeno 1,2,3-cd pyrene	<0.5 mg/l	<0.01	<0.5 mg/l	<0.01	<0.5 mg/l	<0.01	<0.5 mg/l	
Naphthalene	<0.05 mg/L	<0.01	<0.05 mg/L	<0.01	<0.05 mg/L	<0.01	<0.05 mg/L	
Phenanthrene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
Pyrene	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	<0.01	<0.5 mg/L	
1-Methylnaphthalene		<0.01		<0.01		<0.01		
2-Methylnaphthalene		<0.01		<0.01		<0.01		
NWTPH-Dx	<0.14 mg/L	<50	<0.15 mg/L	<50	<0.15 mg/L	<50	<0.15 mg/L	<33
NWTPH-Dx Extended		<250		<250		<250		
pH	7.48		7.57		7.70			
Conductivity	572		636		629			
Temperature	18.0		17.5		17.4			
Depth to Water	21.35'		20.78		20.54			

Note: Soil samples collected from 15 to 16 feet below ground surface
All soils analytical results in milligrams/kilogram = mg/kg.
Water analytical results units as indicated in Table #1: ug/L = micrograms/liter; mg/L = milligrams/liter
MW–23 is laboratory blind QA/QC result for MW-3
Conductivity results in Micromhos/cm
Temperature in degrees Centigrade
Depth to water in feet

APPENDIX A

Site Photographs

PHOTO 1: LOOKING WEST AT MONITORING WELL #3 CONSTRUCTION

PHOTO 2: LOOKING NORTH WEST AT PREPARATION TO BUILD MONITORING WELL #3

PHOTO 3: DRILLING MONITORING WELL #3, LOOKING EAST

PHOTO 4: LOOKING EAST AT THE CONSTRUCTION OF MONITORING WELL #2

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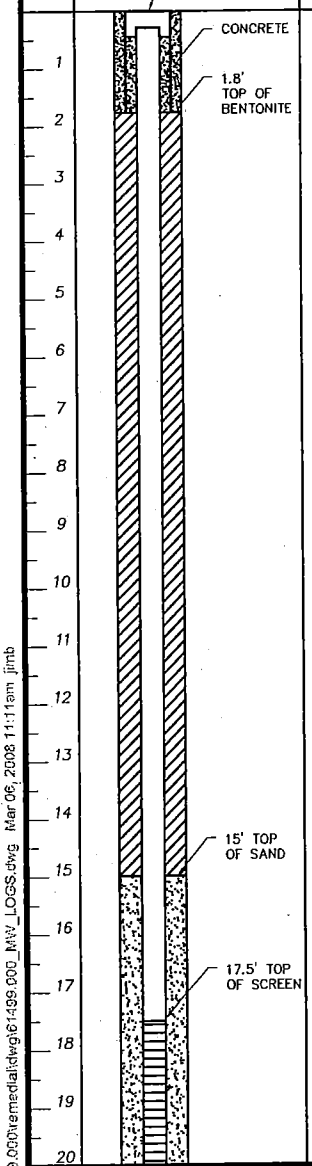
Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#1	1 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 100.67
Surface Elevation (feet above datum): N/A
Start/End Date: 1/24/08
Hole Depth: 28.25 FEET
Outer Hole Diameter: 2 INCH PVC CASING



LOCATION: 53' WEST OF BOILER BUILDING ALONG SOUTH FENCE.

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

MW#1

REV. ____

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PBS
4412 SW CORBETT
PORTLAND, OREGON
97239
(503) 248-1939
FAX
(503) 248-0223

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#1	2 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 100.67
Surface Elevation (feet above datum): N/A
Start/End Date: 1/24/08
Hole Depth: 28.25 FEET
Outer Hole Diameter: 2 INCH PVC CASING

Depth (feet, BGS)	Well Construction Details	Sample Interval	PID Reading (ppm)	Sample Number	Blows/ft.	Lithologic Column	Soil Description
21	21.5'			Soil sample attempted at 20' - not collectable - too much gravel			18.5'-28.25': Dense, gray-browns, sandy **GRAVEL**, very moist, non-plastic.
22							
23							
24							
25							
26							
27	27.5' BOTTOM OF SCREEN						
28							
29	6"						**BOTTOM OF HOLE**
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

LOCATION: 53' WEST OF BOILER BUILDING ALONG SOUTH FENCE.

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
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REV. ____

MW#1

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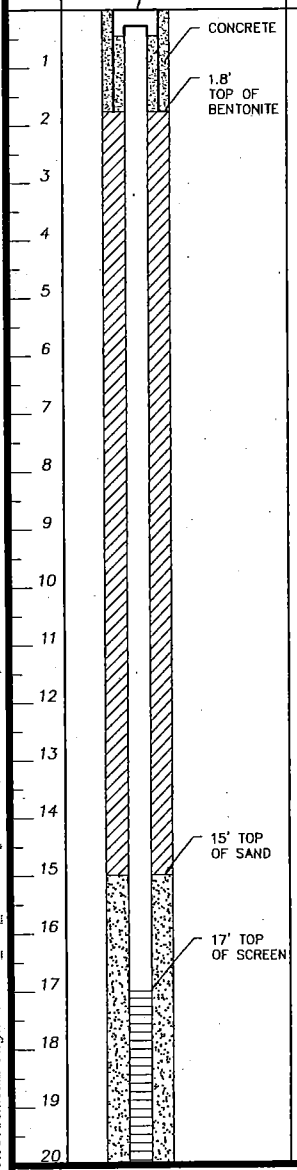
PBS
4412 SW CORBETT
PORTLAND, OREGON
97239
(503) 248-1939
FAX
(503) 248-0223

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#2	1 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 100.03
Surface Elevation (feet above datum): N/A
Start/End Date: 1/24/08-1/25/08
Hole Depth: 30.1 FEET
Outer Hole Diameter: 2 INCH PVC CASING



NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ____

MW#2

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PBS
4412 SW CORBETT
PORTLAND, OREGON
97239
(503) 248-1939
FAX
(503) 248-0223

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#2	2 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 100.03
Surface Elevation (feet above datum): N/A
Start/End Date: 1/24/08–1/25/08
Hole Depth: 30.1 FEET
Outer Hole Diameter: 2 INCH PVC CASING

Depth (feet, BGS)	Well Construction Details	Sample Interval	PID Reading (ppm)	Sample Number	Blows/ft.	Lithologic	Soil Description
21–28	21' ▼; 27' BOTTOM OF SCREEN; 6"						18.5'-28.25': Dense, gray-browns, sandy **GRAVEL**, very moist, non-plastic.
							BOTTOM OF HOLE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ____

MW#2

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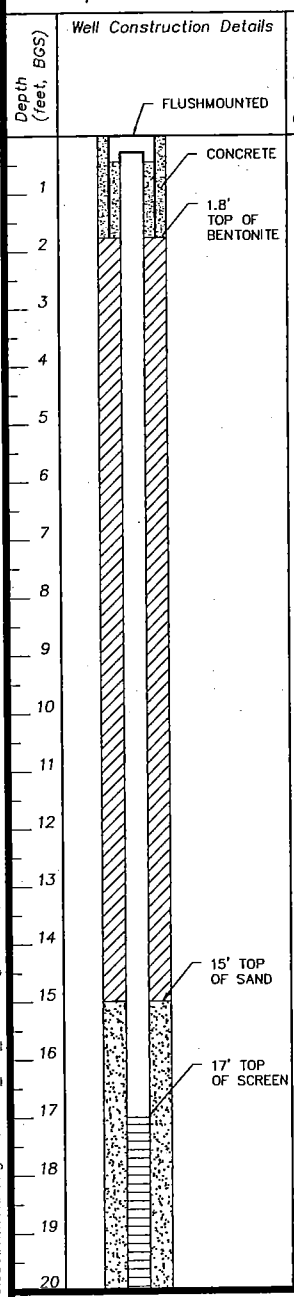
PBS
4412 SW CORBETT
PORTLAND, OREGON
97239
(503) 248-1939
FAX
(503) 248-0223

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#3	1 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 99.60
Surface Elevation (feet above datum): N/A
Start/End Date: 1/25/08
Hole Depth: 27.5 FEET
Outer Hole Diameter: 2 INCH PVC CASING



NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ____

MW#3

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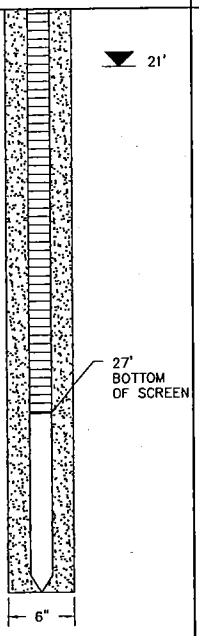
PBS
4412 SW CORBETT
PORTLAND, OREGON
97239
(503) 248-1939
FAX
(503) 248-0223

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61499.000	MW#3	2 of 2

Project Name: WELCH'S FOOD
Project Location: 10 EAST BRUNEAU AVENUE, KENNEWICK
Driller/Equipment: MICHALSON
Geologist/Engineer: P. DANIELSON
Sample Method: DRIVE SAMPLER

TOC Elevation (feet relative datum): 99.60
Surface Elevation (feet above datum): N/A
Start/End Date: 1/25/08
Hole Depth: 27.5 FEET
Outer Hole Diameter: 2 INCH PVC CASING



Depth (feet, BGS)	Sample Interval	PID Reading (ppm)	Sample Number	Blows/ft.	Lithologic Column	Soil Description
21–27						19'-27.5': Brown-gray, **GRAVEL** with sand, dense, moist, non-plastic.
28						**BOTTOM OF HOLE**

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ___

MW#3

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APPENDIX C

Laboratory Reports
Chain-of-Custody Documentation

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

February 1, 2008

Paul Danielson, Project Manager
PBS Engineering and Environmental, Inc.
320 N. Johnson St., Suite 100
Kennewick, WA 99336

Dear Mr. Danielson:

Included are the results from the testing of material submitted on January 25, 2008 from the 61499.00, F&BI 801242 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Eric Young

Eric Young
Project Manager

Enclosures
PBS0201R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 25, 2008 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental 61499.00, F&BI 801242 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
801242-01	MW-1

All quality control requirements were acceptable.

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242
Date Extracted: 01/28/08
Date Analyzed: 01/28/08

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Surrogate (% Recovery) (Limit 50-150)
MW-1 801242-01	<0.02	<0.02	<0.02	<0.06	63
Method Blank	<0.02	<0.02	<0.02	<0.06	70

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242
Date Extracted: 01/25/08
Date Analyzed: 01/25/08

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
MW-1 801242-01	<50	<250	91
Method Blank	<50	<250	95

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	MW-1	Client:	PBS Engineering and Environmental
Date Received:	01/25/08	Project:	61499.00, F&BI 801242
Date Extracted:	01/25/08	Lab ID:	801242-01 1/5
Date Analyzed:	01/30/08	Data File:	013014.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	118	50	150
Benzo(a)anthracene-d12	101	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01
1-Methylnaphthalene	<0.01
2-Methylnaphthalene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270C SIM

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	61499.00, F&BI 801242
Date Extracted:	01/25/08	Lab ID:	08-122 mb2 1/5
Date Analyzed:	01/25/08	Data File:	012514.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	117	50	150
Benzo(a)anthracene-d12	95	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01
1-Methylnaphthalene	<0.01
2-Methylnaphthalene	<0.01

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Laboratory Code: 801242-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	98	70-130
Toluene	mg/kg (ppm)	0.5	98	70-130
Ethylbenzene	mg/kg (ppm)	0.5	98	70-130
Xylenes	mg/kg (ppm)	1.5	96	70-130

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 801250-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	105	109	71-137	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	70-129

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

Laboratory Code: 801242-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Naphthalene	mg/kg (ppm)	<0.01	<0.01	nm
2-Methylnaphthalene	mg/kg (ppm)	<0.01	<0.01	nm
1-Methylnaphthalene	mg/kg (ppm)	<0.01	<0.01	nm
Acenaphthylene	mg/kg (ppm)	<0.01	<0.01	nm
Acenaphthene	mg/kg (ppm)	<0.01	<0.01	nm
Fluorene	mg/kg (ppm)	<0.01	<0.01	nm
Phenanthrene	mg/kg (ppm)	<0.01	<0.01	nm
Anthracene	mg/kg (ppm)	<0.01	<0.01	nm
Fluoranthene	mg/kg (ppm)	<0.01	<0.01	nm
Pyrene	mg/kg (ppm)	<0.01	<0.01	nm
Benz(a)anthracene	mg/kg (ppm)	<0.01	<0.01	nm
Chrysene	mg/kg (ppm)	<0.01	<0.01	nm
Benzo(b)fluoranthene	mg/kg (ppm)	<0.01	<0.01	nm
Benzo(k)fluoranthene	mg/kg (ppm)	<0.01	<0.01	nm
Benzo(a)pyrene	mg/kg (ppm)	<0.01	<0.01	nm
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	<0.01	<0.01	nm
Dibenz(a,h)anthracene	mg/kg (ppm)	<0.01	<0.01	nm
Benzo(g,h,i)perylene	mg/kg (ppm)	<0.01	<0.01	nm

Laboratory Code: 801242-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.17	<0.01	87	50-150
2-Methylnaphthalene	mg/kg (ppm)	0.17	<0.01	86	50-150
1-Methylnaphthalene	mg/kg (ppm)	0.17	<0.01	91	50-150
Acenaphthylene	mg/kg (ppm)	0.17	<0.01	82	16-167
Acenaphthene	mg/kg (ppm)	0.17	<0.01	83	58-108
Fluorene	mg/kg (ppm)	0.17	<0.01	89	57-113
Phenanthrene	mg/kg (ppm)	0.17	<0.01	97	30-138
Anthracene	mg/kg (ppm)	0.17	<0.01	87	42-132
Fluoranthene	mg/kg (ppm)	0.17	<0.01	91	45-145
Pyrene	mg/kg (ppm)	0.17	<0.01	90	44-139
Benz(a)anthracene	mg/kg (ppm)	0.17	<0.01	70	17-134
Chrysene	mg/kg (ppm)	0.17	<0.01	78	10-157
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	<0.01	78	37-123
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	<0.01	83	28-134
Benzo(a)pyrene	mg/kg (ppm)	0.17	<0.01	72	55-115
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	<0.01	91	61-104
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	<0.01	91	69-100
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	<0.01	91	60-105

Date of Report: 02/01/08
Date Received: 01/25/08
Project: 61499.00, F&BI 801242

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270C SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.17	80	82	72-112	2
2-Methylnaphthalene	mg/kg (ppm)	0.17	77	79	60-114	3
1-Methylnaphthalene	mg/kg (ppm)	0.17	78	82	74-118	5
Acenaphthylene	mg/kg (ppm)	0.17	78	79	68-112	1
Acenaphthene	mg/kg (ppm)	0.17	77	78	70-111	1
Fluorene	mg/kg (ppm)	0.17	86	89	69-110	3
Phenanthrene	mg/kg (ppm)	0.17	88	90	68-111	2
Anthracene	mg/kg (ppm)	0.17	83	85	67-110	2
Fluoranthene	mg/kg (ppm)	0.17	83	84	68-114	1
Pyrene	mg/kg (ppm)	0.17	81	82	68-114	1
Benz(a)anthracene	mg/kg (ppm)	0.17	65	66	58-108	2
Chrysene	mg/kg (ppm)	0.17	70	71	64-115	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	76	79	54-111	4
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	78	80	54-119	3
Benzo(a)pyrene	mg/kg (ppm)	0.17	69	71	61-123	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	96	98	46-126	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	89	91	57-119	2
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	86	88	60-116	2

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probablility.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

80.42

SAMPLE CHAIN OF CUSTODY

ME 01/25/08

1801

Send Report To Paul Davidson

Company PBS Eng + Env.

