August 9, 2019

Whitley Fuel Company
c/o Mr. Ben Whitley
1617 2nd Avenue North
Okanogan, WA 98840

Re: Soil Sampling – Whitley Fuels Tanker Spill – Soil Sampling Event, September 2018
Loss 83A012312-1 Whitley Fuel LLC
WA Facility/Site ID No.: 357
Cleanup Site ID No.: 4757

Dear Mr. Whitley,

Fulcrum Environmental Consulting, Inc. (Fulcrum) has completed a limited soil investigation of the Whitley Fuels Tanker Spill site. site located on Washington State Highway 2 (Highway 2) approximately 0.5 miles east of Monitor, Washington (site). The site is situated south of Highway 2 along the southern boundary of a Washington Department of Transportation Right-of-Way and along the northern boundary of the Wenatchee River County Park (Chelan County Parcel No. 231913625077). Sampling was completed to evaluate residual soil contaminants remaining from a 1991 fuel tanker accident were still present in soils underlying Highway 2. The site is identified in State of Washington Databases as WA Facility/Site ID number 357 and as Cleanup Site ID number 4757.

Soil sampling was completed by Kyle Ames, a Washington State Recognized Geologist-In-Training with Fulcrum. Project services were completed under the direction of Travis Trent, a Washington State Licensed Hydrogeologist with Fulcrum. See Attachment A for relevant professional certifications. See Figure 1 in Attachment B for the site location map. Attachment C presents relevant historic reporting and Attachment D presents laboratory analytical reports for this sampling event.

Background

On July 24, 1991, a transporter tanker truck owned by Whitley Fuels Company of Okanogan, Washington, was involved in an accident at the site and released 10,000 gallons of gasoline fuel

P. 509.459.9220 F. 509.459.9219
207 West Boone Avenue
Spokane, Washington 99201
efulcrum.net

along the south side of Highway 2. A resulting fire consumed an unknown amount of fuel. See Attachment B for a site location map.

In 1992, approximately 1,300 cubic yards of petroleum contaminated soil was removed under the supervision of DRT Environmental Consultants, Inc. Confirmation sampling at the time indicated successful removal of contaminated soils except for a localized area of gasoline and benzene contaminated soils beneath Highway that could not be removed without impacting the integrity of the highway. The 1992 remedial action was documented in a Site Assessment Report, *Whitley Fuels Tank Spill, Monitor Washington DRT NO. WA-01* prepared by DRT Environmental Consultants, Inc., dated January 6, 1993 (see Attachment C for copy).

In 1994, three onsite groundwater monitoring wells were installed following soil cleanup activities and completed as follows:

- MW-01: Upgradient and westernmost well at 8.31 feet below ground surface (bgs) depth
- MW-02: Historical spill site location and north-central well at 11.78 feet bgs depth
- MW-03: Downgradient and easternmost well at 10.48 feet bgs depth

Groundwater at the site has been established by historical sampling data to flow in a southeast direction. See Figure 2 in Attachment B for a monitoring well location and gradient map.

Since 1994, sampling had occurred on an about-annual schedule. However, MW-01 and MW-02 were "lost" during extensive flooding in 1996 and were not sampled until they were relocated and excavated in 2016. MW-01 is viewed as hydrogeologically upgradient and has never had contaminants detected above established regulatory thresholds. MW-02 is located within the footprint of the original gasoline release. Since sampling began in 1994, MW-02 has shown contaminant presence with progressively lower values of gasoline and gasoline constituents. Since the recovery of MW-02 in 2016, all analytes detected have been found to be below MTCA clean up levels. Similarly, MW-03, as the downgradient well, initially exhibited high values for gasoline and benzene with a declining trend in concentration values over time. No contaminants above applicable regulatory thresholds have been identified in any of the three wells over eight consecutive quarterly monitoring events completed prior to the sampling event outlined in this report.

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Scope of Work

Fulcrum's scope of work for this soil sampling event consisted of collection and analysis of ten samples from six test pits. Fulcrum utilized portions of the following documents as guidance criteria for current confirmation sampling protocol:

- American Standard of Testing and Materials International (ASTM) 4700 *Standard Guide for Soil Sampling from the Vadose (*unsaturated*) zone.*
- *Model Toxics Control Act Statute and Regulations,* Washington State Department of Ecology Publication No. 94-06, Revised November 2007.

For each sample, a target location was identified by Fulcrum's site staff and the location was collected by backhoe bucket. Fulcrum field staff collected a sample from the middle of the bucket, away from sides, utilizing disposable gloves and equipment. Each sample location included collection of one four-ounce borosilicate jars with Teflon-lined lids and two 40-milliliter glass vials with Teflon-lined lids. Samples were labeled with unique identification numbers and packaged on ice from transport to the selected laboratory.

Fulcrum has evaluated analytical results against the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup thresholds. Application of the MTCA Method A cleanup levels during this portion of the project was determined as most appropriate and intended for initial evaluation, and use of these established cleanup levels does not exclude the potential for reevaluation of site contaminants by other methods or other applicable standards at any time.

Onsite Activities

On September 20, 2018, Fulcrum completed a soil sampling event at the Whitley Fuel Spill. Fulcrum sub-contracted KRCI, LLC (KRCI) of East Wenatchee, WA to complete onsite excavation services as necessary to facilitate the sampling.

Six separate test pits were completed along the north property boundary as close to Highway 2 as could be safely completed without risking adverse impact to the roadbed. Test pits were completed as close as possible to the locations of historic reported residual soil contamination (identified as 15 feet from the Highway and presented on a sample location map) as could be discerned based on available documentation.

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A total of ten (10) soil samples were collected from the six test pits. Specific sample locations were selected based on observed soil conditions and results of field testing both intended to maximize the likelihood of identifying residual petroleum contamination if present.

Samples were subsequently shipped overnight via commercial carrier under chain-of-custody to Fremont Analytical, Inc. (Fremont), an Ecology-accredited laboratory (Accreditation No. C2037), of Seattle, Washington for analysis by the following:

- Gasoline by Northwest Total Petroleum Hydrocarbons (NWTPH)-Gx
- Benzene, Toluene, Ethylbenzene, m,p-Xylene and o-Xylene by Environmental Protection Agency Method 8260C

Results were reported under Fremont Work Order 1809343. See Attachment D for Complete Laboratory Results.

Table 1: Sample Analysis Results

Sample	Depth	Gasoline	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene
92018-01	8’ bgs	ND	ND	ND	ND	ND	ND
92018-02	8.75’ bgs	**441**	ND	ND	ND	ND	ND
92018-03	7’ bgs	**151**	ND	0.0811	0.256	0.695	0.0531
92018-04	9.75’ bgs	52.7	ND	ND	0.0301	0.0926	ND
92018-05	9.5’ bgs	**841**	ND	ND	0.244	0.845	0.210
92018-06	7’ bgs	**325**	ND	ND	ND	ND	ND
92018-07	10’ bgs	82.3	ND	ND	ND	ND	ND
92018-08	8.75’ bgs	11.3	ND	ND	ND	ND	ND
92018-09	10’ bgs	27.2	ND	ND	ND	ND	ND
92018-10	9.75’ bgs	ND	ND	ND	ND	ND	ND
MTCA Cleanup Levels		**100**	**20**	**7**	**6**	**9**	**9**

All values are presented in milligram of analyte per kilogram of soil (mg/kg)

Results documented gasoline concentrations in excess of Model Toxics Control Act (MTCA) Method A cleanup levels in four of the ten collected samples at concentrations ranging from 151 ppm to 841 ppm. No benzene was detected in any of the ten samples. Toluene, ethylbenzene, and xylene constituents were identified in three of the ten samples but all concentrations were below MTCA Method A cleanup levels.

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Conclusions

Fulcrum completed a limited soil sampling event on September 20, 2019, consisting of the collection of ten samples from six test pits excavated along the north boundary of the spill site proximal to historic reported locations of residual petroleum contamination. Analytical results document the absence of benzene. Residual presence of gasoline range hydrocarbons above MTCA Method A cleanup levels was identified in four of the ten samples.

Review of the 1992 sampling results identified two samples proximal to the highway with reported gasoline concentrations of 4,800 ppm and 3,800 ppm. The second sample also had benzene reported at 3.9 ppm. Current testing 25 years later shows found no detectable benzene and residual gasoline concentrations ranging from below the analytical detection limit to a high of 841 ppm.

Limitations

Fulcrum Environmental Consulting, Inc. has performed professional services in accordance with generally accepted professional consulting principles and practices. No other warranty, expressed or implied is made. The conclusion and recommendation are based upon field observations, field screening and independent laboratory analysis. Fulcrum Environmental Consulting, Inc. is not responsible for impact of changes in environmental standards, practices or regulation subsequent to the performance of services. This report is solely for the use and information of our client and any reliance on this report by a third party is at that party's sole risk.

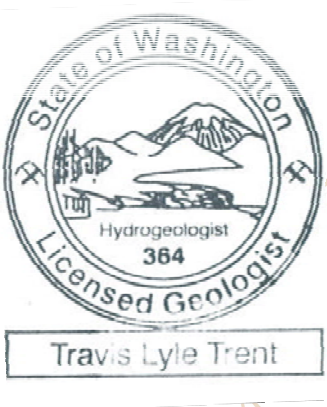
If you have any questions or concerns, please feel free to call me at 509.574.0839.

Sincerely,

Kyle Ames, GIT
Environmental Geologist

Travis Trent
Hydrogeolgist

Attachments



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Spokane, Washington 99201
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STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON OR BUSINESS NAMED BELOW IS AUTHORIZED AS A

GEOLOGIST
HYDROGEOLOGIST

TRAVIS LYLE TRENT
FULCRUM ENVIRONMENTAL CONSULT.
207 WEST BOONE AVENUE
SPOKANE WA 99201

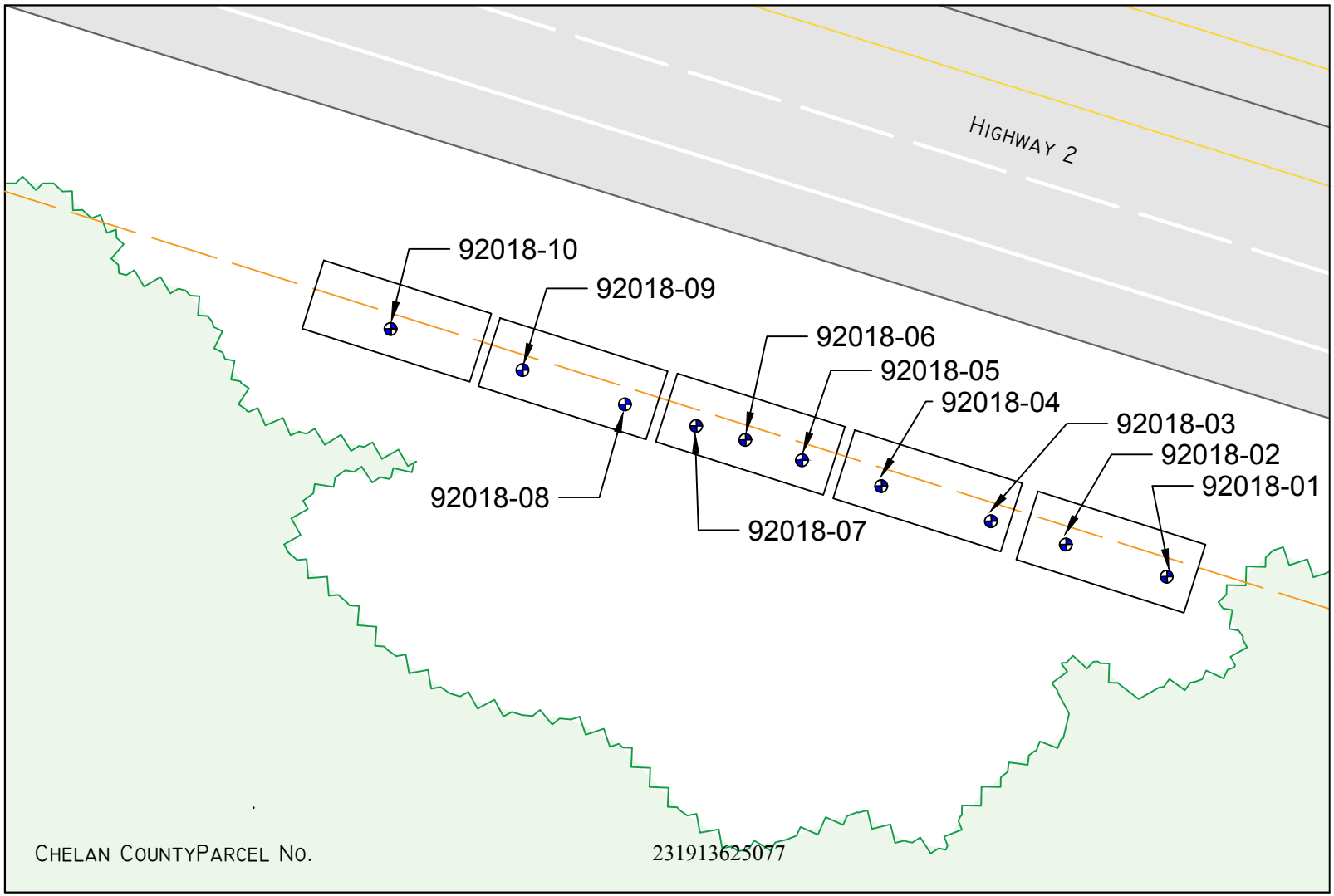
License Number	Issued Date	Expiration Date
364	01/08/2002	06/06/2020

Teresa Berntsen

Teresa Berntsen, Director

PL-630-159 (R/3/16)

FULCRUM environmental consulting



N

Fulcrum Environmental Consulting, Inc.
406 North Second Street, Yakima, Washington 98901
p: 509.574.0839 f: 509.575.8453 efulcrum.net
Whitley Fuel Tanker Spill. 141310. ALY. 071116

Whitley Fuel Tanker Truck Spill Monitor,Washington

Sample Location Map

Figure 2

SITE ASSESSMENT REPORT

WHITLEY FUELS TANKER SPILL

MONITOR, WASHINGTON

DRT NO. WA-01

Prepared By:

DRT Environmental Consultants, Inc.
P.O. Box 2505
Prescott, Arizona 86302
(602) 772-1814

January 6, 1993

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Tables

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Appendices

SITE ASSESSMENT REPORT

WHITLEY FUELS TANKER SPILL

MONITOR, WASHINGTON

DRT NO. WA-01

1.0 INTRODUCTION

1.1 Purpose

The purpose of this report is to present DRT Environmental Consultants, Inc. results of soil and ground water sampling performed from the excavation of soil containing petroleum hydrocarbons. This work was performed as a result of a petroleum loss on July 24, 1991 near Monitor, Washington from a transport tanker owned by Whitley Fuels Company of Okanogan, Washington. This report will present and analyze the work performed and data collected during the site assessment.

1.2 Scope of Work

The scope of work was performed by DRT in regard to this project included:

- Reviewing previous environmental assessment reports prepared on the site;
- Mobilizing to the site;
- Observing the excavation cavity following the removal of approximately 1300 cubic yards of soil;
- Screening the soil in the excavation with a photoionization detector (PID) for petroleum hydrocarbons;
- Collecting and submitting soil samples from the excavation cavity for laboratory analysis;
- Collecting and submitting ground water samples from the excavation cavity for laboratory analysis;
- Mapping the site for documentation; and
- Preparing this report.

2.0 BACKGROUND INFORMATION

The Whitley tanker spill site is located approximately 0.5 miles east of Monitor, Washington on Highway 2 (NW¼, SE¼, SW¼, Section 13, T23N, R19E) in Chelan County, Washington. A site location and topographic map is presented as Figure 1. The tanker truck was involved in an accident while transporting approximately 10,000 gallons of unleaded gasoline on July 24, 1991. The truck caught fire after the accident and burned a large portion of the fuel.

Previous environmental assessments performed at the site during 1991 and 1992 indicated that petroleum hydrocarbons had impacted the soil and ground water at the site.

DRT Environmental Consultants (DRT) was contracted to observe the excavation activities during the removal of soil containing petroleum hydrocarbons and to collect samples of the soil and ground water for laboratory analysis.

3.0 PROJECT RESULTS

Approximately 1300 cubic yards of silty sand and gravel was excavated from the accident location (Figure 2) in November 1992 and stock piled on site. Ground water was present at the site at approximately 4.0 feet below ground surface (bgs). The excavation depth extended to approximately 1.0 foot below the ground water table. The area of excavation was terminated 15 feet from the edge of Highway 2 in order to protect the integrity of the road and base. The excavation area extended approximately 45 feet south from the roadway, into the forested area of the site.