Address 320 N. Johnson St. Suite 100

City, State, ZIP Kennewick WA 99336

Phone # 509 727 0877 Fax # 509 735-1867

SAMPLERS (signature) Dana B. Estes

PROJECT NAME/NO. 61499.00

PO #

REMARKS Pls Return Cooler, Could use more FedEx Shipping as well

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	PAHs 8270D	Naphthalenes 8270SIM				Notes
MW-1	01A-F	1/24/08		Soil	6	✓		✓				✓	✓				
								*									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Dana B. Estes	Dana B. Estes	PBS	1/24/08	
Received by: Nhan Phan	Nhan Phan	FeBI	1/25/08	09:00
Relinquished by:				
Received by:		Samples received at 6 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

LABORATORY REPORT

RJ Lee*Group*, Inc. | Center for Laboratory Sciences
2710 North 20th Avenue, Pasco WA 99301
Tel: (509) 545-4989 | Fax: (509) 544-6010

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
Fax: (509) 735-1867

RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit
MW-1 WA020220080001-001	2/2/2008	Benzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Ethylbenzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Toluene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Xylenes	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Acenaphthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Acenaphthylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Benz (a) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Benzo (b) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Benzo (g,h,i) perylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Benzo (k) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Chrysene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Dibenz (a,h) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Fluorene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Indeno (1,2,3-cd) pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50

LABORATORY REPORT

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
Fax: (509) 735-1867

RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit
MW-1 WA020220080001-001	2/2/2008	Naphthalene	EPA 8270 Non-Potable Water	mg/L	< 0.050		0.050
MW-1 WA020220080001-001	2/2/2008	Phenanthrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	Pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-1 WA020220080001-001	2/2/2008	TPH-Dx	NWTPH-Dx Non-Potable Water	mg/L	< 0.14		0.14
MW-2 WA020220080001-002	2/2/2008	Benzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Ethylbenzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Toluene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Xylenes	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Acenaphthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Acenaphthylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Benz (a) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Benzo (b) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Benzo (g,h,i) perylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Benzo (k) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Chrysene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Dibenz (a,h) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50

LABORATORY REPORT

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
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RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit
MW-2 WA020220080001-002	2/2/2008	Fluorene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Indeno (1,2,3-cd) pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Naphthalene	EPA 8270 Non-Potable Water	mg/L	< 0.050		0.050
MW-2 WA020220080001-002	2/2/2008	Phenanthrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	Pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-2 WA020220080001-002	2/2/2008	TPH-Dx	NWTPH-Dx Non-Potable Water	mg/L	< 0.15		0.15
MW-3 WA020220080001-003	2/2/2008	Benzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Ethylbenzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Toluene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Xylenes	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Acenaphthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Acenaphthylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Benz (a) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Benzo (b) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Benzo (g,h,i) perylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Benzo (k) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Chrysene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50

LABORATORY REPORT

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
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RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit
MW-3 WA020220080001-003	2/2/2008	Dibenz (a,h) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Fluorene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Indeno (1,2,3-cd) pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Naphthalene	EPA 8270 Non-Potable Water	mg/L	< 0.050		0.050
MW-3 WA020220080001-003	2/2/2008	Phenanthrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	Pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-3 WA020220080001-003	2/2/2008	TPH-Dx	NWTPH-Dx Non-Potable Water	mg/L	< 0.15		0.15
MW-23 WA020220080001-004	2/2/2008	Benzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Ethylbenzene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Toluene	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Xylenes	EPA 624 Non-Potable Water	µg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Acenaphthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Acenaphthylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Benz (a) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Benzo (b) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Benzo (g,h,i) perylene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50

LABORATORY REPORT

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
Fax: (509) 735-1867

RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit
MW-23 WA020220080001-004	2/2/2008	Benzo (k) fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Chrysene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Dibenz (a,h) anthracene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Fluoranthene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Fluorene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Indeno (1,2,3-cd) pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Naphthalene	EPA 8270 Non-Potable Water	mg/L	< 0.050		0.050
MW-23 WA020220080001-004	2/2/2008	Phenanthrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	Pyrene	EPA 8270 Non-Potable Water	mg/L	< 0.50		0.50
MW-23 WA020220080001-004	2/2/2008	TPH-Dx	NWTPH-Dx Non-Potable Water	mg/L	< 0.15		0.15
MW-23 WA020220080001-004	1/25/2008	TPH-Dx	NWTPH-Dx Solid	mg/kg	< 33		33

* All solid matricies reported on a dry weight basis unless otherwise noted.
* All values reported without blank correction unless otherwise noted

Analyst Comments:

Report Qualifiers:

E = Value above quantitation range
H = Holding times for preparation or analysis exceeded
N = Analyte not NELAC certified
NELAC-National Environmental Laboratory Accreditation Conference

B = Analyte detected in the associated Method Blank
J = Analyte detected below quantitation limits
L = Sample condition at receipt out of compliance with method defined conditions

S = Spike Recovery outside accepted recovery limits.
R = RPD (relative percent difference) outside accepted recovery limits

LABORATORY REPORT

PBS Environmental - Kennewick, WA
320 N. Johnson #100
Kennewick, WA 99336
Attn: Paul Danielson
Phone: (509) 735-2698
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RJ Lee Group Job No.: WA020220080001
Samples Received: 2/1/2008
Report Date: 2/13/2008
Analysis/Prep Date 2/6/2008
Client Project: 61499
Purchase Order No.:

Analysis:

Sample ID	Sample Collection	Analyte	Matrix/Method	Units	Result	Qualifier	Reporting Limit

Authorized Signature Marisol Avila
Project Manager: Ms. Marisol Avila

C.L.S.
Center for Laboratory Sciences

WA 02022008 0001

RJ I Group, Inc.
Center for Laboratory Sciences
2710 North 20th Avenue, Pasco, WA 99301
Tel: (509) 545-4989 | Fax: (509) 544-6010

Request for Laboratory Analytical Services
Chain of Custody

Page ____ of ____

CC06004 Rev. 02

	Purchase Order No.:	Client Job No.: 61499.00
Lab Use Only	Project No.:	Client No.:
	Date Logged In:	Logged In By:

Report Results To
Name: Paul Danielson
Company: PBS Eng + Env.
Address: 320 N. Johnson Street Suite 100
City, State, Zip: Kennewick WA 99336
Phone: (509 735-2698 Fax: (509 735-1867
Call with Verbal Results:
Email Results To: paul@pbsenv.com
Fax Results To: Paul Danielson

Send Invoice To
Name: Paul Danielson
Company: PBS Email:
Address: As above
City, State, Zip:
Phone: ( ) Fax: ( )

Special Instructions

Turnaround Request (If Left Blank, A Standard TA is Assumed; Please Do Not Use Vague Terms Like ASAP)
Standard: (Yes?) No? If 'No,' No. of Business Days: 5

Drinking Water Sample Only
Sample Purpose: Information ☐ Regulatory ☐
System ID No.:
DOH Source No.:
Multiple Sources Nos.:
Sample Purpose: A? B? Other?

Chemistry Analysis Key
Preservation: Unpres, H_2SO_4, 4°C, HCl, HNO_3, NaOH, Other, Na_2SO_4
Matrix: WW=Wastewater, GW=Groundwater, S=Soil/Sludge, E=Extract, SW=Surface Water, DW=Drinking Water, O=Oil, X=Other
Container: P=Plastic, G=Glass, W=Wipe, A=Air (filter or tube)

Sample Identification	Sample Description	Sample Date	Sample Time Start	Sample Time Stop	Wipe Area / Air Volume	Analysis Requested: NWTPH-Dx	BTEX	PAHs 8270	Naphthalenes 8270 SIM	Pres. Upon Receipt (Y/N)	Preservation	Matrix	Container Type	pH	No. Containers
mw-1	Water	2/1/08				✓	✓	✓	✓						5
mw-2	Water	↓				✓	✓	✓	✓						5
mw-3	Water					✓	✓	✓	✓						1
mw-23	water	↓				✓	✓	✓	✓						5
mw-23	Soil	1/25/08				✓									1

Chain of Custody
Relinquished By (Signature): Daniel Stat Date: 2/1/08 Time: 3:30 pm
Relinquished By (Print Name): Daniel Stat Relinquished To:
Company Name: Method of Shipment:

Chain of Custody
Received By (Signature): Manuel Avila Date: 2/1/08 Time: 3:30 pm
Received By (Print Name): Manuel Avila Relinquished To:
Company Name: Method of Shipment:

Chain of Custody
Relinquished By (Signature): Manuel Avila MA 2/1/08
Relinquished By (Print Name): Manuel Avila MA Date: Time:
Company Name: HDR Relinquished To:
Method of Shipment:

Chain of Custody
Received By (Signature): Date: Time:
Received By (Print Name): Relinquished To:
Company Name: Method of Shipment:

Questions?
Contact Client Services:
(724) 387-1833

350 Hochberg Road
Monroeville, PA 15146
Tel: (724) 325-1776
Fax: (724) 733-1799

530 McCormick Street
San Leandro, CA 94577
Tel: (510) 567-0480
Fax: (510) 567-0488

10503 Battleview Parkway
Manassas, VA 20109
Tel: (703) 368-7880
Fax: (703) 368-7761

2710 North 20th Avenue
Pasco, WA 99301
Tel: (509) 545-4989
Fax: (509) 544-6010

RJ Lee *Group*, Inc.

Customer Name: PBS Environmental - Kennewick, WA
Purchase Order:
Project: 61499.00
Comment:

Order ID: WA020220080001
Order Date: 02/01/2008
Order Entered By: Glynnis Bowman

Samples

Sample ID: WA020220080001-001	Customer Sample ID: MW-1	Site:
Collector: client	Date/Time Collected: 02/02/2008 12:00 PM Pacific Standard Time	Date/Time Received: 02/01/2008 03:30 PM Pacific Standard Time
Priority: 5 day		
Preservative: None	Matrix: Non-Potable Water	Quantity: 1120.0000000000mL
Sample Entered By: Glynnis Bowman		
Comment:		

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-001-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-001-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Fluoranthene	EPA 8270	EPA 3510C
		Acenaphthene	EPA 8270	EPA 3510C
		Naphthalene	EPA 8270	EPA 3510C
		Anthracene	EPA 8270	EPA 3510C
		Benz (a) anthracene	EPA 8270	EPA 3510C
		Phenanthrene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C
		Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
		Fluorene	EPA 8270	EPA 3510C
		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Acenaphthylene	EPA 8270	EPA 3510C
		Benzo (k) fluoranthene	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
WA020220080001-001-03	BTEX by EPA 624	Benzene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation
		Toluene	EPA 624	Analysis Preparation
		Ethylbenzene	EPA 624	Analysis Preparation

Sample ID: WA020220080001-002	Customer Sample ID: MW-2	Site:
Collector: client	Date/Time Collected: 02/02/2008 12:00 PM Pacific Standard Time	Date/Time Received: 02/01/2008 03:30 PM Pacific Standard Time
Priority: 5 day		
Preservative: None	Matrix: Non-Potable Water	Quantity: 1120.0000000000mL
Sample Entered By: Glynnis Bowman		
Comment:		

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-002-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-002-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Fluorene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
		Fluoranthene	EPA 8270	EPA 3510C
		Acenaphthylene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
		Benzo (k) fluoranthene	EPA 8270	EPA 3510C
		Phenanthrene	EPA 8270	EPA 3510C
		Benz (a) anthracene	EPA 8270	EPA 3510C
		Naphthalene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Anthracene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Acenaphthene	EPA 8270	EPA 3510C
		Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C
		Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
WA020220080001-002-03	BTEX by EPA 624	Ethylbenzene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation
		Toluene	EPA 624	Analysis Preparation
		Benzene	EPA 624	Analysis Preparation

Sample ID: WA020220080001-003	**Customer Sample ID:** MW-3	**Site:**
Collector: client	**Date/Time Collected:** 02/02/2008 12:00 PM Pacific Standard Time	**Date/Time Received:** 02/01/2008 03:30 PM Pacific Standard Time
Priority: 5 day		
Preservative: None	**Matrix:** Non-Potable Water	**Quantity:** 1120.0000000000mL
Sample Entered By: Glynnis Bowman		
Comment:		

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-003-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-003-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Phenanthrene	EPA 8270	EPA 3510C
		Fluorene	EPA 8270	EPA 3510C
		Anthracene	EPA 8270	EPA 3510C
		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C

Sample Entered By: Glynnis Bowman
Comment:

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-005-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Dry Weight

SAMPLE CONDITION RECORD

Sufficient sample for the requested tests? yes
Custody seals intact on shipping containers? yes
Sample temperature 4°C ± 2? yes
COC present? yes
Samples in proper container? yes
Air samples - Is a known blank included? n/a
COC signed when relinquished and received? yes
Shipping containers in good condition when received? yes
Are all samples for volatile organic analyses free of headspace? yes
TAT marked on COC? yes
Samples received within the holding time? yes
Bottle caps tight and securely in place? yes
COC agrees with sample labels? yes
Sample containers intact when received? yes
Custody seals intact on sample containers? n/a
Hex Chromium Air Samples - are samples from spray paint operations? n/a

		fluoranthene		
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
WA020220080001-001-03	BTEX by EPA 624	Benzene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation
		Toluene	EPA 624	Analysis Preparation
		Ethylbenzene	EPA 624	Analysis Preparation

Sample ID: WA020220080001-002 **Customer Sample ID**: MW-2 **Site**:

Collector: client **Date/Time Collected**: 02/02/2008 12:00 PM Pacific Standard Time **Date/Time Received**: 02/01/2008 03:30 PM Pacific Standard Time

Priority: 5 day

Preservative: None **Matrix**: Non-Potable Water **Quantity**: 1120.0000000000mL

Sample Entered By: Glynnis Bowman

Comment:

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-002-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-002-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Fluorene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
		Fluoranthene	EPA 8270	EPA 3510C
		Acenaphthylene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
		Benzo (k) fluoranthene	EPA 8270	EPA 3510C
		Phenanthrene	EPA 8270	EPA 3510C
		Benz (a) anthracene	EPA 8270	EPA 3510C
		Naphthalene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Anthracene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Acenaphthene	EPA 8270	EPA 3510C
		Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C

		Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
WA020220080001-002-03	BTEX by EPA 624	Ethylbenzene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation
		Toluene	EPA 624	Analysis Preparation
		Benzene	EPA 624	Analysis Preparation

Sample ID: WA020220080001-003 **Customer Sample ID**: MW-3 **Site**:

Collector: client **Date/Time Collected**: 02/02/2008 12:00 PM Pacific Standard Time **Date/Time Received**: 02/01/2008 03:30 PM Pacific Standard Time

Priority: 5 day

Preservative: None **Matrix**: Non-Potable Water **Quantity**: 1120.0000000000mL

Sample Entered By: Glynnis Bowman

Comment:

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-003-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-003-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Phenanthrene	EPA 8270	EPA 3510C
		Fluorene	EPA 8270	EPA 3510C
		Anthracene	EPA 8270	EPA 3510C
		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C
		Acenaphthylene	EPA 8270	EPA 3510C
		Acenaphthene	EPA 8270	EPA 3510C
		Naphthalene	EPA 8270	EPA 3510C
		Benz (a) anthracene	EPA 8270	EPA 3510C

		Benzo (k) fluoranthene	EPA 8270	EPA 3510C
		Fluoranthene	EPA 8270	EPA 3510C
WA020220080001-003-03	BTEX by EPA 624	Toluene	EPA 624	Analysis Preparation
		Ethylbenzene	EPA 624	Analysis Preparation
		Benzene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation

Sample ID: WA020220080001-004 **Customer Sample ID**: MW-23 **Site**:

Collector: client **Date/Time Collected**: 02/02/2008 12:00 PM Pacific Standard Time **Date/Time Received**: 02/01/2008 03:30 PM Pacific Standard Time

Priority: 5 day

Preservative: None **Matrix**: Non-Potable Water **Quantity**: 1120.0000000000mL

Sample Entered By: Glynnis Bowman

Comment:

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-004-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Liquid to Liquid Extraction
WA020220080001-004-02	Polynuclear Aromatic Hydrocarbons by EPA 8270	Benz (a) anthracene	EPA 8270	EPA 3510C
		Benzo (g,h,i) perylene	EPA 8270	EPA 3510C
		Acenaphthylene	EPA 8270	EPA 3510C
		Dibenz (a,h) anthracene	EPA 8270	EPA 3510C
		Chrysene	EPA 8270	EPA 3510C
		do not use	EPA 8270	EPA 3510C
		Indeno (1,2,3-cd) pyrene	EPA 8270	EPA 3510C
	Naphthalene by EPA 8270	Naphthalene	EPA 8270	EPA 3510C
	Polynuclear Aromatic Hydrocarbons by EPA 8270	Fluorene	EPA 8270	EPA 3510C
		Anthracene	EPA 8270	EPA 3510C
		Acenaphthene	EPA 8270	EPA 3510C
		Naphthalene	EPA 8270	EPA 3510C
		Pyrene	EPA 8270	EPA 3510C
		Phenanthrene	EPA 8270	EPA 3510C
		Benzo (k) fluoranthene	EPA 8270	EPA 3510C

		Benzo (b) fluoranthene	EPA 8270	EPA 3510C
		Fluoranthene	EPA 8270	EPA 3510C
WA020220080001-004-03	BTEX by EPA 624	Benzene	EPA 624	Analysis Preparation
		Toluene	EPA 624	Analysis Preparation
		Xylenes	EPA 624	Analysis Preparation
		Ethylbenzene	EPA 624	Analysis Preparation

Sample ID: WA020220080001-005 **Customer Sample ID**: MW-23 **Site**:

Collector: client **Date/Time Collected**: 01/25/2008 12:00 PM Pacific Standard Time **Date/Time Received**: 02/01/2008 03:30 PM Pacific Standard Time

Priority: 5 day

Preservative: None **Matrix**: Solid **Quantity**: 500.0000000000g

Sample Entered By: Glynnis Bowman

Comment:

Sub-Sample ID	Test	Analyte	Method	Preparation
WA020220080001-005-01	Total Pet Hydrocarbons - Diesel by NWTPH-Dx	TPH-Dx	NWTPH-Dx	Dry Weight

SAMPLE CONDITION RECORD

Sufficient sample for the requested tests? yes
Custody seals intact on shipping containers? yes
Sample temperature 4°C ± 2? yes
COC present? yes
Samples in proper container? yes
Air samples - Is a known blank included? n/a
COC signed when relinquished and received? yes
Shipping containers in good condition when received? yes
Are all samples for volatile organic analyses free of headspace? yes
TAT marked on COC? yes
Samples received within the holding time? yes
Bottle caps tight and securely in place? yes
COC agrees with sample labels? yes
Sample containers intact when received? yes
Custody seals intact on sample containers? n/a
Hex Chromium Air Samples - are samples from spray paint operations? n/a

C.L.S.
Center for Laboratory Sciences

RJ LeeGroup, Inc.
Center for Laboratory Sciences
2710 North 20th Avenue, Pasco, WA 99301
Tel: (509) 545-4989 | Fax: (509) 544-6010

Request for Laboratory Analytical Services
Chain of Custody

Page ____ of ____

CC06004 Rev. 02

	Purchase Order No.:	Client Job No.: 61499.00
Lab Use Only	Project No.:	Client No.:
	Date Logged In:	Logged In By:
Report Results To	Name: Paul Danielson	
	Company: PBS Eng + Env.	
	Address: 320 N. Johnson Street Suite 100	
	City, State, Zip: Kennewick WA 99336	
	Phone: (509 735-2698	Fax: (509 735-1867
	Call with Verbal Results:	
	Email Results To: paul@pbsenv.com	
	Fax Results To: Paul Danielson	
Send Invoice To	Name: Paul Danielson	
	Company: PBS	Email:
	Address: As above	
	City, State, Zip:	
	Phone: ( )	Fax: ( )
Special Instructions		

Turnaround Request	Standard: (If Left Blank, A Standard TA is Assumed; Please Do Not Use Vague Terms Like ASAP) Yes? (circled) No? If 'No,' No. of Business Days: 5
Drinking Water Sample Only	Sample Purpose: Information ☐ Regulatory ☐
	System ID No.:
	DOH Source No.:
	Multiple Sources Nos.:
	Sample Purpose: A? B? Other?
Chemistry Analysis Key	Preservation: Unpres, H_2SO_4, 4°C, HCl, HNO_3, NaOH, Other, Na_2SO_4
	Matrix: WW=Wastewater, GW=Groundwater, S=Soil/Sludge, E=Extract, SW=Surface Water, DW=Drinking Water, O=Oil, X=Other
	Container: P=Plastic, G=Glass, W=Wipe, A=Air (filter or tube)

Analysis Requested

Sample Identification	Sample Description	Sample Date	Sample Time Start	Sample Time Stop	Wipe Area / Air Volume	NWTPH-Dx	BTEX	PAHs 8270C	Naphthalenes 8270 SIM						Pres. Upon Receipt (Y/N)	Preservation	Matrix	Container Type	pH	No. Containers
mw-1	Water	2/1/08				✓	✓	✓	✓	✓										5
mw-2	Water	↓				✓	✓	✓	✓											5
mw-3	Water					✓	✓	✓	✓											7
mw-23	water	↓				✓	✓	✓	✓											5
mw-23	soil	1/25/08				✓														1

Chain of Custody	Relinquished By (Signature): [signature] Date: 2/1/08 Time: 3:30 pm Relinquished By (Print Name): Relinquished To: Company Name: Method of Shipment:	Received By (Signature): Marisol Avila Date: 2/1/08 Time: 3:30pm Received By (Print Name): Marisol Avila Relinquished To: Company Name: Method of Shipment:
Chain of Custody	Relinquished By (Signature): Marisol Avila MA 2/1/08 Date: Time: Relinquished By (Print Name): Marisol Avila MA Relinquished To: Company Name: 2/1/08 Method of Shipment:	Received By (Signature): Date: Time: Received By (Print Name): Relinquished To: Company Name: Method of Shipment:

APPENDIX D

Excerpts of Previous PBS Reports

PBS

PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES

August 16, 2006

Mr. Dallas Beamer
Lieb Foods, Inc
2550-D 23rd Avenue
P.O. Box 389
Forest Grove, OR 97116

Re: LIMITED UNDERGROUND STORAGE TANK (UST) ASSESSMENT, PCBs INSPECTION AND WELL WATER REVIEW AT WELCHS FOODS, 10 EAST BRUNEAU, KENNEWICK, WASHINGTON
PBS PROJECT NUMBER #61396.00

Dear Mr. Beamer:

In August 2006, at your request PBS Engineering and Environmental (PBS) completed a Limited UST Assessment, PCBs Inspection and well water review at the Welchs property. This report provides a summary of the assessment results.

BACKGROUND

Food processing has occurred at the plant location since approximately 1925. During a portion of that time a 50,000-gallon bunker fuel UST system has been providing fuel to power the boiler system. At this time the UST system only provides backup power, with the main heating supplied by natural gas. An earlier UST assessment was completed by others in January 2006, with results not providing information on groundwater. Bank of the West engaged PBS during June of 2006 to complete a Phase I Environmental Assessment on the property, with results of that assessment recommending further work to assess groundwater and soil near the UST system and fuel lines.

Recent information indicates that 2 – 12,000 gallon USTs containing bunker fuel were removed from the site between 1974 and 1978. The location of those units were 120 feet east of the southwest corner of the subject property, with the pump unit on the south side of the two north oriented USTs. Excavation based remedial action has begun to remove bunker fuel contaminated soil related to those USTs.

FIELD METHODS

The fieldwork for this assessment was conducted from July 31 to August 11, 2006; with a utility locate completed on the property prior to beginning work. After arrival on the property, Welchs personnel, PBS and the drilling contractor reviewed the location of the UST and underground fuel lines as well as other utilities in the area prior to beginning drilling.

After the site was checked for utility locations, air rotary Tubex system drilling was provided by Environmental West Exploration, Spokane, Washington to sample soil adjacent to the UST, lines

320 N. Johnson St.
Suite 700
Kennewick, WA 99336
509.735.2698 PHONE
509.735.1867 FAX

and maintenance area of Building #4. Seven borings, with sampling, were completed. Drill holes were completed at the locations shown on Figure 1. After the borings were completed and the samples were collected, the holes were backfilled with bentonite. Soil samples were collected into 4-ounce glass jars, with water samples collected with disposable bailers into 40 ml vials and ½ liter amber bottles. All samples were shipped in iced coolers to a certified environmental laboratory, within the required holding time of the chosen analytical method.

PBS logged the borings in general accordance with the Unified Soil Classification System; see attached boring logs. In general, materials encountered in the borings included a surface layer of asphalt or grass. Various mixtures of sandy gravel and sand were present in most of the borings to approximately 25 feet below ground surface at the base of the borings. See the attached boring logs for further information. Groundwater was encountered in the borings at between 20 and 23 feet below ground surface.

LABORATORY RESULTS

All samples were submitted to Friedman and Bruya Laboratory in Seattle, Washington for analysis by total petroleum hydrocarbons – hydrocarbon identification method; (NWTPH-HCID) a qualitative procedure to identify the fraction and type of hydrocarbon in the sample. Other analysis was completed for total petroleum hydrocarbons – diesel extended method (NWTPH-Dx) and volatile organic constituents (VOCs). Table 1 provides a summary of analytical results for the UST assessment; fuel contamination was encountered in borings #4 and #7 as indicated below. The laboratory report is attached following this report.

TABLE 1
ANALYTICAL RESULTS

Sample/Depth	NWTPH-HCID	8260 Constituents	Gasoline	Diesel	Oil
B1 (water)	ND	All ND	NA	ND	ND
B2 (water)	ND	All ND	NA	ND	ND
B3 (water)	ND	All ND	NA	ND	ND
B4 (water)	NA	All ND	NA	**16,000**	**20,000**
B5 (water)	ND	All ND	NA	ND	ND
B6 (water)	ND	All ND	NA	ND	ND
B7 (water)	NA	All ND	NA	**1,300**	**1,700**
B1 16-17.5'	ND	NA	NA	ND	ND
B1 21-22.5'	ND	NA	NA	ND	ND
B1 24-25.5'	ND	NA	NA	ND	ND
B2 19-20.5'	ND	NA	NA	ND	ND
B2 20.5-22'	ND	NA	NA	ND	ND
B3 15-16'	ND	NA	NA	ND	ND
B3 20.5-22'	ND	NA	NA	ND	ND
B4 20.5-22'	Detect Diesel	NA	NA	<50	<250
B5 20.5-22'	ND	NA	NA	ND	ND
B6 13-15'	ND	NA	NA	ND	ND
B7 14-15'	ND	NA	NA	ND	ND
Cleanup Levels Soil	NA	NA -Variable	100/30*	2,000	2,000
Cleanup Levels Water	NA	NA -Variable	1.0/0.8*	0.5	0.5

NOTES:
Unless indicated, all sample matrix materials are soil.
WDOE – MTCA Method A Cleanup levels for each constituent are indicated in the last line.
Bolded numbers indicate analysis exceeding cleanup levels
All analytical results are in milligrams/kilogram (mg/kg) (water in micrograms/L) p.d.
ND – Material not detected.
NA - indicates not applicable or not analyzed.
* = The Method A cleanup level for gasoline is 100/1.0 mg/kg or 30/0.8 mg/kg if benzene is present. Groundwater is second number.
See Figure I for boring/sample locations.

CONCLUSIONS

Analytical results indicate that petroleum hydrocarbon impact above Washington State Department of Ecology (WDOE) Model Toxic Control Act (MTCA) Method A cleanup levels were found in groundwater sampled at the Welchs site from Borings #4 and #7. Field indications of bunker fuel contamination were observed in both borings. The fuel was encountered only in groundwater, with no soil contamination above the water table elevation encountered. Boring #4 was located approximately one foot north of the existing bunker fuel lines and at the north end of the former 12,000-gallon USTs on the property. Boring #7 was approximately 25 feet south of the existing bunker fuel lines and 18 feet southeast of the south side of the former UST pump house. The larger amount of contamination was observed in Boring #4, which was judged to be downgradient of the confirmed leaks that occurred in the lines and pump house of the earlier 12,000 gallon USTs. No leakage was suspected from the current 50,000 gallon UST and piping system.

No contamination was detected in Boring #5, which was approximately 80 feet downgradient from the suspected leak locations. No contamination was detected in Borings #1, #2 and #3 which were adjacent and downgradient from the existing onsite 50,000 gallon UST. Boring #6 was completed further east on the site, immediately north of the Building #4 machine shop to check for leakage from that area. No contamination was detected in Boring #6, suggesting that no contaminants had escaped from that area.

PCBs ISSUES

In support of the project, PBS completed a review of onsite privately owned transformers and capacitors to check for PCBs. Mr. Gary Splattstoesser, of Benton County PUD, aided in the review. PBS walked through the facility and observed approximately 7 floor mounted oil-less transformers. In addition, approximately 10 - 50 KVA capacitors were observed in the various production areas on the site. Several of the capacitors in the southwest portion of Building #4 were indicated to contain Areovox - Supernol transformer oil. The Supernol oil was indicated to be non-PCBs containing. No other PCBs containing fixtures were observed on the site; no PCBs issues with transformers or capacitors are suspected. Individual fluorescent ballasts were examined for PCBs in the maintenance shop area of Building #4 (the oldest building onsite); labels on the ballasts observed indicated "No PCBs". Checking all light ballasts was beyond the scope of the project, but results at this time suggest that "No PCBs" ballasts will be present throughout.

WATER SUPPLY WELL ISSUES

One production supply well is located immediately west of the Boiler Building. Well construction data indicates the well is 548 feet deep, with unperforated casing to 365 feet below ground surface in basalt bedrock. Six pounds of artesian pressure is present at the well head. Laboratory analytical data was provided to PBS by Welchs, with analysis for inorganic chemicals, synthetic organic chemicals, metals, pesticides, herbicides, petroleum chemicals, volatile organic chemicals, trihalomethanes, semi-volatiles, PCBs and dioxins. Detected constituents included fluoride (0.9 mg/l), sulfate (50 mg/l), sodium (100 mg/l), hardness (11 mg/l), total dissolved solids (319 mg/l), conductivity (503 umhos/cm) and turbidity (0.5 NTUs); all results are within regulatory MCLs. The detected dioxins constituent (2,3,7,8 – TCDD) indicated a concentration of 203.597 picograms/liter in the production well; this can also be written as 203.597×10^{-15} grams/l. EPA Region 9 Preliminary Remediation Goals (PRGs) indicates that the dioxins remediation goal is 4.5×10^{-7} grams/l, suggesting that dioxins levels within the well are safe. All of the other indicated sample results are non-detect for all constituents. No problems concerning well water contamination are suspected from the supplied analytical analysis.

RECOMMENDATIONS

In support of due diligence, PBS recommends that the onsite bunker fuel contaminated soil be removed to the degree possible to not jeprodize adjacent building, slab or utility foundations. Removing the contaminated soil will reduce potential future groundwater contamination by ending the gravity transfer of bunker fuel from soil into the groundwater beneath. The contaminated soil should be disposed at an offsite landfill. Clean fill soil can be brought in to replace the contaminated soil. Work to remove the contaminated soil is currently underway through a separate environmental project with Welchs Foods.