Eight soil samples were collected from the edge of the excavation cavity near the ground water surface for laboratory analysis. The laboratory results of the soil sample analyses are provided on Table 1.

Three ground water samples were collected from the water table for laboratory analysis. The sample analyses are summarized on Table 2. The laboratory reports and chain of custody are provided in Appendix A. The area of excavation and sample locations are presented on Figure 2. Photographs taken of the site are provided in Appendix B. Following collection of the samples, the excavation cavity was filled and compacted with clean fill material.

4.0 CONCLUSIONS

All of the soil containing hydrocarbons that could feasibly be removed from the subsurface were excavated and stock piled on site. Petroleum hydrocarbon concentrations exceeding the State of Washington Health Based Guideline Action Levels were detected in two of the soil samples collected from the edge of the highway road base. However, further excavation along the roadway would cause damage to the integrity of the highway. The laboratory results of the soil samples collected on the south, east, and west sides of the excavation, indicates that all of the soil containing hydrocarbons was removed from the subsurface.

The three ground water samples collected from the excavation cavity all contained hydrocarbons. However, the highly organic nature of the soil present in the site area should facilitate removal of the hydrocarbon compounds from the subsurface by natural biodegradation.

5.0 METHODS

5.1 Sampling for Laboratory Evaluation

Soil samples obtained for laboratory evaluation were collected from the excavations in glass soil sample jars with teflon covered lids and the ground water samples were collected in 40 ml VOA vials. The samples were stored at approximately 4°C from time of collection until laboratory evaluation. The samples were shipped to the laboratory following all chain-of-custody procedures. The samples were analyzed by Coast to Coast Analytical Services, located in San Luis Obispo, California. The samples were analyzed by EPA Methods 8260 for total petroleum hydrocarbons and EPA Method 8020 for benzene, toluene, ethylbenzene and total xylenes.

5.2 Soil Sample Screening/Hnu Photoionization Detector Method

Soil samples that were screened in the field were collected from the excavation and placed into a clean container and sealed. After the soil sample was brought to ambient temperature, the container seal was perforated with the PID instrument probe, and the highest observed reading recorded. The soil samples were screened with an hNu photoionization detector equipped with a 10.2 eV lamp and calibrated to benzene for a direct reading in parts per million (ppm).

6.0 REMARKS

The discussion and recommendations contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived in accordance with currently accepted hydrogeologic and engineering practices at this time and this location. Other than this, no warranty is implied or intended.

This report was prepared by **DRT ENVIRONMENTAL CONSULTANTS, INC.**

Steven B. Hoffman Date 1/14/93
Steven B. Hoffman
Project Manager

This report was reviewed by:

Marc G. Gaffney Date 1/14/93
Marc G. Gaffney
Senior Consultant

TABLES

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
SOIL SAMPLES
WHITLEY TANKER SPILL
MONITOR, WASHINGTON
DRT NO. WA-01

Sample No./Depth	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Petroleum Hydrocarbons (gasoline)	Total Petroleum Hydrocarbons (diesel)
SS-1 / 4.0'	ND	0.007	ND	ND	ND	ND
SS-2 / 4.0'	ND	0.009	ND	ND	ND	ND
SS-3 / 4.0'	ND	0.008	ND	ND	ND	ND
SS-4 / 4.0'	ND	0.013	ND	ND	ND	ND
SS-5 / 4.0'	ND	0.025	ND	ND	ND	ND
SS-6 / 4.0'	ND	ND	ND	ND	ND	ND
SS-7 / 4.0'	ND	25	26	170	4800	ND
SS-8 / 4.0'	3.9	48	19	120	3800	ND

All concentrations reported in parts per million (mg/kg)

ND = Parameter Not Detected

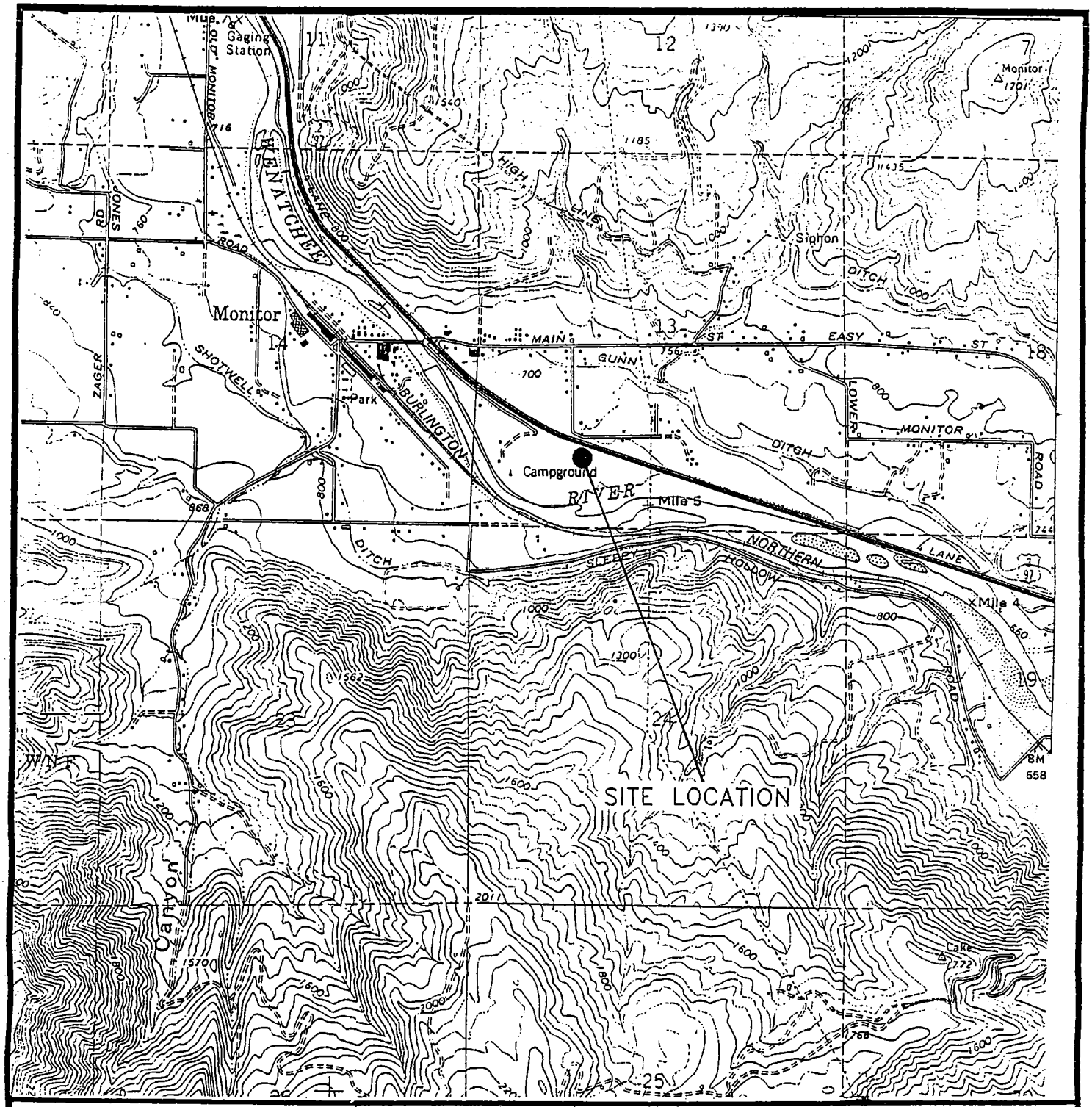
TABLE 2
SUMMARY OF ANALYTICAL RESULTS
GROUND WATER SAMPLES
MONITOR, WASHINGTON
WHITLEY TANKER SPILL
DRT NO. WA-01

Sample No.	Benzene	Toluene	Ethylbenzene	Total Xylenes	EDB	EDC	Total Petroleum Hydrocarbons (gasoline)
W-1	3000	6300	180	5000	ND	ND	56000
W-2	4100	7900	60	5400	ND	ND	59000
W-3	3900	7800	ND	5300	ND	ND	61000

All concentrations in parts per billion (ug/L)

EDB = Ethylene Dibromide
EDC = 1,2-dichloroethane
ND = Parameter not detected

FIGURES



WASHINGTON

QUADRANGLE LOCATION

SCALE 1:24000

1000 0 1000

FEET

FIGURE 1
SITE LOCATION MAP
WHITLEY FUELS TANKER SPILL
MONITOR QUADRANGLE
MONITOR, WASHINGTON

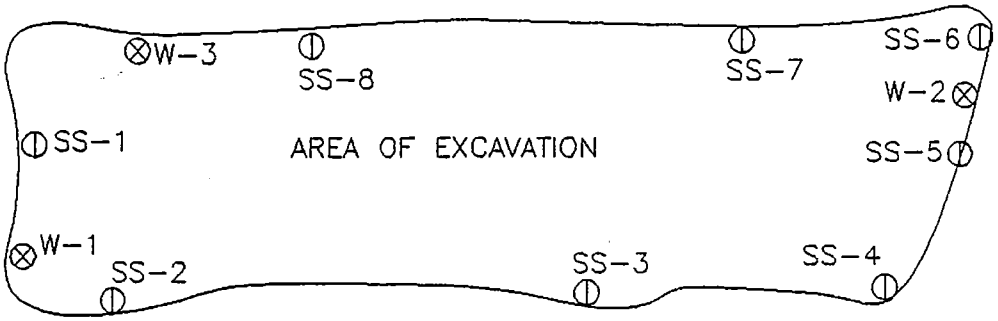
PROJECT NO.	PREPARED BY
WA-01	ARK
DATE	REVIEWED BY
1/11/93	SBH

DRT
Environmental Consultants, Inc.

MONITOR, WA
0.5 MILES

HIGWAY 2
(EAST BOUND)

WENATCHEE, WA
8 MILES



DEPTH OF EXCAVATION IS APPROX 6 Ft

LEGEND :

SS-5 SOIL SAMPLE LOCATION

W-2 GROUND WATER SAMPLE LOCATION

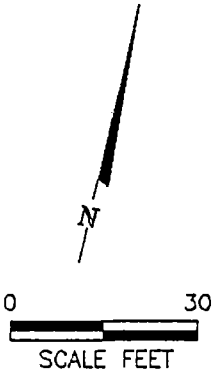


FIGURE 2
SITE MAP
WHITLEY FUELS TANKER SPILL
MONITOR, WASHINGTON

PROJECT NO.	PREPARED BY	
WA-01	ARK	DRT Environmental Consultants, Inc.
DATE	REVIEWED BY	
1/11/93	SBH	

SEACOR

November 5, 1993

Ms. Janine A. Rees
Industrial Hygienist
Department of Labor and Industries
300 West Harrison Street
Seattle, WA 98119

RE: WHITLEY FUELS INFORMATION REQUEST DATED 11/4/93

Dear Ms. Rees:

SEACOR became involved with the Whitley Fuels tanker spill event on the afternoon of July 24, 1991. We received a telephone call from Federated Insurance informing SEACOR that a tanker truck that belonged to one of their insured had been involved in an accident and fire. Approximately 10,000-gallons of gasoline was lost and/or burned. Federated Insurance requested SEACOR to coordinate the initial environmental response and remediation of the accident site.

On July 25, 1991 SEACOR completed a preliminary assessment of the accident site. Several shallow soil borings were completed to assess the depth to groundwater, the presence of free gasoline product, and to collect soil samples for chemical analysis of gasoline hydrocarbons. The analytical results of submitted soil samples are presented in the attached data package. SEACOR also retained Riedel Environmental Services to conduct the initial removal of free gasoline from the groundwater and soil at the accident site.

On July 26, 1991 SEACOR submitted a brief emergency action remediation plan to the Department of Ecology and Riedel Environmental Services mobilized to the accident site.

On July 27, 1991 Riedel Environmental Services excavated three shallow pits and also a shallow trench along the length of the accident site to collect free gasoline product on the groundwater. This gasoline and water mixture (approximately 20,000 gallons) was removed with vacuum trucks for disposal at Petroleum Services, Inc. in Tacoma, Washington. On July 28, 1991 the trench was backfilled and the site was marked off with caution tape.

SEACOR recommended, and was authorized to install, groundwater monitoring wells at the accident site to assess groundwater quality and to serve as potential groundwater treatment/extraction wells. A conceptual remediation plan was submitted to the Chelan County Planning Department on August 6, 1991. SEACOR retained the services of

11040 Main Street
Suite 240
Bellevue, WA 98004
(206) 646-0280
(206) 646-0283 FAX

Bartholomew Brothers Drilling from Spokane, Washington to drill and install three shallow groundwater monitoring wells. These wells were completed on August 9, 1991, and were sampled on August 12, 1991. The analytical results of the water samples are contained in the attached data package.

SEACOR made contacts with various local and state agencies regarding cleanup requirements, environmental permits, construction permits, and operation permits for a proposed remediation system. On January 16, 1992 SEACOR submitted an interim remediation plan to Mr. Whitley. Further discussion with Department of Ecology personnel revealed that Best Available Control Technology (BACT) would be required for air emissions from the remediation treatment system and that a SEPA Environmental Checklist would also be required. An on-site meeting with SEACOR and Mr. Bob Swackhammer of the Department of Ecology was held on April 29, 1992 to discuss the site, a revised remedial action plan that included BACT, and the required SEPA Checklist. On that day three samples of water from the Wenatchee River were also collected for analysis of petroleum hydrocarbons (results in attached data package).

SEACOR was relieved of our duties on behalf of Whitley Fuels on June 14, 1992. We supplied our file data to Aegis Environmental in Beaverton, Oregon. SEACOR has had no further involvement with this project since that time.

I trust that this brief summary and the attached data package meet your needs.

Sincerely,

Science & Engineering Analysis Corporation

Gordon W. Shaffer
Associate Scientist

Attachment

CHRISTINE GREGOIRE
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
106 South 6th Ave. • Yakima, Washington 98902-3387 • (509) 575-2490

July 26, 1991

Seacor
330 112 Av. N.E.
Suite #104
Bellevue, Wa. 98004

Attn: Gordon Shafer RDS

Re: Emergency pick-up of 40,000 gallons of mixed gasoline and water.

Dear Mr. Shafer RDS:

On July 26, 1991 the Department of Ecology granted emergency authorization to recover and transport 40,000 gallons of mixed gasoline and water located at approximately mile marker 116 on State Highway 2.

The authority of this action is found in RCW 70.105 and WAC 173-303-145.

If you have any questions or need further assistance please contact me at 1-509-575-2490.

Sincerely,
Robert D. Swackhamer
Bob Swackhamer

Spill Response Duty Officer

cc:

SEACOR

July 26, 1991

Mr. Robert Swackhammer
Department of Ecology
Yakima, Washington

FAX number: 509-575-2809

Dear Mr. Swackhammer:

SEACOR is pleased to present this brief description of the scope of work to initiate remedial action of petroleum hydrocarbons at a fuel tanker truck accident site near mile 116 on Highway 2 west of Wenatchee, Washington.

It is our understanding that a tanker truck spilled approximately 10,000 gallons of leaded and unleaded gasoline onto the ground surface. An unknown amount of fuel burned and an unknown amount of fuel entered the soil. Our preliminary site study, conducted on July 25, 1991, identified two or more inches of product in the groundwater in the immediate vicinity of the tanker truck and spill. Groundwater was encountered approximately 2 feet below ground surface.

The area of the spill is located approximately 75 yards from the Wenatchee River and about 15 feet below the road grade surface. Several soil borings were advanced to groundwater. Soil samples were obtained for chemical analysis of BTEX and TPH (gasoline). A copy of results is attached to this scope of work. The proposed scope of work is described below.

Site Preparation

The right-hand lane of the east-bound Highway 2 will be temporarily closed to public traffic. A trackhoe will be used to excavate one to four small (10 feet by 10 feet in diameter) test pits, 4 to 5 feet deep in the area of visible hydrocarbons. The shallow depressions will serve as collection basins for shallow groundwater and floating product.

Product Recovery

Vacuum tanks will be used to pump groundwater and free product from the shallow depressions. The trucks will be staged in the closed highway lane. The vacuum truck will transfer product and water to awaiting tanker trucks for transport to an approved storage facility pending complete characterization and disposal and treatment in accordance with applicable WAC requirements.

We anticipate collecting up to 40,000 gallons of mixed water and fuel fluids in a 1 or 2 day initial effort.

Remedial Action Assessment

Upon completion of the initial remedial product recovery, soil borings will be completed downgradient of the spill location. Soil samples will be collected from near the groundwater interface for analysis of gasoline constituents (BTEX and TPH(g)).

Arrangements will be made and a plan submitted to install groundwater monitoring wells/extraction wells in the area of concern.