In accordance with WDOE – MTCA regulations in Chapter 173-340 WAC, PBS recommends that the release be reported to the WDOE (this action has already been completed). In conjunction with the contact with WDOE, PBS recommends that Welchs consider joining the WDOE Voluntary Cleanup Program (VCP). Joining the VCP will involve submitting this report (and a planned future excavation remedial action report) and receiving a decision from WDOE concerning whether cleanup action, risk assessment, installing monitoring wells/monitoring or further assessment is necessary at the Welchs site.

Further inspection of fluorescent light ballasts for PCBs and other potential hazardous building materials (lead and asbestos) should be completed prior to future onsite renovations.

LIMITATIONS

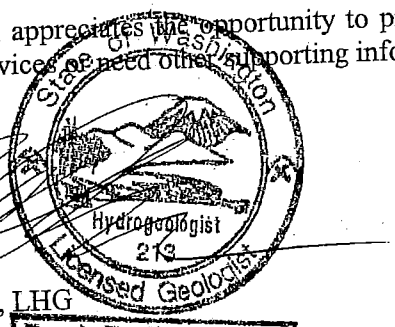
This work was performed in accordance with generally accepted practices of other consultants undertaking similar studies during the same time period and geographical area. PBS Environmental observed the same degree of care and skill generally exercised by other consultants under similar circumstances and conditions. The findings and conclusions of this

report are not scientific certainties, but rather, are based on professional judgement concerning the significance of data gathered during the course of this assessment. The recommendations of this report, or lack thereof, are not considered a legal opinion as to the clients duty concerning due diligence relating to potential liabilities in leasing, owning, or purchasing real estate.

PBS in not able to represent that the site or adjoining land contains no hazardous waste, oil or other latent conditions beyond that detected or observed by PBS during this study. The possibility always exists for contaminants to migrate through surface water, air, or groundwater. The ability to accurately address the environmental risk associated with transport in these media is beyond the scope of this investigation.

PBS very much appreciates the opportunity to provide this report. If you have any questions, need further services or need other supporting information please contact us at (509) 735-2698.

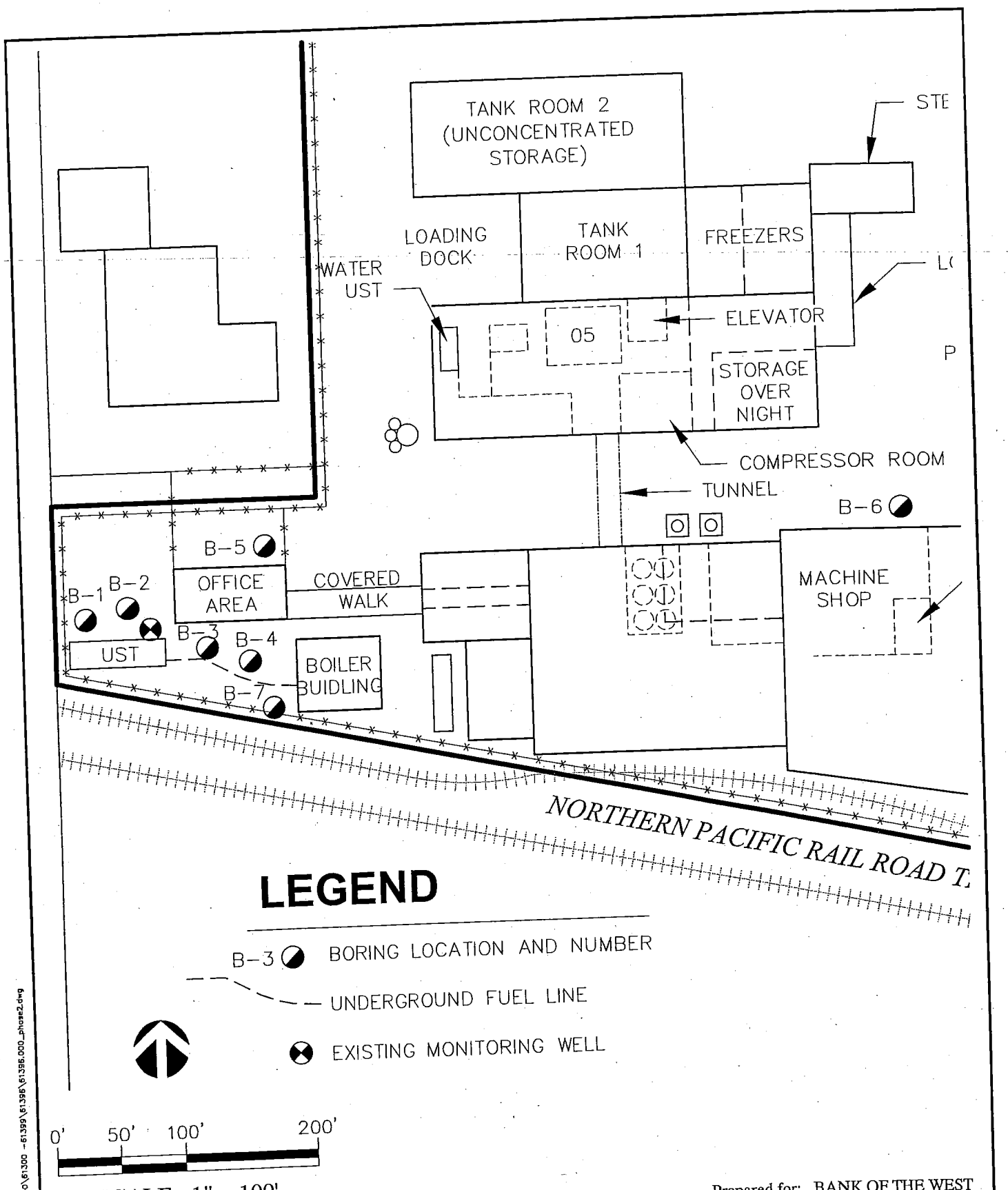
Sincerely,



Paul Danielson, LHG
Project Manager

Paul E. Danielson

Attachments: Figure 1
Boring Logs
Analytical Results



Prepared for: BANK OF THE WEST

PBS	Project #: 61396.000 Date: AUGUST 2006	SITE VICINITY PLAN 10 EAST BRUNEAU STREET KENNEWICK, WASHINGTON	FIGURE 1

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Bore Hole/Well Construction Log

PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-1	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 7/31/06
Hole Depth: 26.5'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	Sample Data: PID Reading (ppm)	Sample Data: Sample Number	Sample Data: Blows/ft.	Lithologic Column	Soil Description
0							0.0-7': Firm, brown, sandy **SILT**; moist,slightly plastic.
7							7-14': Very dense, gray, sandy **GRAVEL**; moist, non-plastic, subrounded.
14				SB1 16-17.5	29 23 30		14-21': Dense, brown fine to medium grained **SAND**; moist, non-plastic.
21				SB1 21-22.5	13 40 42		21-26.5': Very dense, gray, fine to coarse grained **GRAVEL**; moist, subrounded.
				SB1 24-25.5			Collected water sample.
26.5							**BOTTOM OF HOLE**

LOCATION: 37' N. and 19' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

SB-1

REV. _____

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Bore Hole/Well Construction Log

PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-2	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 7/31/06
Hole Depth: 24'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	Sample Data: PID Reading (ppm)	Sample Data: Sample Number	Sample Data: Blows/ft.	Lithologic Column	Soil Description
2							0.0-5.0': Firm brown, sandy **SILT** w/ minor gravel; moist, slightly plastic.
4							
6							5-14': Dense, gray-brown, sandy **GRAVEL;** moist, non-plastic, subrounded.
8							
10							
12							
14							14-21': Dense, gray-brown, fine to medium grained **SAND** w/ gravel; moist, non-plastic, subrounded.
16							
18					4		
20				SB2 19-20.5	21 76		
22	▼			SB2 20.5-22	26 90 83		21-24': Dense, gray-brown, sandy fine to coarse grained **GRAVEL;** satruated, subrounded. Collected water sample.
24							**BOTTOM OF HOLE**
26							
28							
30							
32							
34							
36							
38							
40							

LOCATION: 54' E. and 34' N. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ____

SB-2

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Bore Hole/Well Construction Log

PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-3	1 of 1

Project Name: LOW INCOME HOUSING AUTHORITY
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 7/31/06
Hole Depth: 24'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	PID Reading (ppm)	Sample Number	Blows/ft.	Lithologic Column	Soil Description
0-4							0.0-4': Firm, brown, silty fine grained **SAND** w/ minor gravel; moist, non-plastic.
4-14							4-14': Dense, gray, sandy **GRAVEL;** moist, non-plastic, subrounded.
14-19				SB3 15-16	34 36 92		14-19': Dense, brown, fine to medium grained **SAND** w/ minor gravel; moist, non-plastic.
19-24				SB3 20.5-22	15 46 50		19-24': Very dense, gray, fine to coarse grained **GRAVEL;** moist, non-plastic, subrounded. Collected water sample.
							BOTTOM OF HOLE

LOCATION: 22' N. and 87' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

SB-3

REV. ____

8/14/06 16:33 T:\Projects\61000\61300 -61399\61396\61396_BORINGS.dwg

Bore Hole/Well Construction Log

PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-4	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 7/31/06
Hole Depth: 24'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	Sample Data: PID Reading (ppm)	Sample Data: Sample Number	Sample Data: Blows/ft.	Lithologic Column	Soil Description
0							0.0-6': Medium dense, brown, silty fine grained **SAND** w/ fine gravel; moist, non-plastic.
6							6-15': Dense, gray-brown, sandy **GRAVEL**; moist, non-plastic, subrounded.
15							15-18': Dense, brown, fine to medium grained **SAND**; moist, non-plastic.
18					56		18-24': Very dense, brown-gray, sandy **GRAVEL**; moist, subrounded.
		X		SB4 19-20.5	75 72		
		X		SB4 20.5-22	52 50 49		
24							**BOTTOM OF HOLE**

LOCATION: 14' N. and 115' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

SB-4

REV. ____

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PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-5	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 8/1/06
Hole Depth: 24'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	PID Reading (ppm)	Sample Number	Blows/ft.	Lithologic Column	Soil Description
0-2							0.0-0.2': Asphalt.
2-7							0.2-7': Dense, gray, sandy **GRAVEL**; slightly moist, non-plastic.
7-14							7-14': Dense, gray-brown, fine to coarse grained **SAND** w/gravel; moist, non-plastic.
14-18							14-18': Dense, gray, sandy fine to medium **GRAVEL**; moist, non-plastic.
18-20.5		▼	+100	SB5 19-20.5	72		18-24': Very dense, gray, medium to coarse grained **GRAVEL**; moist, non-plastic.
20.5-22				SB5 20.5-22	33 44 42		Collected water sample.
24							**BOTTOM OF HOLE**

LOCATION: 80' N. and 153' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

SB-5

REV: ____

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PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Bore Hole/Well Construction Log

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-6	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 8/1/06
Hole Depth: 20.5'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	Sample Data: PID Reading (ppm)	Sample Data: Sample Number	Sample Data: Blows/ft.	Lithologic Column	Soil Description
0-6							0.0-0.2': Asphalt. 0.2-6': Dense, brown, fine to medium grained **SAND** w/ some fine gravel; moist, non-plastic.
6-12							6-13': Dense, gray-brown, sandy fine to medium grained **GRAVEL**; moist, non-plastic.
12-14		X		SB6 11-15			13-15': Medium dense, brown, silty **SAND** w/ fine gravel; moist, non-plastic.
14-20	▼				14 26 90		15-20.5': Very dense, gray, sandy **GRAVEL**; moist, nonplastic. Collected water sample.
20		X		SB6 19-20.5			**BOTTOM OF HOLE**

LOCATION: 100' N. and 600' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

SB-6

REV. ____

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Bore Hole/Well Construction Log

PBS
320 N. JOHNSON ST.
SUITE 700
KENNEWICK, WA. 99336
(509) 735-2698
FAX
(509) 735-1867

Project Number:	Boring/Well Number:	Sheet
61396.00	SB-7	1 of 1

Project Name: WELCHS
Project Location: KENNEWICK, WASHINGTON
Driller/Equipment: ENVIRONMENTAL WEST
Geologist/Engineer: PAUL DANIELSON
Sample Method: AIR ROTARY/SPLIT-SPOON

TOC Elevation (feet above datum): _____
Surface Elevation (feet above datum): _____
Start/End Date: 8/1/06
Hole Depth: 24'
Outer Hole Diameter: 6"

Depth (feet, BGS)	Well Construction Details	Sample Data: Sample Interval	Sample Data: PID Reading (ppm)	Sample Data: Sample Number	Sample Data: Blows/ft.	Lithologic Column	Soil Description
0							0.0-0.2': Asphalt.
2							0.2-4': Dense, gray, sandy **GRAVEL**; slightly moist, non-plastic.
4							4-17': Dense, gray, medium to coarse grained **SAND** w/ gravel; moist, non-plastic.
6							
8							
10							
12							
14		X		SB7 14-15			
16							
18							17-24': Very dense, gray, medium to coarse grained **GRAVEL** w/ sand; saturated, nonplastic.
20	▼				12		Collected water sample. Small amount of oil on top of water.
22		X		SB7 20.5-22	26 33		
24							**BOTTOM OF HOLE**
26							
28							
30							
32							
34							
36							
38							
40							

LOCATION: 30' S. and 145' E. FROM SOUTHWEST CORNER OF SITE

NOTES

1. SOIL INTERFACES AND DESCRIPTIONS ARE INTERPRETIVE AND ACTUAL CHANGES AND TRANSITIONS MAY BE GRADUAL.
2. WATER LEVEL IS FOR DATE SHOWN AND MAY VARY WITH TIME OF YEAR.
3. SOIL DESCRIPTIONS NOT INTENDED TO BE USED FOR GEOTECHNICAL DESIGN PURPOSES.

REV. ____

SB-7

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PBS

PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES

August 24, 2006

Mr. Marty Gardner
Welch's Foods
10 East Bruneau
Kennewick, WA 99336

Re: SOIL REMEDIAL ACTION REPORT AT THE LOCATION OF FORMER UNDERGROUND STORAGE TANKS (USTS), 10 EAST BRUNEAU, KENNEWICK, WASHINGTON
PBS PROJECT NUMBER #61405.00

Dear Mr. Gardner:

In August 2006, at your request PBS Engineering and Environmental (PBS) and Welch's Foods (Welch's) began a soil based remedial action for the removal of bunker fuel contaminated soil at the Welch's property. This report provides a summary of the remedial action results.

BACKGROUND

Food processing has occurred at the Welch's plant location since approximately 1925. PBS completed a Phase I Environmental Site Assessment (Phase I) in July 2006, followed by a Phase II Environmental Assessment (Phase II) on the property in August 2006. Bunker fuel contamination was detected in groundwater during the Phase II in borings #4 and #7. Further study of the results, plans and early photographs of the site indicated that two – 12,000 gallon USTs containing bunker fuel were removed from the site in the late 1980s. The location of the earlier USTs were 120 feet east of the southwest corner of the subject property, with the pump unit on the south side of the two north oriented USTs (see Figure 1). A 50,000 gallon UST provides backup fuel at this time. This report summarizes excavation based remedial action and soil disposal associated with the project and the former USTs.