General Protocols and Procedures

SEACOR has inplace, standard protocols and procedures for Health and Safety, soil and groundwater sampling, and field documentation. Copies of these procedures are attached to this scope of work. A site-specific Health and Safety Plan is also attached to this report.

Laboratory Analysis

Laboratory analysis of soil and groundwater samples will be conducted by a contract laboratory. The required analysis for gasoline is shown in the attachments.

Laboratory Quality Control/Quality Assurance

SEACOR contrracts only with laboratories that maintain stringent QA/QC procedures for soil analyses and are accredited by Ecology for groundwater analysis. All laboratory reports include the QA/QC results.

Health and Safety

All SEACOR personnel working on the spill site, including their immediate supervisors, have received health and safety training as required by Federal (29 CFR 1910.120) and State (Chapter 296-62 WAC) regulations. In addition, a site-specific health and safety plan is prepared before conducting field activities at a UST site. The plan identifies potential hazards, and the appropriate responses to emergency situations. The Health and Safety Plan is attached.

Sincerely,

Gordon W. Shaffer
Associate Scientist

GWS:sm

attachments

TABLE

REQUIRED AND RECOMMENDED ANALYSES FOR PETROLEUM SUBSTANCES

REQUIRED ANALYSIS

Substance	Media	Analysis	Analytical Method
Gasoline-range Organic Compounds	Soil	BTEX	8020[1] or 8240
	Water	BTEX	602[1] or 624
	Soil	TPH	8015 Modified[2]
	Water	TPH	8015 Modified[2]
	Soil	Total Lead[4]	6010, 7420 or 7421[3]
	Water	Total Lead[4]	7421[5]
Diesel-range Organic Compounds	Soil	TPH	8015 Modified[6]
	Water	TPH	8015 Modified[7]
Petroleum Compounds Heavier than Diesel	Soil	TPH	418.1[6,8]
	Water	TPH	418.1[7,8]

ADDITIONAL RECOMMENDED ANALYSES

Gasoline	Waste Oils	Analyte	Analytical Method
Free Product	--	Flash Point	1010 or 1020
Soil	Soil	TCLP[9]	1311
Water	--	EDB	504
--	Water	PCBs	608
--	Soil		8080
--	Water	Total Metals[10]	6010 & 7000 series
--	Water	Volatile Organics	(601 &602) or 624
--	Soil		(8010 & 8020) or 8240
--	Water	Phenols	604 or 625
--	Soil		8040 or 8270
--	Water	PAHs	610 or 625
--	Soil		8100 or 8270

1 Use dual column confirmation.
2 Use Methods 5030, purge and trap, to prepare samples.
3 Prepare samples with Method 3050 or Contract Lab Method 3051.
4 Not required if only unleaded gasoline is present.
5 Use Method 3010 to prepare samples.
6 Use Method 3540 or 3550 to prepare samples.
7 Use Method 3510 or 5320 to prepare samples.
8 Use at least two silica gel cleanups.
9 Benzene or lead.
10 Lead, chromium, copper, zinc.
Source: Ecology 1991

APPENDIX A
SOIL AND GROUNDWATER SAMPLING PROCEDURES

SOIL SAMPLING

Soil samples for chemical analyses and for lithologic description may be collected using a hand auger, a backhoe, or hollow-stem augers and split spoon samplers. Equipment preparation, sample collection, sample description, and sample identification procedures for each method are described in the following sections.

Prior to arrival at the sampling site, all sampling equipment is scrubbed in hot water containing trisodium phosphate, Liqui-Nox or equivalent, rinsed with tap water, rinsed three times with deionized water, and air or oven dried. All equipment is packaged in clean boxes or crates.

Hand Auger and Backhoe Pit Sampling

Hand augers are used for sampling surface and near surface soils, generally to depths of five feet or less. Backhoe pits are excavated in conjunction with underground tank or pipeline excavations.

Sample Collection

Samples are typically collected from UST excavations using a backhoe. The backhoe bucket is brought to the surface and a soil sample is collected using a clean stainless steel trowel. THe sample is collected from the middle of the bucket away from the bucket sides. The samples are contained in the labeled glass containers with Teflon lined lids. The sample jar is filled with soil as completely as possible to minimize volatilization.

Soil from hand auger borings are collected using a hand operated drive sampler equipped at the end with a brass sample tube. Both ends of the brass tube are trimmed of soil, covered with Teflon or aluminum foil, covered with a plastic cap, taped and labeled.

All samples are stored in coolers containing ice in appropriate containers. Following sample collection, all sampling equipment is brushed clean in a solution of trisodium phosphate or Liqui-Nox and rinsed with tap water. The equipment is then rinsed with deionized water, and excess moisture shaken off.

Sample Description

All sample locations are accurately located with reference to a permanent feature and are plotted on a map. Descriptions of the soil sampled and sample depths are recorded in field notes.

Hollow-Stem Auger Sampling

Equipment Preparation

The auger flights and split-spoon sampler are steam cleaned prior to the start of the sampling program. Samplers are steam cleaned between each sample and auger flights are steam cleaned after each hole is completed.

Sample Collection

The split-spoon sampler is lined with three 6-inch brass or stainless steel cylinders with a diameter of 2 or 2.5 inches. The sampler is lowered into the hole either on a wire line, or at the end of the drill pipe. The split-spoon sampler is then driven to a depth of 18 inches using a 140-pound drop hammer with a 30-inch fall. The number of blows required to drive the sampler over 6-inch increments are recorded. The sampler is then removed.

If the sampler is refused and cannot be driven at least nine inches (refusal occurs when the sample cannot be driven six inches by 50 blows with the drop hammer), the sampler is removed from the borehole, and drilling continues to the next interval.

Upon removal from the borehole, the sampler is split longitudinally. The first six-inch cylinder is packaged for analysis and is separated by the insertion of a stainless steel spatula between the cylinders. The cylinder, with soil intact, is immediately lifted and the ends are sealed with aluminum foil or Teflon and plastic end caps. The end caps are sealed to the brass tube with plastic tape. A sample label is then attached to the brass tube, with the date collected, sample and boring number, and depth recorded on the label. The samples are then placed in sealed plastic bags and placed inside a cooler containing ice.

GROUNDWATER SAMPLING

The objective of groundwater sampling is to obtain a volume of water that is as representative (i.e., as chemically close) to water in the aquifer as possible. To meet this objective, the following minimum criteria are observed:

- All stagnant water from the casing is purged to allow fresh water from the aquifer to enter the well at the time of sample collection;
- The sample is extracted from the well with minimal disturbance and exposure to the atmosphere as possible in order to minimize volatilization of organic compounds;
- Physical parameters which would change with exposure to the air during containerization, transport, storage or laboratory analysis and cannot be preserved, are measured at the time of sample collection; and
- Portions of the sample are treated to preserve those parameters which may otherwise be altered in transport to the laboratory.

Groundwater samples will be collected following a three-step process:

- The static water level will be measured using a clean electric sounder, and the static well volume will be calculated;
- A minimum of three static volumes will be purged into a 55-gallon steel drum using one of the three methods described below; and
- After the purging is complete, groundwater samples will be collected using a decontaminated stainless steel or Teflon bailer.

For low producing wells, the well will be purged until water cannot be efficiently removed (i.e., the well becomes dewatered). The well will then be sampled as soon as sufficient amounts of groundwater has reentered.

Several different technologies are available to purge and sample wells. The appropriate equipment varies upon the well construction and hydrogeologic conditions at each monitoring well site. The following purging technologies may be used depending on field conditions:

- Centrifugal Pumps,
- Submersible Pumps,
- Piston Pumps, and
- Bailing.

Sample Collection

Following purging of the wells, samples will be collected using a decontaminated stainless steel or Teflon bailer. The bailer will be lowered into the monitoring well by a heavy grade nylon fishing line or rope. The bailer will be slowly lowered into the monitoring well casing minimizing the contact of the bailer and supporting line with the well casing. After the bailer has been lowered below the water surface, it will be retrieved by reeling the line back up the surface. As the sample is drained from the bailer into labeled sample containers, via the toggle on the bottom of the bailer, care will be taken to not handle the seal on the sample container, or touch the lip or interior of the apparatus will be completed with gloved hands. The nylon line is used to support the bailer and protective gloves will be replaced between each sampling location. In order to preserve the laboratory decontamination, the sample containers will be opened only at the moment the sample is to be dispensed from the bailer. Samples will be stored at the site in iced coolers pending transport to the project laboratory.