FIELD METHODS/ACTIVITIES

The fieldwork for this project was conducted from August 10 through 17, 2006; with a utility locate completed on the property prior to beginning work. K. Kaser Company completed the excavation and contaminated soil removal with a Case 9030 B Trackhoe. The original intent was to locate contamination along an existing set of fuel lines from the Welch's Boiler Building to the existing 50,000-gallon UST. As excavation proceeded along the lines in the vicinity of contaminated Boring #4, it was concluded that no leakage had occurred from that system. A plans search indicated that the two 12,000 gallon USTs had previously been located immediately to the south of Boring #4, so excavation at the former location of the USTs for the earlier system was initiated. The excavator first encountered contamination at approximately 14 feet below ground surface, with contamination continuing down to groundwater at 21 feet below ground surface.

320 N. Johnson St.
Suite 700
Kennewick, WA 99336
509.735.2698 PHONE
509.735.1867 FAX

The project continued by excavating into and progressively removing the contamination. Contaminated soil was removed by the excavator and placed into a dump truck for removal from the immediate area and temporary storage in the northeast quadrant of the Welch's site (see Figure 2). Because of lack of room in the excavation area clean soil was also removed and separately stacked in the northeast corner of the Welch's facility. The temporary soil storage areas were asphalt covered, with a catch basin in that area temporarily plugged to disallow contaminant discharge from the site if rain occurred.

Soil remediation was the main target of this project, with all of the contaminated soil from above the water table removed. Contaminated soil from below the water table was left, due to the ineffectiveness of attempts to remediate that soil and groundwater by excavation. As excavation proceeded, a gas line and then the main oil lines between the boiler and 50,000 gallon UST were cut and removed to make room to the northwest for excavation to proceed.

When all contamination above the water table was removed, soil samples from the lower portion of the excavation sidewalls, clean soil stockpile and contaminated soil stockpile were collected into 4-ounce glass jars (see Figures 1 & 2 for the sample locations). All samples were shipped in iced coolers to a certified environmental laboratory, within the required holding time of the relevant analytical method.

Mixed sand and gravel, with many pieces of brick, pipe, rebar and other former construction components were excavated from the former tank basin. Much of the material excavated from the upper 12 feet of the former UST area was fill from within the previous tank basin. Within the excavation, gravel with sand was observed to 10 feet below ground surface, with sand beneath to 18 feet below ground surface. Beneath the sand was sandy gravel down into the water table. Groundwater was encountered in the excavation at 21 feet below ground surface.

Backfill of the remedial excavation zone with clean backfill is underway concurrent with the completion of this report. The clean soil excavated from the hole, as well as clean offsite backfill are being used to complete the backfill.

LABORATORY RESULTS

All samples were submitted to Friedman and Bruya Laboratory in Seattle, Washington for analysis by total petroleum hydrocarbons – diesel extended (NWTPH-Dx) a method that quantifies heavy hydrocarbon oil components. To make the quantifications necessary for contaminated soil disposal at Allied Waste (Rabanco) other analysis was completed including: total metals for lead (Pb), cadmium (Cd) and chromium (Cr), benzene, ethylbenzene, toluene and xylenes (BTEX) and total organic halogens (TOX). Table 1 provides a summary of analytical results. The analyses indicate that fuel contamination was present in the contaminated stockpile, with minimal contaminant impact indicated in the clean stockpile and the final excavation sidewalls. Final analytical results for the clean soil transferred onto the property from offsite have not yet been completed, with that data to be provided in an addendum letter to follow. The laboratory report is attached following this report.

TABLE 1
ANALYTICAL RESULTS

Sample Number	Sample Location	Diesel/Oil Results	BTEX	Pb/Cd/Cr	TOX
61405.00-1	Excavation 33W/39S/-21'	All ND	NA	NA	NA
61405.00-2	Excavation 31W/48S/-20'	All ND	NA	NA	NA
61405.00-3	Excavation 23W/31S/-20'	All ND	NA	NA	NA
61405.00-4	Excavation 23W/58S/-19'	All ND	NA	NA	NA
61405.00-5	Excavation 8W/66S/-17'	All ND	NA	NA	NA
61405.00-6	Excavation 5W/57S/-19'	62/ND	NA	NA	NA
61405.00-7	Excavation 6W/45S/-18'	420/1100	NA	NA	NA
61405.00-8	Contaminated Stockpile	**8900/12000**	All ND	9.31/<1/2.58	<5
61405.00-9	Contaminated Stockpile	NA	NA	NA	NA
61405.00-10	Contaminated Stockpile	**8300/11000**	ND/ND/ND/0.6	20.6/<1/3.33	<5
61405.00-11	Contaminated Stockpile	NA	NA	NA	NA
61405.00-12	Contaminated Stockpile	1400/**2400**	ND/ND/ND/0.8	5.46/<1/2.6	<5
61405.00-13	Clean Stockpile	55/ND	NA	NA	NA
61405.00-14	Clean Stockpile	140/ND	NA	NA	NA
61405.00-15	Clean Stockpile	All ND	NA	NA	NA
61405.00-16	Imported Clean Soil	In Progress	NA	NA	NA
61405.00-17	Imported Clean Soil	In Progress	NA	NA	NA
61405.00-18	Imported Clean Soil	In Progress	NA	NA	NA
Soil Cleanup Levels		2000/2000	0.03/7/6/9	250/2/19	NA

NOTES:
All sample matrix materials are soil.
WDOE – MTCA Method A Cleanup levels for each constituent are indicated in the last line.
Bolded numbers indicate analysis exceeding cleanup levels
All analytical results are in milligrams/kilogram (mg/kg)
ND – Soil sampled and analyzed but constituent not detected.
NA - indicates not applicable or not analyzed.
Excavation sample locations (and depth) are measured (in feet) from the southeast corner of the Welch's Office Building
See Figures 1 & 2 for further sample location information

CONCLUSIONS

Analytical results indicate that petroleum hydrocarbon impact above Washington State Department of Ecology (WDOE) Model Toxic Control Act (MTCA) Method A cleanup levels were found in soil from the excavation (see analytical results for the contaminated stockpile, which originated from contaminated soil in the excavation). Field indications of significant bunker fuel contamination were observed within the excavation during remedial action. Approximately 516 cubic yards of contaminated soil were removed from the excavation, with approximately 348 cubic yards of clean soil separately stockpiled in the northeast portion of the site.

The origin of the fuel contamination was judged to be approximately below the south end of the west former 12,000-gallon UST. Excavating and removing the contaminated soil above the water table has reduced potential future groundwater contamination by ending the previously ongoing gravity transfer of oil from soil to groundwater.

Groundwater is contaminated due to the release of bunker fuel. From the previous Phase II, Boring #4 groundwater was most contaminated because it was located closest to the former USTs (approximately at the north end of the tanks and downgradient). Boring #7 (10' – 15" upgradient) indicated much less fuel contamination on groundwater. Downgradient flow of contamination in groundwater did not transport contamination as far as Boring #5 (approximately 75' northeast of the former USTs).

Allied waste "Generator Waste Profile Sheets" have been prepared, with analytical results supplied to the Rabanco Landfill in Klickitat County, Washington (see attached). Removal and offsite disposal of the contaminated soil is to be completed within approximately one–month. At that time waste disposal receipts, a more accurate shipping weight and other not yet available information will be supplied as an addendum to this report.

In accordance with WDOE – MTCA regulations in Chapter 173-340 WAC, the release associated with this cleanup has been reported to the WDOE with a Facility Site ID Number (#89931898) provided by the agency. In conjunction with the contact with WDOE, Welch's is in communication with WDOE for the purposes of joining the Voluntary Cleanup Program (VCP). Joining the VCP will involve submitting this report (and the recently completed Phase II report) and receiving a decision from WDOE concerning whether further groundwater cleanup action, risk assessment, installing monitoring wells (with monitoring) or further assessment is necessary at the Welch's site.

RECOMMENDATIONS

PBS recommends that, in conjunction with the cleanup process and the VCP, Welch's should consider requesting that WDOE provide a No Further Action (NFA) letter regarding remediation of the soil at the site. The WDOE will provide further recommendations concerning how to proceed regarding the remaining onsite groundwater contamination, with further work including, but not necessarily limited to, well installation and monitoring expected.

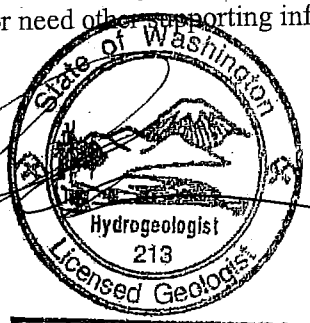
LIMITATIONS

This work was performed in accordance with generally accepted practices of other consultants undertaking similar studies during the same time period and geographical area. PBS Environmental observed the same degree of care and skill generally exercised by other consultants under similar circumstances and conditions. The findings and conclusions of this report are not scientific certainties, but rather, are based on professional judgement concerning the significance of data gathered during the course of this assessment. The recommendations of this report, or lack thereof, are not considered a legal opinion as to the clients duty concerning due diligence relating to potential liabilities in leasing, owning, or purchasing real estate.

PBS in not able to represent that the site or adjoining land contains no hazardous waste, oil or other latent conditions beyond that detected or observed by PBS during this study. The possibility always exists for contaminants to migrate through surface water, air, or groundwater. The ability to accurately address the environmental risk associated with transport in these media is beyond the scope of this investigation.

PBS very much appreciates the opportunity to provide this report. If you have any questions, need further services or need other supporting information please contact us at (509) 735-2698.

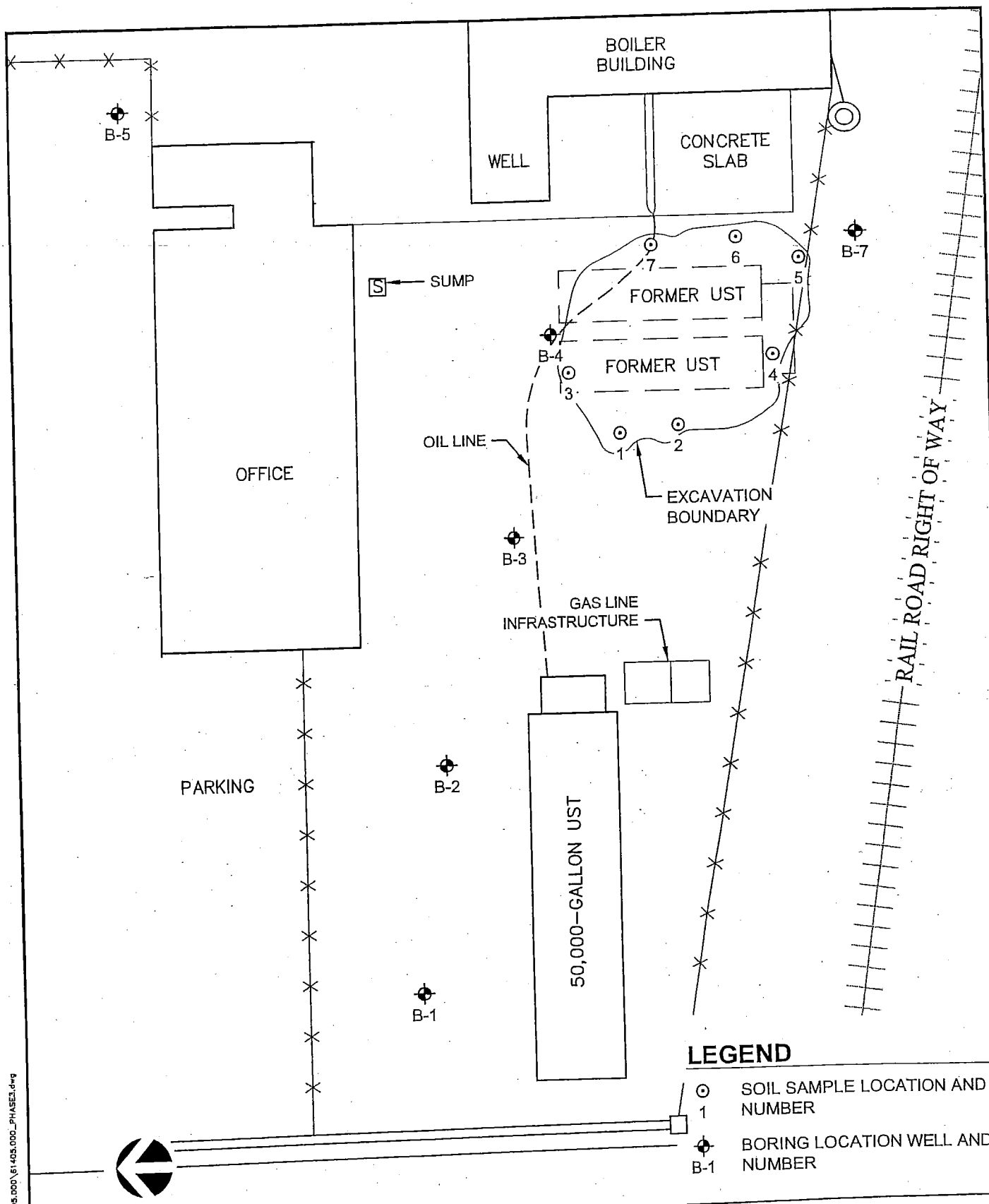
Sincerely,



Paul Danielson, LHG
Project Manager

Paul E. Danielso

Attachments: Figure 1 & Figure 2
Pictures
Generator Waste Profile Sheets
Analytical Results



SCALE: 1" = 20'

Prepared for: WELCHS FOODS

PBS

Project #: 61405.000

Date: AUGUST 2006

SITE VICINITY AND EXCAVATION REMEDIAL ACTION PLAN

10 EAST BRUNEAU
KENNEWICK, WASHINGTON

FIGURE 1

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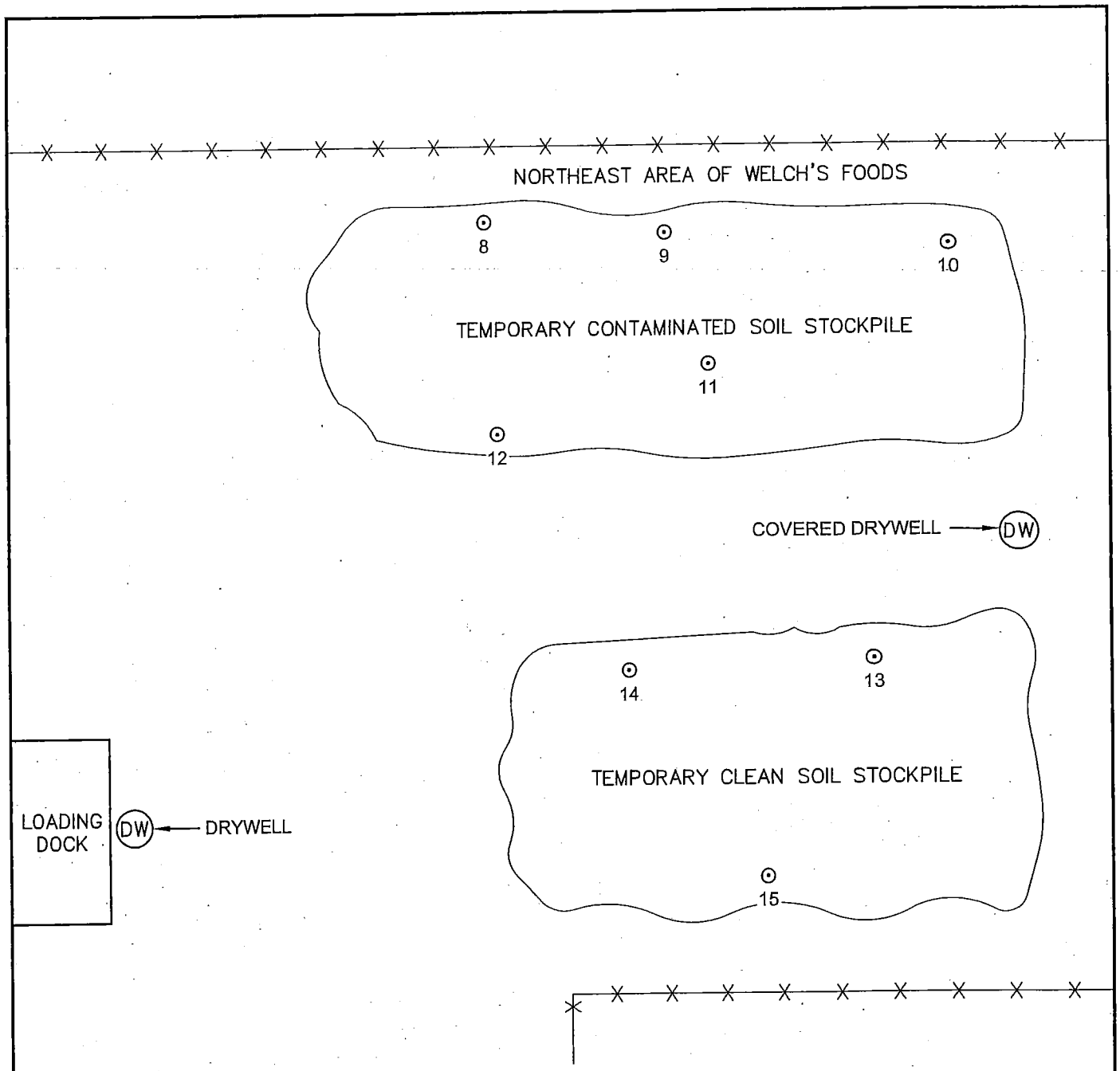