Equipment Decontamination

Prior to the sampling, all equipment will be contaminated. After each well, equipment will be allowed to soak in a solution of trisodium phosphate detergent, Liqui-Nox or equivalent and water, scrubbed on the interior and exterior, rinsed with tap water, and followed by distilled water.

SEACOR

TANK SITE SAFETY PLAN FOR FIELD INVESTIGATION(S)

CLIENT: Federated Insurance

JOB NO: 00004- -01

SITE MANAGER:

SITE SAFETY COORDINATOR:

SITE NAME: Federated Insurance - Whitley Fuels Spill

SITE LOCATION: Monitor, WA

ACTIVITIES PLANNED: OVERSIGHT ON THE REMOVAL OF soil ~~USTs AT~~ AND SOIL SAMPLING.

DATES: July 25 and 26, 1991

BACKGROUND INFORMATION AVAILABLE FROM:

1. SITE CHARACTERISTICS

FACILITY DESCRIPTION: Highway 2 east of Wenatchee

STATUS: Emergency response to excavate gasoline contaminated soil

WASTE TYPES: SOIL X LIQUID X (ground H2O)

WASTE DISPOSAL OR TREATMENT METHOD (IF REQUIRED): Chelan County landfill (East Wenatchee landfill) and to be determined

FEATURES OF THE SITE:

HISTORY:
Tanker rollover & fire with 10,000 gallons leaded and Unleaded gas

CHARACTERISTICS:
Pear orchard and wetted water nearby

2. HAZARD EVALUATION

Overall Hazard Level: Overall hazard level for the planned site activities is low. Actual hazard will depend on weather conditions, i.e., still conditions and high temperatures will increase the potential hazards at the site.

Chemical Hazards: Gasoline is a familiar fuel. It is a variable mixture of paraffins, aromatics and olefins. Diesel is also a familiar fuel. It is a variable mixture of complex liquid hydrocarbons. Used motor oil is a common lubricant. It is a variable mixture of complex liquid hydrocarbons of low volatility and may contain heavy metals. Symptoms of acute toxicity includes anesthetic effects and mucous membrane irritation. Symptoms of acute exposure include headache, blurred vision, dizziness, and nausea. Chronic exposure has been associated with skin cancer. The major toxicity concern is due to benzene. Benzene is a known human carcinogen through inhalation. Gasoline typically contains 0.7 to 1.0 percent benzene. The OSHA TWA for benzene is currently 10 ppm, however, it has been proposed at 1 ppm, primarily due to the association between benzene and leukemia. The NIOSH recommended 8-hr level is 1 ppm. NIOSH recommended lowering exposure limits to the lowest level which could be reliably measured because it is not possible to establish a safe level for a carcinogen.

Gasoline sometimes contains lead, which had adverse health effects if inhaled. The OSHA TWA for lead is 50 μg/m3, however, lead is not readily volatized. The overall TLV for gasoline is 300 ppm, based largely upon assumptions about the hydrocarbon content of gasoline. This TLV could result in benzene exposures of 3 to 7.5 ppm depending on the benzene content. If the gasoline TLV were lowered to 25 ppm, it would result in benzene exposures of 0.25 ppm and 0.6 ppm. Lowering the TLV is also supported in the documentation for the TLV if operations involve a gasoline spill rather than the normal bulk handling operations. This is because vaporization will change the relative composition of the constituents of gasoline.

Move victim to fresh air if contact occurs. Skin contact with gasoline can produce immediate or delayed symptoms of dryness or irritation. If skin comes in contact with gasoline, diesel or waste oil, remove clothing from affected area and wash promptly with soap and water. Dry carefully with a clean towel. If skin is inflamed, painful, or blistered, seek medical attention. If ingestion occurs, DO NOT INDUCE VOMITING. Get medical help. Be prepared to administer artificial respiration.

Physical Hazards: The major potential physical hazards possible at the site are; flammability of gas (a flashpoint of 50 *F); explosive conditions (LEL for gasoline is 1.3 percent or 13,000 ppm) due to buildup of concentrations at ground level; and/or traffic, onlookers. Gasoline vapors are heavier than air.

3. TRAINING

Training must comply with the latest State and Federal Laws. SEACOR staff have successfully completed OSHA forty hour training, and required eight hour updates. If Level A or Level B protection is needed, 80 hours of total training is required.

General site workers should engage in actual field activities under direct supervision of a trained, experienced supervisor. Health and Safety staff with specific responsibilities for health and safety guidance, should be familiar with the training provided to general site workers and their supervisors, and should receive advanced training in health and safety issues, policies, and techniques. Visitors to the site must also receive a briefing on safety.

4. PERSONNEL PROTECTIVE EQUIPMENT

4.1 Levels of Protection: A___ B___ C___ D X

4.1.1 Level A Protection

Personnel protective equipment

- Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH). Respirators may be:
  - Pressure-demand, self-contained breathing apparatus (SCBA)

    or

  - Pressure-demand, airline respirator (with escape bottle for Immediately Dangerous to Life and Health IDLH) or potential for IDLH atmosphere)
- Fully encapsulating chemical-resistant suit

4.1.2 Level B Protection

Personnel protective equipment

- Supplied-air respirator (MSHA/NIOSH approved). Respirators may be:
  - Pressure-demand, self-contained breathing apparatus

    or

  - Pressure-demand, airline respirator (with escape bottle for IDLH or potential for IDLH atmosphere)
- Chemical-resistant clothing (overalls and ling-sleeved jacket; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant, one-piece suits)
- Gloves (outer), chemical-resistant

- Gloves (inner), chemical-resistant
- Boots (outer), chemical-resistant, steel toe and shank

4.1.3 Level C Protection

Personnel protective equipment

- Air-purifying respirator (APR), full-face, canister-equipped (MSHA/NIOSH approved)
- Chemical-resistant clothing (coveralls; hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- Gloves (outer), chemical-resistant
- Boots (outer), chemical-resistant, steel toe and shank

4.1.4 Level D Protection

Personnel protective equipment

- Coveralls
- Boots/shoes, leather or chemical-resistant, steel toe and shank

Mark one: _____A _____B _X_C and _X_D

4.2 Modifications: For all contact work – Tyvek or cotton -- if cotton is worn, coveralls must be washed prior to rewearing, separate from household laundry to avoid cross-contamination. Tyveks may be disposed of in sealed plastic bags with the facility's trash. Neoprene steel toe/shank boots, surgeons gloves under nitrile or polyvinyl alcohol gloves (neoprene gloves are acceptable, but nitrile or polyvinyl alcohol are much better), safety glasses, and hard hat.

Have NIOSH/MSHA approved APR with organic vapor cartridges (GMC-H) on hand for potential upgrade to Level C. If Level C upgrade is required, but APR's are not available, leave the site.

For Drilling -- drill rig must have spark arrestor on exhaust pipe.

For Survey Work -- field clothes. Areas of known or suspected contamination require the use of disposable booties over your work boots or steel shank neoprene boots and a boot wash prior to leaving contaminated area.

Safety Equipment and Materials: (Must be immediately available to team members)

- First Aid Kit
- Eye Wash Kit
- Fire Extinguisher
- Blanket or Stretcher

4.3 Monitoring Equipment and Procedures: Using an HNu with 10.2 eV Probe or TIP Meter take background readings from an upwind position. Background IS NOT taken in the area you suspect to be contaminated. Do not let instrument run continuously. Take readings in the breathing zone upon initiating work. Record readings at least every 1/2 hour in the breathing zone. The HNu or TIP should be used to monitor ambient air more frequently than every 1/2 hour to determine if action levels are met. For an upgrade to be warranted, readings in the breathing zone must persist above action levels for 5 minutes.

4.3.1 ACTION LEVELS:

If readings are 0 to 25 ppm above background in the breathing zone, continue in Level D. Readings from 25 to 100 ppm above background, in the breathing zone require Level C (or leaving the site). Readings over 100 ppm in the breathing zone require upgrade to Level B.

[PLEASE NOTE, THIS PLAN IS NOT APPROVED FOR LEVEL B WORK.]

4.3.2 Explosimeter/0_2 meter:

Explosimeter monitoring is typically performed by the contractor removing the UST. Lead in gasoline will poison the O_2 sensor, rendering the instrument useless. If a filter is available, continuous monitoring should be performed. If a filter is not available, take readings at least every 15 minutes at the excavation or hole opening, then purge the instrument in clean air.