LEGEND

⊙ 1 SOIL SAMPLE LOCATION AND NUMBER

SCALE: 1" = 20'

Prepared for: WELCHS FOODS

PBS	Project #: 61405.000 Date: AUGUST 2006	SITE VICINITY PLAN 10 EAST BRUNEAU KENNEWICK, WASHINGTON	FIGURE 2

8/23/06 10:37 V:\60000\61405.000\61405.000_PHASE3.dwg

APPENDIX E

Site Health and Safety Plan

PBS

SITE HEALTH & SAFETY PLAN

October 14, 2007

Purpose: *To identify potential work-related hazards and required PPE, and to develop a basic plan-of-action for responding to injuries and emergencies. Where applicable, information contained here shall be briefed verbally to PBS subcontractors prior to the start of work. A signature page is found on Page 3.*

Prepared for:
Welch's Foods
Grandview, Washington

Site Name and Address:
Welch's Site, Kennewick
10 East Bruneau
Kennewick, WA

EMERGENCY INFORMATION

PBS Project Manager Name: Paul Danielson
PBS Office Address & Mobile Phone Number: 320 North Johnson #100, Kennewick, WA, (509) 727-0538

Alternate PBS Contact Name: ~~Larry Ross~~ Dana Ertl 727-0873 Cell
Alternate Mobile Phone Number: (509) ~~378-2196~~ 735-2698

Nearest Hospital/Emergency Room and Phone: (driving directions attached)
Leave project site by turning left off of Bruneau Street onto Washington Street. Drive approximately 10 block south on Washington Street and turn right onto 8th Avenue. Travel one block west on 8th Avenue and turn left onto Auburn Street; Kennewick General Hospital is on your right immediately as you enter Auburn Street. The Emergency Room entrance is available on the right.

Ambulance/Fire/Police: 911

Nearest Phone: PBS Project Manager (mobile): (509) 727-0538
Nearest Water: On site

Important Emergency Phone Numbers

WA Department of Ecology 24-hour Spill Response Hotline:	(360) 407-6300
National Response Center:	(800) 424-8802
Northwest Natural Gas (Emergency):	(800) 882-3377
Other Natural Gas (*hand-enter phone*):	(888) 522-1130
Northwest Utility Notification Center (Washington):	(800) 424-5555
Washington Poison Center; Emergency Phone:	(800) 222-1222

Washington State Labor and Industry Safety & Health: .....(800) 423-7233

EMERGENCY PLAN

First-aid kit location: Project Manager's vehicle (verify present)
Chemical exposure (accidental skin/eye contact): Identify chemical and flush with water if appropriate; transport to hospital. See attached MSDS for further information.

Ambulance: 911
Fire: 911
Police: 911
Map and Directions to the nearest hospital: ..... *attached/last page*
Designated Emergency Vehicle: Will call ambulance
Ignition key location (if not in vehicle): NA

NATURE OF SITE WORK

Three borings and monitoring wells will be completed on the subject property in an area of known fuel contamination. Work areas marked and cleared from utilities prior to drilling.

KNOWN/SUSPECTED SITE HAZARDS

Potential Hazard	"X" indicates known hazard on site.
Heavy Equipment (drill rig)	☑
Noise	☑
Slippery Surfaces if wet	☐
Fall Risks	☐
Site Construction traffic	☑
Bunker Fuel Oil Contamination	☑
Processing, J. Lieb Foods	☑
	☐
	☐

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Minimum required PPE are noted below with an "X". **Note:** If reporting to a primary contractor, ensure compliance with their minimum PPE requirements.

PPE	"X" indicates item is required
Hard Hat	☑
Hearing Protection	☑
Safety Glasses	☑
Steel-Toe Boots	☑
Safety/high-visibility vest	☑
Rain Suit	☐
Work Gloves (rubber when in oil contact)	☑
Other	☐
	☐
	☐
	☐

PLAN ACKNOWLEDGMENTS

This Plan was prepared and reviewed in general accordance with the *PBS Corporate Health and Safety Program* and was written by Paul Danielson on October 14, 2007.

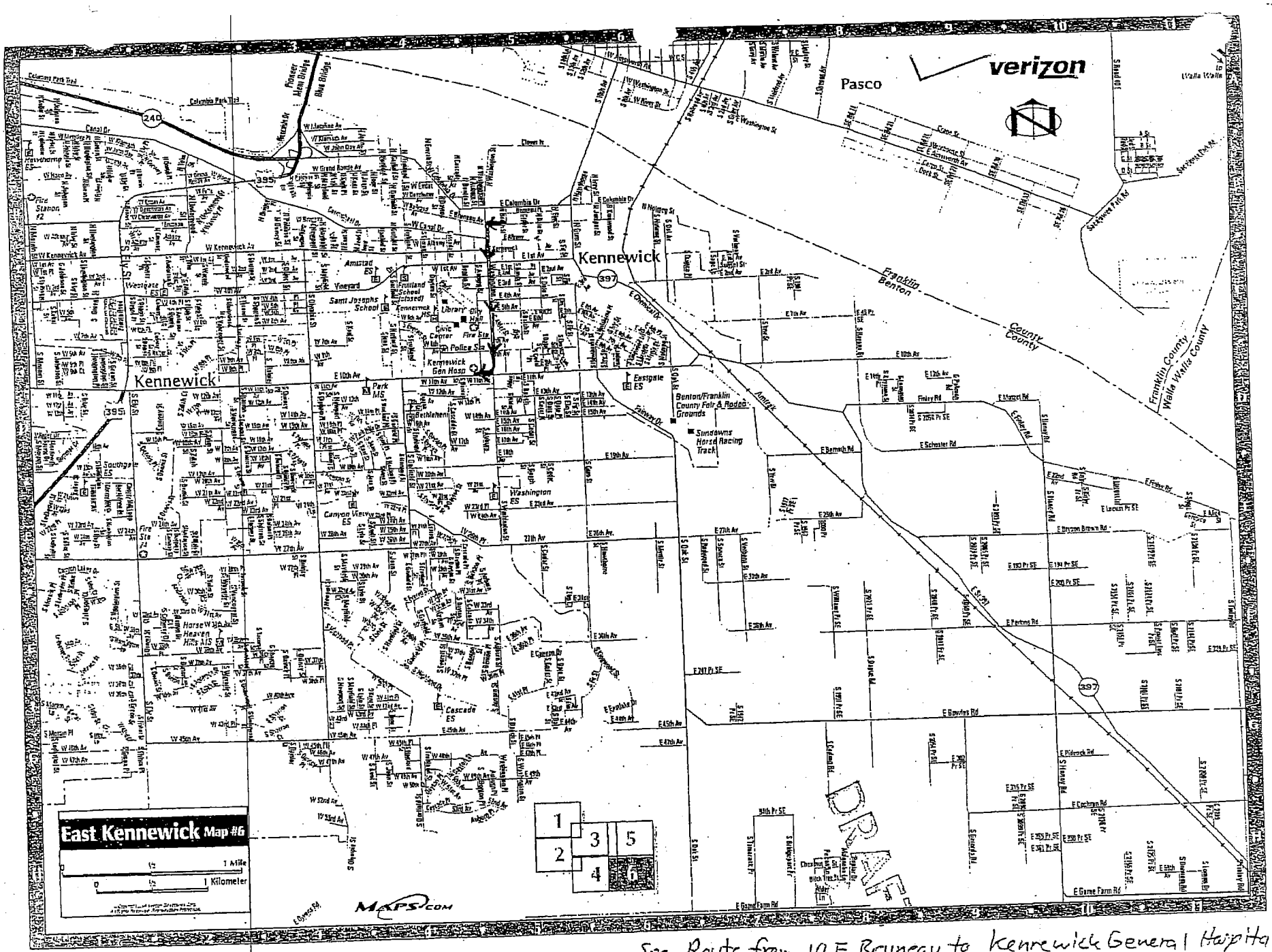
The following site personnel have been briefed on this Plan and understand its provisions:

NAME – Please Print	SIGNATURE	EMPLOYER
Paul Danielson		PBS Engineering and Environmental
Dana Ertel		PBS
Scott Mickelson		MVDC
Alan Stancil		MVDC

Date and time of brief: 1-23-08

PBS Initials: P.D.

Directions and Map to Nearest Medical Facility



See Route from 10 E Bruneau to Kennewick General Hospital

/MSDS/HMIS/151/BHCPZ.HTM (6 hits)

RESIDUAL FUEL OIL,BUNKER FUEL OIL

!! This is an ARCHIVE Record !!

TOP

DRAFT

MSDS Safety Information

FSC: 9140 **MSDS Date:** 10/07/1985 **MSDS Num:** BHCPZ

Submitter: B DT **LIIN:** 00B020062 **Tech Review:** 04/14/1989 **Status CD:** C

Product ID: RESIDUAL FUEL OIL,BUNKER FUEL OIL **MFN:** 01

Article: N **Kit Part:** N

Responsible Party **Cage:** 00033

Name: BELCHER COMPANY

Address: 9 GREENWAY PLAZA **Box:** N/K

City: HOUSTON **State:** TX **Zip:** 77046

Country: US

Info Phone Number: 713-877-1400

Emergency Phone Number: 713-877-1400

Preparer's Name: DELNO MALZAHN,CIH

Proprietary Ind: N **Review Ind:** Y

HMIS BHCPZ : RESIDUAL FUEL OIL,BUNKER FUEL OIL

Published: Y

Special Project CD: N

TOP

Contractor Summary

Cage:00033 Name:BELCHER COMPANY

Address:9 GREENWAY PLAZA Box:N/K
City:HOUSTON State:TX Zip:77046

Country:US Phone:713-877-1400

TOP

Ingredients

Cas: 68553-00-4 Code: M RTECS #: 1004181CM Code: M

Name: COMPLEX MIXTURE OF PARAFFINIC,OLEFINIC,NAPHTHENIC AND AROMATIC HYDROCARBONS

% Text: 99

Environmental Wt:

Other REC Limits: N/K

OSHA PEL: 5 AS OIL MIST Code: M

OSHA STEL: Code:

ACGIH TLV: 5 Code: M

ACGIH N/P STEL: Code:

EPA Rpt Qty:

DOT Rpt Qty:

Ozone Depleting Chemical: N

TOP

Health Hazards Data

LD50 LC50 MixtureN/K

Route Of Entry Inds - Inhalation:YES Skin:YES Ingestion:YES

Carcinogenicity Inds - NTP:NO IARC:NO OSHA:NO

Health Hazards Acute And Chronic

PROLONGED AND REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

Explanation Of Carcinogenicity

N/K

Signs And Symptious Of Overexposure

MODERATELY IRRITATING TO SKIN. CAUSES REDNESS AND DRYING OF SKIN. IRRITATING TO MUCOUS MEMBRANES AND RESPIRATORY TRACT.WILL PRODUCE SYMPTOMS OF INTOXICATION. CAN ACT AS A SIMPLE ASPHYXIANT. INGESTION-MAY CAUSE MILD EXCITATION,LOSS OF CONSCI OUSNESS,CONVULIONS,CYANOSIS,CONGESTION AND CAPILLARY HEMORRHAGING OF LUNGS/ORGA

Medical Cond Aggravated By Exposure

MAY AGGRAVATE PRE-EXISTING DERMATITIS.

First Aid Information TOP

FLUSH EYES WITH WATER FOR 15 MIN. GET MEDICAL ATTENTION. FOR SKIN,REMOVE CONTAMINATED CLOTHING,WASH WITH SOAP & WATER. IF INHALED,MOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION. IF INGESTED,DO NOT IN DUCE VOMITING IF SPONTANEOUS VOMITING OCCURS,HOLD VICTIM'S HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

Spill Release Procedures TOP

REMOVE SOURCES OF HEAT OR IGNITION,INCLUDING INTERNAL COMBUSTION ENGINES AND ROWER TOOLS. CLEAN-UP SPILL BUT DO NOT FLUSH TO SEWER OR SURFACES WATER. VENTILATE AREA AND AVOID BREATHING VAPORS OR MISTS.

Neutralizing Agent

N/K

Waste Disposal Methods TOP

DISPOSE THROUGH A LICENSED WASTE DISPOSAL COMPANY.FOLLOW FEDERAL,STATE AND LOCAL REGULATIONS.

Handling and Storage Precautions TOP

STORE IN TIGHTLY CLOSED CONTAINERS IN A COOL,DRY PLACE,AWAY FROM SOURCES OF HEAT OR IGNITION.GROUND AND BOND ALL TRANSFER & STORAGE EQUIP WITH SELF CL

Other Precautions

CONTACT BELCHER COMPANY FOR FURTHER INFORMATION.

Fire and Explosion Hazard Information TOP

Flash Point Method: PMCC

Flash Point: **Flash Point Text:** >140

Autoignition Temp: **Autoignition Temp Text:** N/A

Lower Limits: 3.9 **Upper Limits:** 20.1

Extinguishing Media

DRY CHEMICAL,FOAM,CARBON DIOXIDE,WATER SPRAY.

Fire Fighting Procedures

FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. DO NOT USE A FORCE STREAM OF WATER DIRECTLY ON OIL FIRES AS THIS WILL SCATTER THE FIRE.

Unusual Fire/Explosion Hazard

CAN BE IGNITED BY SELF-GENERATED STATIC ELECTRICITY;CONTAINERS SHOULD BE

BONDED AND GROUNDED.

TOP

Control Measures

Respiratory Protection

USE APPROVED RESPIRATORY PROTECTIVE EQUIPMENT FOR CLEANING LARGE SPILLS OR ENTRY INTO LARGE TANKS,VESSELS OR OTHER CONFINED SPACES.

Ventilation

PROVIDE ADEQUATE VENTILATION TO KEEP MIST OR VAPORS BELOW ALLOWABLE EXPOSURE LEVELS.

Protective Gloves

IMPERVIOUS.

Eye Protection

CHEMICAL GLASSES OR GOGGLES.