4.3.2.1 ACTION LEVELS FOR EXPLOSIVE VAPORS:

* <20 percent LEL continue
* >20 percent LEL but <50 percent LEL, proceed with caution
* >50 percent LEL shut down operations and evacuate immediately - notify the owner and call the fire department.

4.4 Work Limitations

* No eating, drinking, or SMOKING on-site.
* No contact lenses to be worn on-site.

* No facial hair that would interfere with respirator fit.

* Level C is not to be used without two fully trained SEACOR employees on-site. If monitoring results indicate an upgrade is required, you must leave the site until conditions change or request an additional person, and not initiate work until that person arrives.

* Heat stress breaks to be taken at regular intervals of 2 hours, or more frequently, if symptoms occur.

* No spark sources within 50 feet of the site.

4.5 Site Entry

Locate emergency telephone numbers and route to hospital prior to starting any work. Notify any staff on-site of your presence at the site and your field plans. If there is only one SEACOR employee on-site, another on-site worker must receive a copy of the emergency numbers in case of an accident (i.e., police, fire, etc.). Prior to work on-site, you must conduct a safety briefing with your subcontractors. This shall include informing them of the hazards associated with site work, and the chemicals anticipated.

Position equipment and contractor upwind of the area to be excavated, and upgradient of the tank. Set up decontamination area upwind of the tank at a sufficient distance from the excavation to be reasonably sure you are not in an area that can become contaminated as a results of excavation activities. It is anticipated work will start in Level D, but be prepared to upgrade or leave the site.

Inspect exclusion zone (the area where you are going to excavate, where you suspect contamination, either "on-site" or off) for spark sources, paying careful attention to electrical equipment. PLEASE NOTE: Fires have been started at another site by an electrical spark from faulty wiring. It spreads VERY quickly and is not easily controlled. Do not start excavation or boring work until all possible sources of ignition have been removed. Secure the area to prevent the public from approaching within 25 feet of any sampling, digging, or drilling.

5. MEDICAL SURVEILLANCE (MONITORING)

Regular physical examination requirements for SEACOR personnel are done by Virginia Mason Occupational Medicine and are kept on record at Virginia Mason and at the appropriate SEACOR Regional office.

6. DECONTAMINATION

For Sampling or subsurface disturbance activities by personnel: Wash boots and outer gloves in TSP or Liqui-Nox and water, rinse, remove outer gloves. Remove and bag overalls. If cotton overalls are used, bag in garbage bags and wash prior to rewearing. Remove respirator, if worn. Remove surgical gloves and dispose of in a plastic trash bag. Wash hands and face. Sanitize respirator nightly, if used. Take a shower and wash hair as soon as possible after leaving the site.

Equipment needed: Buckets, tub, TSP, brushes, garbage bags, hand soap and paper towels.

For Sampling Equipment: Wash in TSP and water, rinse in water several times, final rinse in distilled/deionized water.

For Heavy Equipment: Wash off the bucket of the backhoe or the drilling equipment with TSP and water, rinse in water. Use the HNu to monitor the backhoe or drilling equipment. If you get readings from the equipment, steam clean it prior to removing it from the site.

For Sampling: Wash hands after removing booties, if worn.

PLEASE NOTE: It is the responsibility of the Site Safety Coordinator to make sure all pieces of equipment coming off site are properly decontaminated according to the procedures outlines above. Documentation of decontamination must be made in the field log notebook that will then become part of the permanent project file.

7. DISPOSAL OF MATERIALS GENERATED ON SITE

Contaminated Materials: Contain in a secure area. Follow customer's instructions. Bag all health and safety related disposable items, and dispose of in dumpster on site.

8. EMERGENCY INFORMATION

Form 511, Emergency Information, will be posted on site. If an injury occurs on site, take the following action:

* Get medical attention for the injured person immediately.

* Depending on the type and severity of the injury, notify the occupational physician for the injured person.

* Notify regional health and safety coordinator (Del Christenson or Jim Flynn) at 206/646-0280.

* Fill out Form 508, SEACOR Accident Report (Attached).

  Write down all circumstances surrounding the incident which caused the injury, including, but not limited to, time of day, working conditions (weather, etc.), how long it had been since the last rest period when the injury occurred, what the person was doing when injured, what all other personnel on site were doing, what level of protection was being used, if all safety procedures were being followed, etc. All team members that witnessed the incident should write down their recollection of the incident, give it to the site safety coordinator who shall then write up an exposure report. This exposure report needs to be sent to Jim Young.

EMERGENCY ROUTES (Map to be posted)

Police
Fire
Ambulance
Water
GAS
Electronic
Telephone
Sanitarian
Hospital
Owner

Sunnyslope
WENATCHEE
RIVER
NORTHERN
Olds
Radio Tower (KUEN)
COLUMBIA
Radio Towers (KPQ)
Wenatchee Cem
Trailer Park
MAPLE
Lewis and Clark Sch
SPRINGWATER
Riverfront Park
Sewage Disposal
DOUGLAS CO
CHELAN
Wenatchee Valley Jr College
Canyon
Orchard Jr High Sch
Pennsylvania Park
WENATCHEE
WASHINGTON
Washington Sch
Washington Park
Columbia Sch
St Josephs Sch
Athletic Field
Pioneer Park
Pioneer Jr High Sch
Mission St Park
Memorial Park
High Sch
Footbridge
East Wenatchee
Mile 465
Lincoln Park
Reservoir
Sewage Disposal Ponds
Appleyard
Burlington

EMERGENCY CONTACTS

Del Christenson
Phone: 206/646-0280

Jim Flynn
Phone: 206/646/0280

Occupational Medical Consultant:
Virginia Mason Occupational Medicine
2323 - 120th NE, Bellevue, WA 98005
Phone: 206/455/1105

Team members under above physicians' care: SEACOR
Employees

Project Manager
Name: Gordon Shaffer
Phone: 206-646-0280

Site Manager
Name: Chris Jones
Phone: (206) 646-0280

Workmen's Compensation
Name: SEACOR
Phone: (206)-646-0280

If an injury occurs on site, please notify the nearest Workmen's Compensation office as soon as possible, after obtaining medical attention for the injured. Notification must be made within 24 hours of the injury.

PLAN APPROVAL

Plan Prepared By: Gordon Shaffer Date: 7/24/91

Approved By: Date:

FORM 508

ACCIDENT REPORT

Note: To be completed only for representative of SEACOR

Date_____

Project:_____ Project No._____

Injured Employee:_____ Employee No._____

Date Injured_____ Time_____a.m./p.m.

Date Reported_____ Last Day Worked_____

Did Employee Return to Work?_____ Date Returned_____

Where Accident Occurred_____

Witnesses_____

Work Performing When Injured_____

Kind and Extent of Injury_____

Name & Address of Doctor/Hospital_____

Description of Accident_____

_____

_____

Was There Equipment Malfunction? _____Yes _____No

Describe Damage to Equipment or Property_____

_____

_____

Unsafe Conditions or Act Causing Accident_____

_____

_____

Form 508 (Continued)

Action Taken to Prevent Similar Accident_____

_____

Additional Recommendations or Action_____

_____

_____

_____

Photo(s) Taken_____

Field Supervisor_____

Form 511
SEACOR

EMERGENCY PHONE NUMBERS

	Phone	Address	Contact
POLICE	911		
FIRE	911	662-6125 (City of Wenatchee)	
PARAMEDIC	911		
AMBULANCE	911		
WATER			
GAS UTILITY			
ELECTRIC			
TELEPHONE	(509) 662-6101		Bob Burke
SANITARIAN			
HOSPITAL	Central Washington	1300 Fork St.	662-1511
OWNER	Whitby Fuels	(509) 422-3120	

This Notice is Located At: _____

FORM 833
SEACOR

RECORD OF HAZARDOUS WASTE FIELD ACTIVITY

Site Name:
Site Safety Coordinator:
Project Name:
Record of Activities for (Dates):

Employee Name	Total Days On-site	Days at the Site in Level B	Days at the Site in Level C	Days at the Site in Level D	Number Days as SSC Level B	Number Days as SSC Level C	Number Days as SSC Level D	Activities EES Perform While On-site
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

Signature of SSC:_____

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-2569
Phone (206) 481-9200 • FAX (206) 485-2992

SEACOR	Client Project ID:	Fed. Ins., Wenatchee Truck	Sampled:	Jul 25, 1991
11040 Main Street, #240	Matrix Descript:	Soil	Received:	Jul 26, 1991
Bellevue, WA 98004	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 26, 1991
Attention: Gordon Shaffer	First Sample #:	107-1026	Reported:	Jul 26, 1991

TOTAL PETROLEUM HYDROCARBONS with BTEX DISTINCTION (WTPH-G/BTEX)

Sample Number	Sample Description	Purgeable Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)	Surrogate Recovery %
107-1026	HB4-1	N.D.	N.D.	N.D.	N.D.	N.D.	97
107-1027	HB1-1	1.7	0.12	0.28	N.D.	0.012	98
107-1028	HB2-2	58	0.73	2.9	1.1	6.1	106
107-1029	HB6-1	3,300	95	370	93	480	93
BLK072691	Method Blank	N.D.	N.D.	N.D.	N.D.	N.D.	105
Detection Limits:		1.0	0.050	0.10	0.10	0.10	

Purgeable Hydrocarbons are quantitated as Gasoline Range Organics (nC5 - nC14). Surrogate recovery reported is for Bromofluorobenzene.
Analytes reported as N.D. were not present above the stated limit of detection.