Other Protective Equipment

N/K

Work Hygienic Practices

N/K

Supplemental Safety and Health

N/K

TOP

Physical/Chemical Properties

HCC: **NRC/State LIC No:**

Net Prop WT For Ammo:

Boiling Point: **B.P. Text:** 500F

Melt/Freeze Pt: **M.P/F.P Text:** -20F

Decomp Temp: **Decomp Text:** N/K

Vapor Pres: 0.2 @20C **Vapor Density:** N/K

Volatile Org Content %: **Spec Gravity:** 0.97

VOC Pounds/Gallon: **PH:** N/K

VOC Grams/Liter: **Viscosity:** N/P

Evaporation Rate & <0.01 ETHYL ETHER=1

Reference:

Solubility in Water: INSOLUBLE

Appearance and Odor: MILD PETROLEUM ODOR,BLACK LIQUID TO HEAVY SPRAY.

Percent Volatiles by Volume: 100 **Corrosion Rate:** N/K

dtSearch 7.20 (7104)

TOP

Reactivity Data

Stability Indicator: YES

Stability Condition To Avoid: AVOID HEAT,SPARK,FLAME,BUILD-UP OF STATIC ELECTRICITY.

Materials To Avoid: STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products: CARBON MONOXIDE,CARBON DIOXIDE AND HYDROCARBONS AND SULFUR DIOXIDE.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: N/K

TOP

Toxicological Information

Toxicological Information: N/P

TOP

Ecological Information

Ecological: N/P

TOP

MSDS Transport Information

Transport Information: N/P

TOP

Regulatory Information

Sara Title III Information: N/P

Federal Regulatory Information: N/P

State Regulatory Information: N/P

TOP

Other Information

Other Information: N/P

TOP

HMIS HAZCOM Label

Product ID: RESIDUAL FUEL OIL,BUNKER FUEL OIL

Cage: 00033

Assigned IND: Y

Company Name: BELCHER COMPANY

Street: 9 GREENWAY PLAZA

PO Box: N/K

HMIS BHCPZ : RESIDUAL FUEL OIL,BUNKER FUEL OIL

City: HOUSTON State: TX Zipcode: 77046
Country: US

Health Emergency Phone: 713-877-1400

Label Required IND: Y
Status Code: C
Label Date: 12/16/1998

Date Of Label Review: 12/16/1998
MFG Label NO:
Year Procured: N/K

Origination Code: G
Eye Protection IND: N/P

Chronic Hazard IND: N/P
Skin Protection IND: N/P

Signal Word: N/P

Respiratory Protection IND: N/P

Health Hazard:
Contact Hazard:

Fire Hazard:
Reactivity Hazard:

Hazard And Precautions

PROLONGED AND REPEATED SKIN CONTACT MAY CAUSE DERMATITIS. MODERATELY IRRITATING TO SKIN. CAUSES REDNESS AND DRYING OF SKIN. IRRITATING TO MUCOUS MEMBRANES AND RESPIRATORY TRAC.WILL PRODUCE SYMPTOMS OF INTOXICATION. CA N ACT AS A SIMPLE ASPHYXIANT. INGESTION-MAY CAUSE MILD EXCITATION,LOSS OF CONSCIOUSNESS,CONVULSIONS,CYANOSIS,CONGESTION AND CAPILLARY HEMORRHAGING OF LUNGS/ORGA

DRAFT

APPENDIX F

Sampling and Analysis Plan

PBS

Sampling and Analysis Plan for Remedial Investigation

Former Welch's Facility
10 East Bruneau
Kennewick, Washington

Prepared for:
Welch's Foods
Grandview, Washington

November 2007
Project # 61499.000

Bandon | Bend | Boise | Eugene | Portland | Seattle | Tri-Cities | Vancouver
320 N Johnson Street, Suite 100, Kennewick, WA 99336
509.735.2698 Main
509.735.1867 Fax
www.pbsenv.com

SAMPLING AND ANALYSIS PLAN FOR REMEDIAL INVESTIGATION

Former Welch's Foods Facility
10 East Bruneau
Kennewick, Washington

Prepared for
Welch's Foods
Grandview, Washington

Prepared by
PBS Engineering and Environmental
320 North Johnson Street, Suite #100
Kennewick, Washington 99336
(509) 735-2698

PBS Project No: 61499.000

November 2007

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose

PBS Engineering + Environmental (PBS) has prepared this Sampling and Analysis Plan for Remedial Investigation (SAP) for the Former Welch's Foods, Kennewick, Washington site. The purpose of this study is to complete the delineation of the extent of soil and groundwater contamination onsite. PBS assumes that the work will be conducted with Washington State Department of Ecology (WDOE) oversight, and that documentation will generally follow the format provided in the Agreed Order (AO) between Welch's Foods Inc. and the WDOE, as indicated in Exhibit B of the AO. The AO establishes the general scope requirements for the Remedial Investigation (RI).

1.2 Background Summary

The facility has historically operated as a food processing juice facility since approximately 1925. Welch's Foods recently operated the site until it was closed in 2005. Another company (J.Lieb Foods) recently occupied the site and is providing food processing and manufacturing vitamin water.

The large 50,000 gallon bunker fuel UST was in the removal process in September 2007. Gas lines that were in the way of the UST removal were recently moved by Cascade Natural Gas Company. The onsite boiler system had been converted to natural gas, with no further need for fuel storage.

No tank leakage was observed during the UST decommissioning; further environmental history of the site is provided in Section 3.1.

2.0 PROJECT MANAGEMENT

2.1 Project Communications

The project team members and responsibilities for the final site characterization activities are summarized in the following table:

Table 1. Project Team Members and Responsibilities

Personnel	Project Role
Welch's Foods	
Keith Naughton	Project Coordinator
Tom Brooke	Project Manager
Chuck Evans	Director of Manufacturing
J. Lieb Foods	
Marty Gardner	Site Manager
PBS Engineering & Environmental	
Paul Danielson, LHG	Project Manager/Hydrogeologist
Dulcy Berri, LHG	Principal Hydrogeologist/Reviewer
WDOE	
Mark Dunbar	WDOE Project Coordinator

2.2 Schedule

The schedule for completing the proposed activities is summarized in the following table. The timing of this schedule was prepared by PBS from review of Exhibit B of the order (Schedule for Work).

Table 2. Proposed Schedule for Remedial Investigation and Reporting

Task	Start Date	Completion Date
Prepare Draft SAP	September 24, 2007	October 7, 2007
Prepare HASP	October 7, 2007	October 14, 2007
Ecology Comment on SAP	October 14, 2007	October 21, 2007
Final SAP to Ecology	October 21, 2007	November 5, 2007
Well Installation and Soil Sampling	November 5, 2007	December 9, 2007
First Quarter of Groundwater Monitoring	December 9, 2007	December 16, 2007
Draft Remedial Investigation Report to Ecology	December 16, 2007	February 4, 2008
Ecology Comments of Draft Report	February 4, 2008	February 18, 2008
Final Remedial Investigation Report to Ecology	February 18, 2008	March 1, 2008

3.0 SITE DESCRIPTION

The point of contaminant release is located within the former Welch's Foods facility, located at 10 East Bruneau Street, Kennewick, Benton County, Washington (Figure 1). The property is located on the southeast corner of the Washington Street and Bruneau Street intersection within Benton County Parcel Number #106802030001022. The property is further described as located in Township 8 North, Range 30 East, NW ¼ of Section 6. For the purposes of the environmental issues regarding the AO, the Site is defined as the extent of contamination caused by the release and not the boundaries of the property the release originated from. There remains the possibility that the Site could include other parcels if contamination migrated off of the former Welch's Foods property.

3.1 Previous Environmental Investigations and Findings

A Phase II Environmental Site Assessment was completed by Blue Mountain Environmental on the subject property in January 2006, to assess whether leakage had occurred onto the property from a 50,000 gallon UST. This geoprobe drilling project, which did not test groundwater, found no contamination.

PBS completed a Phase I Environmental Site Assessment (PBS Project #61375.00) in July 2006. This assessment recommended a Phase II Environmental Assessment to test groundwater adjacent to the 50,000 gallon UST and in other areas of the site.

A Phase II Environmental Site Assessment was completed by PBS in July and August 2006 (PBS Project #61396.00). That assessment, which used an air-rotary drill system, located groundwater and soil contamination approximately 40 feet west of the Boiler building at or near water table elevation at 20 feet below ground surface (bgs). The

boring that discovered the contamination was immediately adjacent to a 2" oil line that trended from the 50,000 gallon UST to the Boiler building.

In early August, 2006, PBS oversaw environmental excavation along the oil line that trended from the 50,000 gallon UST to the boiler building (PBS Project #61405.00). No oil contaminated soil was found along the oil line, this finding prompted further study. Review of plans and early photographs of the site indicated that two 12,000 gallon USTs containing bunker fuel were removed from the site in the 1980s. The earlier UST locations were approximately 15 feet south of contaminated Boring #4 (from the previous Phase II). Further excavation was then proposed to the south at the former location of the earlier USTs.

Later in August 2006, excavation and Independent Remedial Action (WAC 173-340-515) was completed further south, with signficant contamination located. The independent action was conducted to meet the purposes of an Interim Remedial Action (WAC 173-340-430) as a good faith effort by Welchs to reduce soil contamination in a timely manner. The excavation contractor removed approximately 516 cubic yards of contaminated soil from the soil and upper contaminated groundwater zone beneath the former locations of the USTs on August 10 through 17th, 2006 (PBS Project #61405.00).

The Interim Remedial Action was intended to aid in reducing the source of saturated contaminated oil in soil over the groundwater to discourage further oil movement to groundwater. The full known extent of oil contamination in the soil was excavated and removed. Contamination within the groundwater zone was less known and not fully removed. Contamination was known to have migrated to the north, with groundwater, where it was detected in the earlier Phase II. With the specific gravity of the fuel product at 0.97, the greater appearance of contamination at the water table surface in Boring #4 and the lack of volatiles in Phase II water samples collected, we assume most of the oil contamination in groundwater is near the surface of the water table in all areas. The oil appeared to be very soil bound, with little tendency to dissolve or travel with groundwater.

The extent of the Interim Remedial Action effort was limited by the location of buildings and utilities on the site and the depth that the trackhoe could effectively work and still protect surrounding infrastructure. Contaminated soil and clean soil from the excavation area was removed to the northeast corner of the site, with contaminated soil later hauled to the Rabanco facility in Roosevelt, Washington for final disposal. The clean soil, plus offsite clean soil, was later used to help backfill the excavation zone.

4.0 PROPOSED REMEDIAL INVESTIGATION

The AO driven RI process is intended to aid delineation of the extent of groundwater contamination onsite; soil contamination was previously removed and disposed. The RI, along with the environmental information gathered from the earlier work, will lay the groundwork for cleanup options for the site. This information is to be used at a later time to plan a cleanup Feasibility Study (FS). The FS is not a part of the investigation at this time, but is a component of the AO and is required for completion of the AO. This SAP will be submitted to Welch's Foods and WDOE as the first portion of the RI process. The future components of the RI are discussed:

4.1 Site Health and Safety Plan

A Site Health and Safety Plan (HASP) will be submitted for WDOE review approximately one week after completion of this SAP. The HASP will be completed in conjunction with the safety issues foreseen in the proposed RI project for PBS personnel, the current site occupant (J. Lieb Foods), Welch's Foods, and the future site workers.

4.2 Utility Locates

A utility locate will be requested from the one-call locate service prior to completing the RI. A private locator will be used, if necessary, to locate private utilities. Once the utility locating is completed, this information will be compiled onto a site plan.

4.3 RI Soil Sampling

The 2006 Phase II Environmental Assessment (#61396.00) and the Remedial Action Report (#61405.00) were compiled by PBS and helped to delineate soil and groundwater contamination on the property. The proposed RI soil sampling will further characterize the soil in the proposed well locations to support the final RI report.

Figure 2 shows the proposed locations for monitoring wells. These locations may be adjusted for drilling access, utility conflicts or recommendations from Welch's, J. Lieb or WDOE. An air rotary drill will be used for completing the project; the heavy gravel and cobble formation beneath the site will not allow use of other drilling methods. A logged description of the soil (Unified Method) and environmental parameters will be recorded (including grain size, color, moisture, odor and volatiles). Soil samples will be collected at from approximately 15 to 22 feet below ground surface (or where other zones of contamination are suspected). See Appendix A for further field procedures concerning decontamination, documentation, photographs, soil/water drum storage and disposal.

4.4 Monitoring Well Construction

A major purpose of the onsite drilling will be the construction of monitoring wells. The wells will be completed within borings provided by an air rotary drill. Wells will be constructed in accordance with WDOE monitoring well construction regulations provided in WAC Chapter 173-160 and 173-162. Wells will be constructed with 2" casings to a depth of at least 6 feet below the surface of the unconfined groundwater table elevation (27 feet bgs). With the use of 10 feet of screened casing, approximately 4 feet of screen will be prepared above the water table. One well will be constructed upgradient of the location of the contamination, with two wells (or more if necessary) constructed downgradient. Wells will be constructed in such a configuration that the top of casing can be surveyed and the surface of the groundwater table can be determined, along with groundwater flow direction and gradient. Well surveying will be completed by PBS, with an accuracy of 0.01 feet vertical accuracy measured against a relative datum.

4.5 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring is planned to begin one week after the wells have been constructed. All three wells will be monitored and sampled. Prior to sampling

monitoring wells, water table elevations will be recorded by PBS with an electronic water level indicator. PBS will use bailers or a 12 volt submersible pump to purge and sample the monitoring wells. Prior to sampling, each well will be purged with an estimated 3 well casing volumes of water removed. Concurrently with purging, the groundwater parameters of conductivity, pH, and temperature will be recorded with a water quality meter, until these parameters have stabilized. Laboratory-manufactured conductivity and pH standard solution values will be recorded during purging to check data accuracy. All waste water generated from sampling and purging will be held on the property, in drums, until the initial analysis of the groundwater samples is complete. Drums will need to be sampled for disposal as indicated by the results of the groundwater analysis (see Appendix A).

4.6 Analytical Procedures

Once the conductivity, pH and temperature parameters have stabilized during the well purging process, sampling will be completed by collecting well water from the purged well system into laboratory-cleaned one-liter amber jars or 40-milliliter VOAs. Any reused sampling tools will be decontaminated as indicated in Appendix A. Preservatives will be added as needed and requested by the lab; no preservatives are planned at this time. Soil samples collected during the drilling process will be collected into 4 ounce glass jars for submission to a laboratory. All collected samples will be stored in a cooler with ice until released to a certified laboratory, with chain of custody documentation, within the holding time for the analytical process.

Proposed soil and groundwater analytical procedures will be performed as indicated in Section VII (3) of the AO. Testing will be designed to determine whether the following hazardous substances have been released at the Site: petroleum products, benzene, toluene, ethyl benzene, xylenes, carcinogenic polycyclic aromatic hydrocarbons (PAHs), and napthalenes, Petroleum products are tested through northwest total petroleum hydrocarbons – diesel methods (NWTPH-Dx). The list of constituents and analytical procedures is provided below:

Constituent	Proposed Analytical Procedures
Petroleum Products (Oil)	EPA Method 8015M (NWTPH-Dx)
Petroleum Products (heavy oil)	EPA Method 8015M (NWTPH-Dx Extended)
Benzene	EPA Method 8021B
Toluene	EPA Method 8021B
Ethyl benzene	EPA Method 8021B
Xylenes	EPA Method 8021B
PAHs	EPA Method 8270C
Napthalenes	EPA Method 8270 SIM

PBS proposes to use Friedman and Bruya, Environmental Laboratory in Seattle, Washington to complete analytical analysis for the project.

4.7 QA/QC Procedures

Sample QA/QC will include collecting one duplicate groundwater sample and soil sample during the RI process which will be submitted to the laboratory blind-labeled. The

duplicate will be numbered separately for comparison to the initial sample, with results provided in the RI report. Excessive deviation between the duplicates and initial samples will trigger further QA/QC procedures. The laboratory's daily batch quality control testing will also be reviewed for data quality.

5.0 REMEDIAL INVESTIGATION REPORT

5.1 Data Evaluation

The results of the RI soil and groundwater testing (including the results of the first groundwater monitoring event) will be compiled into tables along with data from the earlier investigations. These data will be compared to WDOE Method A and CLARC (Method B) tables for unrestricted and industrial settings. For data exceeding these parameters, PBS will evaluate the input parameters for site-specific data wherever possible and consider risk assessment. Most risk assessment evaluation is expected to be addressed during the FS stage of the future project to support incorporation of a final cleanup option.

It should be noted that the access limitations placed on drilling activities due to the existing buildings and utilities may result in incomplete contamination delineation at the site. Additional drilling or other environmental assessment may needed (or requested by WDOE) if the initial RI results suggest further work is necessary.

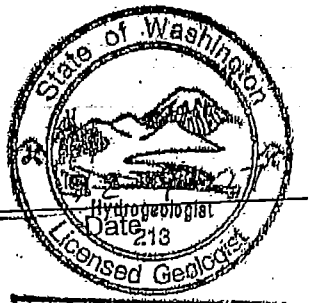
5.2 Reporting

A report will be prepared that details the RI. The report will include methodology, sampling results, a site plan showing sample locations, tables summarizing previous and new data, discussion of the laboratory results and copies of laboratory reports and chain-of-custody documentation. A PBS Washington-Licensed Hydrogeologist will complete the report. PBS management staff will provide review; a draft copy will be submitted to Welch's Foods and then WDOE for review.

The report will provide the technical baseline for potential additional RI work and the future FS that will evaluate cleanup options for the property as outlined in Exhibit B in the Order.

The RI report, which details the well installation and soil/groundwater testing is planned to be completed by March 1, 2008, and will include the findings of the first round of quarterly groundwater monitoring. If desired, subsequent monitoring events (May, August and October 2008) can be reported separately as brief quarterly monitoring reports provided to Welch's Foods and WDOE. It is possible that results of the three quarters of monitoring could change the focus of the future FS.

6.0 SIGNATURE PAGE



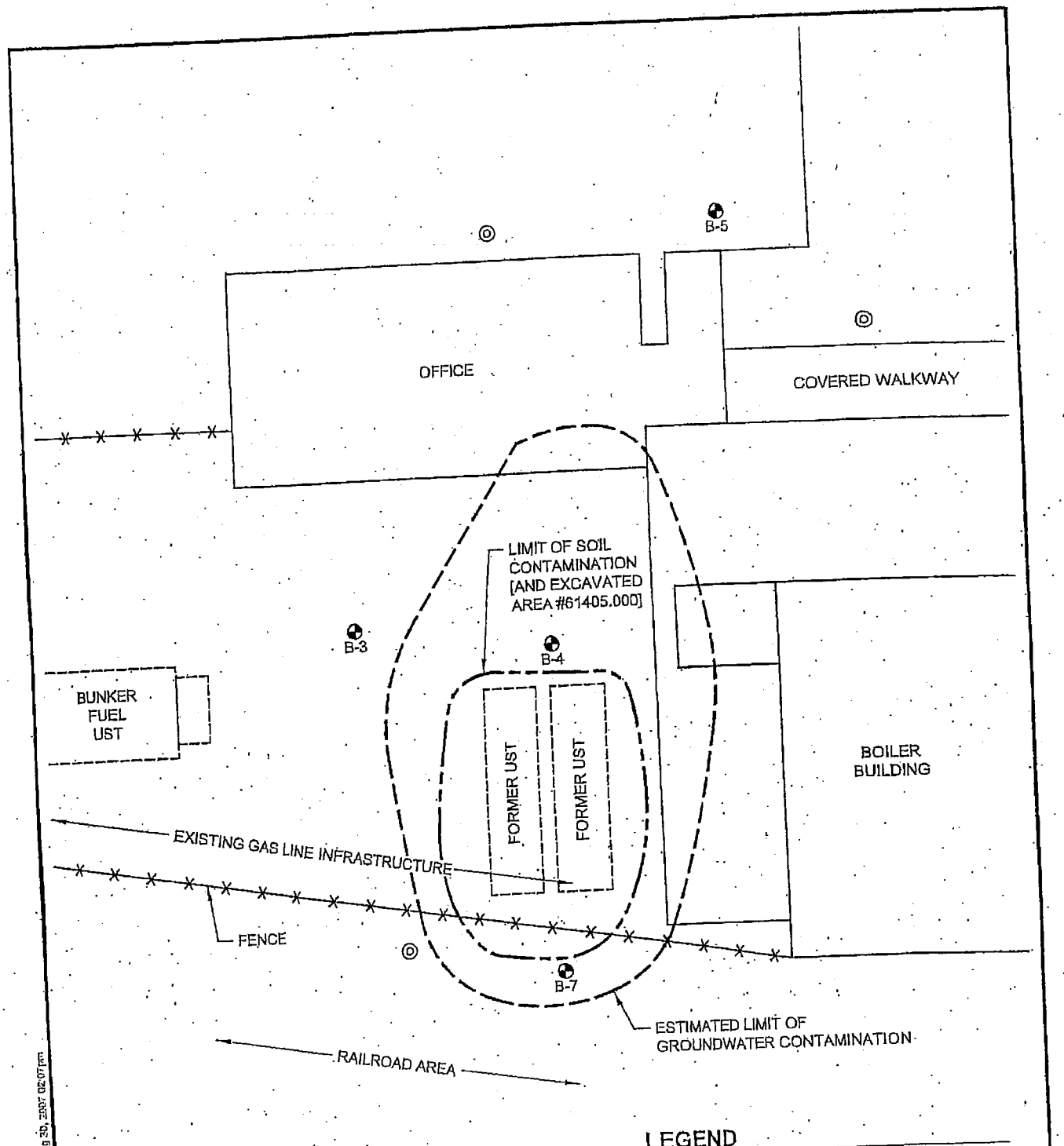
Paul E. Danielson

Paul Danielson, LHG
Project Manager, Hydrogeologist

DULCY A. BERRI

Dulcy A. Berri, R.G.
Principal/Senior Hydrogeologist

FIGURES



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PBS	PROJECT # 61499.000	SAMPLING AND ANALYSIS PLAN FOR REMEDIA INVESTIGATION	FIGURE 2
	DATE SEPT. 2007	10 EAST BRUNEAU AVENUE KENNEWICK, WASHINGTON	

APPENDIX A

APPENDIX A

1.0 EQUIPMENT DECONTAMINATION PROCEDURES

Decontamination of field equipment is performed to minimize the potential for transfer of potentially contaminated materials to uncontaminated areas, to minimize the exposure of personnel to hazardous substances, and to reduce the possibility of cross-contamination between samples.

1.1 Personal Protective Equipment and Worker Decontamination

Personal protective equipment (PPE) will be worn in accordance with the Health and Safety Plan (HASP) prepared for this project. In addition to protecting workers, PPE also helps to reduce the possibility of cross-contamination. Worker decontamination zones are not required for the remedial investigation.

1.2 Equipment Decontamination

Wherever practical, new disposable sampling equipment (e.g. pump tubing) will be used to collect each sample and will then be discarded to eliminate the need for decontamination.

Soil sampling equipment that will be reused (such as scoops, spoons, and drilling equipment) will be decontaminated to prevent cross-contamination between samples.

The larger boring equipment will be decontaminated between boreholes and before demobilization with a pressure washer.

For smaller sampling equipment, such as scoops, spoons and bowls, the decontamination will occur between each use. Smaller sampling equipment that cannot be cleaned with a pressure washer will be decontaminated as follows:

- Remove visible soil and material from equipment.
- Wash equipment with a non-phosphate detergent (i.e., Alconox) solution in tap water.
- Thoroughly rinse with tap or distilled water.

Field measurement equipment will be kept clean to ensure accurate performance and to prevent cross-contamination.

2.0 PROJECT DOCUMENTATION PROCEDURES

During the course of the investigation, all field activities will be documented using one or more of the following methods:

- Field notebook
- Soil boring log
- Photographs

2.1 Field Notebook

Field personnel will use a field notebook to record any pertinent information and to describe sampling procedures. Notes may include sketches of actual boring locations, visual and olfactory characteristics of the soil and water sampled, time of sample collection, and other relevant information. In addition to the investigation data, the following site activity records will be recorded in the field notebook:

- Time of arrival and departure from the site
- Project personnel and subcontractor personnel onsite
- Equipment calibration records
- Health and safety monitoring records, such as breathing zone monitoring
- Disposal and storage of investigation-derived waste

After completion of the sampling activities, the field notebook will be stored in the custody of PBS Engineering and Environmental.

2.2 Soil Boring Log

Soil boring logs will be completed for each boring advanced at the site. Grain size, color, moisture, odor and other field observations will be noted on these logs.

2.3 Photographs

Photographs taken during field investigative activities will be recorded in the field notebook with the following information:

- Date and time of photograph
- Compass direction (N/S/E/W) in which picture was taken
- Description of activity or condition seen in photograph

3.0 INVESTIGATION-DERIVED WASTE

During environmental field investigations, investigation-derived waste (IDW) will be generated. The investigations are expected to produce the following waste:

- Drill cuttings (soil) and soil sampling waste
- Equipment decontamination water
- Non-media waste such as direct push liners, disposable gloves, etc.

The disposal of each type of waste is addressed below.

3.1 Containment of Soil and Drilling Fluids

All potentially contaminated soil sampling waste, drilling cuttings and fluids will be contained within 55-gallon drums. Each drum will be labeled with the project name and "Property of Welch's Foods". The label shall also contain the type of media (soil, drilling fluid), drum number, the date filled and the borehole(s) from which the media originated.

Drums containing contaminated or suspected contaminated cuttings will be identified on the drum inventory as such. Based on results of earlier work on the site, hazardous waste is not expected to be generated during this investigation. Drums will be sampled later for suspected contaminants and disposed as needed.

3.2 Containment of Water

Water resulting from equipment decontamination shall be contained within 55-gallon drums. The drums shall be labeled as noted previously and sampled and disposed as needed by Welch's.

3.3 Containment of Non-media Waste

During the course of the field investigations, waste such as direct push liners, disposable gloves, plastic bags and other disposable items will be generated. Typically, these items are classified as solid waste and can be disposed of through regular solid waste streams by the driller or PBS. PBS will take care to minimize the inclusion of these items in the drum-contained media.

3.4 Storage and Management of Drums

Drums shall be labeled and covers secured prior to placement in a Welch's and/or Lieb Foods designated storage area on the subject property.

PBS will maintain a drum inventory table of all drums generated during the investigation and will make a copy of this inventory available to Welch's Foods.

3.5 Disposal of Drums

Welch's Foods is designated as being responsible for arranging for proper disposal of drums generated during environmental investigations.

APPENDIX G

Groundwater Flow Direction Information

Project #61499.00

Groundwater Flow Gradient and Direction

Station	Reference GW Elevation
MW #1	79.32
MW #2	79.25
MW #3	79.26

Complete reference line from highest to lowest groundwater elevation (MW #1 to MW #2)

Distance between MW #1 and MW #2 = 98 feet
Change of depth between MW #1 and MW #2 = 79.32 – 79.25 = 0.07 feet
Depth range ascribed to MW #3 = 79.26 – 79.25 = 0.01 feet

$\frac{0.01}{0.07} = 0.14$ or 14%

98' x 0.14 = 17.72 feet; Therefore the line of equal groundwater table elevation on the line from MW #1 to MW #2 is 17.72 feet from MW #2 (see attached drawing).

The downgradient flow direction is perpendicular to the equal elevation line and forms a bearing of North 4^0 East.

Gradient and Depth Range

Gradient is 0.07 feet per 98 feet or

$\frac{0.07}{98 \text{ feet}} = \frac{X}{100 \text{ feet}}$

$\frac{100' (0.07)}{98 \text{ feet}} = X$

X = 0.071 feet/100 feet gradient

Project #61499.00

Hydraulic Conductivity and Velocity Estimation

Hydraulic conductivity is estimated in the upper portion of the unconfined aquifer. Although pump tests or slug tests are preferred, that information was not available for this project. Unit consists of a clean sandy Gravel (GP). From Bowles and Walton, 1998 the hydraulic conductivity is estimated at 1×10^2 feet per day (100 feet per day).

Groundwater velocity and gradient are correlated through Darcy's Law:

Groundwater velocity (V) = -K dh/dx

-K = hydraulic conductivity in feet per day (- in a downgradient direction)

dh/dx = hydraulic gradient in feet per 100 feet

$$\frac{100 \text{ feet}}{\text{Day}} \times \frac{0.071 \text{ feet}}{100 \text{ feet}} = 0.071 \text{ feet per day}$$

$$\frac{1 \text{ day}}{0.071} = 14.08 \text{ days per foot of groundwater travel at the given gradient}$$

High gradient and higher velocity are expected in the spring and summer when irrigation canals infiltrate into the system so estimated flow velocity is considered low end.

In 20 years since tank closure the groundwater flow distance is estimated to be:

20 years x 365 days per year = 7,300 days

$$\frac{7{,}300}{14.08} = 518 \text{ feet distance water has travelled in 20 years (low end number).}$$

APPENDIX H

Oil Release Approximations

Project #61499.00
Soil Oil Loading, Fuel Spill Volume and Oil vs Water Flow Distance

Interim Remedial Action contaminated soil analytical results indicated diesel and oil contamination as high as 8,900 mg/kg diesel and 12,000 mg/kg oil.

8,900
12,000
20,900 mg/kg total (milligrams of product per kilogram of soil)

Estimated 60' diameter of soil contamination related to the groundwater smear zone at 1.5' thickness. Estimated 25'diameter of soil contamination above the water table at a thickness of 7'.

Area of Circle = $R^2\pi$
Area of Cylinder = $R^2\pi$ x h

3.14 x 30^2 x 1.5 = 4,239 cubic feet of contaminated soil in smear zone.
3.14 x 12.5^2 x 7 = 3,434 cubic feet of contaminated soil above the water table.

One cubic foot of the clean sandy gravel weighs approximately 130 pounds / cubic foot.

One kilogram = 2.2 pounds

$$\frac{130 \text{ pounds}}{2.2 \text{ pounds/kilogram}} = 59.1 \text{ kilograms/cubic foot}$$

Weight of contaminated zone soil = 59.1 x 7,673 cubic feet = 453,474 kilograms
Each kilogram of soil contains 20,900 milligrams of product.

or

$$20{,}900 \text{ mg} \times \frac{1 \text{ gram}}{1{,}000 \text{ mg}} \times \frac{1 \text{ kilogram}}{1{,}000 \text{ grams}} = \frac{20{,}900}{1{,}000{,}000} = 0.0209 \text{ kilograms}$$

0.0209 kilograms of product per kilogram of soil

0.0209 x 453,474 = 9,478 kilograms of oil total

2.2 pounds/ kilogram x 9,478 kilograms = 20,852 pounds of oil

Specific Gravity of water = 1.0
Specific Gravity of oil = 0.97
7.48 gallons/cubic foot, volume
62.4 pounds of water/cubic foot

62.4 = 8.34 pounds of water / gallon
7.48

20,852 pounds of oil = 2,500 gallons of oil total
8.34 pounds/gallon

2,500 gallons = 2,577 gallons of oil released (approximately)
0.97

Oil transport at the site has been shown by boring and well construction to be less than 70 feet.

Water has moved a minimum of 518 feet in the 20 year time period since the USTs were removed.

70 feet = 0.135 or 13.5% distance of oil transport compared to water.
518 feet