NORTH CREEK ANALYTICAL Inc

Scot Cocanour
Laboratory Director

RIEDEL ENVIRONMENTAL SERVICES, Inc.
Seattle District Office, 910 SW Spokane St., Seattle, WA, 98134 (206) 382-1655 FAX (206) 623-6833

FAX COVER SHEET

FAX NO.: 646 - 0283 DATE: 8.2.91

TO: CHRIS JONES
SEACOR
Bellevue Office

FROM: M. BRADY
RES
SEA

NUMBER OF PAGES INCLUDING COVER SHEET 2

MESSAGE: Chris—
Analytical results (finally!) on contaminated water. PRC cannot process H_2O at this concentration so it will go to Chem Pro at no additional cost. (PRC upper limit for Benzene is 0.5 ppm)

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 · TELEPHONE (206)922-2310 · FAX (206)922-5047

Report To: Petroleum Reclaiming Date: August 1, 1991

Report On: Analysis of Water Lab No.: 18971

IDENTIFICATION:
Samples Received on 07-31-91
Client ID: RUSH CTC/Riedel/TK #7A-2

ANALYSIS:

Benzene, mg/l	7.8

by EPA SW-846 Method 8020

SOUND ANALYTICAL SERVICES

MARTY FRENCH

SEACOR

BORING LOG

BORING: MW-1
PAGE ____ of ____

PROJECT Federated/Ashtray Fuels LOCATION SE end of trench
SURFACE ELEVATION _____ CASING TOP ELEVATION _____
START _____ FINISH 2/9/91
SAMPLER _____ MONITORING DEVICE _____
SUBCONTRTACTOR AND EQUIPMENT Bartholomew Bros.
COMMENTS _____

Penetration Results: Blows 6"-6"-6"	Sample Depth Interval, feet	PID Reading (ppm)	Depth Below Surface, feet	Lithologic Description	Unified Soil Classification	Boring Abandonment/ Well Construction Details
			0	Backfill Crusher chips w fines moist - mod odor		6" concrete 6" pellets bentonite 5' sand pack
				same materials 28" saturated - mod odor		4' Screen .02 slot #12 sand
			5	EOB 6'0" refusal on boulders		slip cap w stainless screws
			10			standpipe 18" below surface grade
			15			
			20			
			25			

SEACOR

BORING LOG

BORING: MW-2
PAGE ___ of ___

PROJECT Federated/Whitley Fuels LOCATION ___
SURFACE ELEVATION ___ CASING TOP ELEVATION ___
START ___ FINISH 8/9/91
SAMPLER ___ MONITORING DEVICE ___
SUBCONTRTACTOR AND EQUIPMENT Bartholomew Bros.
COMMENTS ___

Penetration Results / Blows 6"-6"-6"	Sample Depth Interval, feet	PID Reading (ppm)	Depth Below Surface, feet	Lithologic Description	Unified Soil Classification	Boring Abandonment/ Well Construction Details
			0	Organic sandy clay, black, moist — no odor		1' 1" concrete
				SP, med to coarse sand, w/ few fines, moist, brown, no odor		8" plug bentonite
				same, saturated		to 1'9" blank up
			5			sand
						5' screen
						8'1" 4" cap
						3" #12 sand
				EOB 8'4"		
			10	Refusal on Boulders		
			15			
			20			
			25			

SEACOR

BORING LOG

BORING: MW-3
PAGE____of____

PROJECT Fed / Whitley Fuels LOCATION _____
SURFACE ELEVATION _____ CASING TOP ELEVATION _____
START _____ FINISH 8/9/91
SAMPLER _____ MONITORING DEVICE _____
SUBCONTRTACTOR AND EQUIPMENT Bartholomew Bros.
COMMENTS _____

Penetration Results Blows 6"-6"-6"	Sample Depth Interval, feet	PID Reading (ppm)	Depth Below Surface, feet	Lithologic Description	Unified Soil Classification	Boring Abandonment/ Well Construction Details
			0	organic		2'6" blank above grade; 6" concrete
				silty SAND		plug 2"
			5			6' screen
				EoB 8.83 Refusal		4" cap TD
			10			
			15			
			20			
			25			

FIELD WATER-LEVEL MEASUREMENTS

SITE Federated/Whitley Fuels

CHECKED BY _____

PROJECT NO. 00004-020-01

FIELD PERSONNEL C. Jones

WELL I.D.	DATE	TIME	REFERENCE ELEVATION (feet)	DEPTH TO WATER (feet)	WATER ELEVATION (feet)	Total Depth ~~INSTRUMENT NO.~~
MW-1	8-12-91	11:00	91.77	6.63	85.14	8.86
MW-2	"	"	90.67	5.41	85.26	10.06
MW-3	"	"	91.56	6.07	85.49	10.38

PLATE

DRAWN | JOB NUMBER | APPROVED | DATE | REVISED | DATE

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-1

PROJECT Fed/Whitley EVENT _____ SAMPLER S. Jones DATE 8-12-91

Action	Time	Pump rate	~~WL~~ (low yield)
Start pump / Begin	15:00 -		
Sampled	15:30		

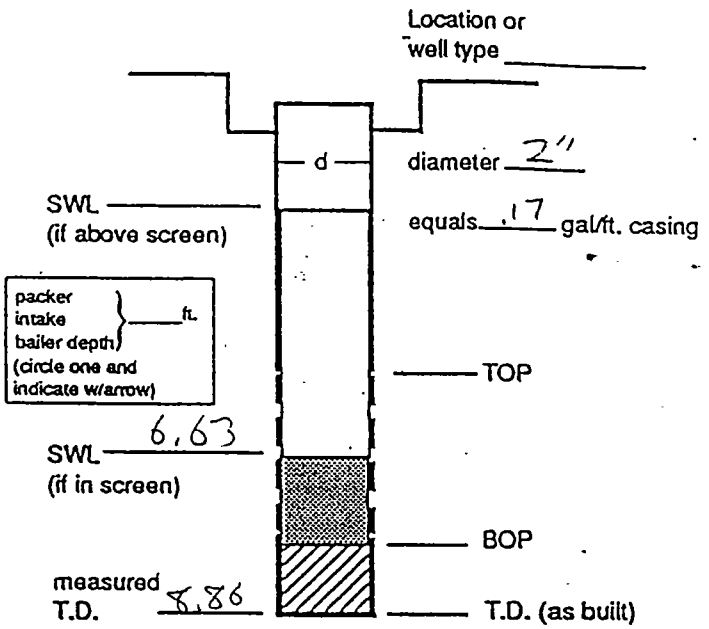
Purge calculation

.17 gal/ft. (SWL to BOP or packer to BOP) * 2.23 ft. (one volume) = .38 gals x 3 = 1.14 gals. (purge volume-3 casings)

Head purge calculation (Airlift)

_____ gal/ft. (packer to SWL) * _____ ft. = _____ gals.

Well / Hydrologic statistics



Method and Equipment Used: 2" Stainless Bailer

Event Description: strong odor, Moderate turbidity

Actual gallons purged 2.5

Actual volumes purged 6.5

Well yield ⊕ LY

Additional comments: Strong odor, High turbidity

COC # _____

Sample I.D.	Analysis	Lab
MW-1	8015, 8020	North Creek

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1.						
2.						
3.						
4.						
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-2

PROJECT Whitley Fuels EVENT _____ SAMPLER K. VanDyk DATE 8-12-91

Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	14:30		
Sampled	14:45		

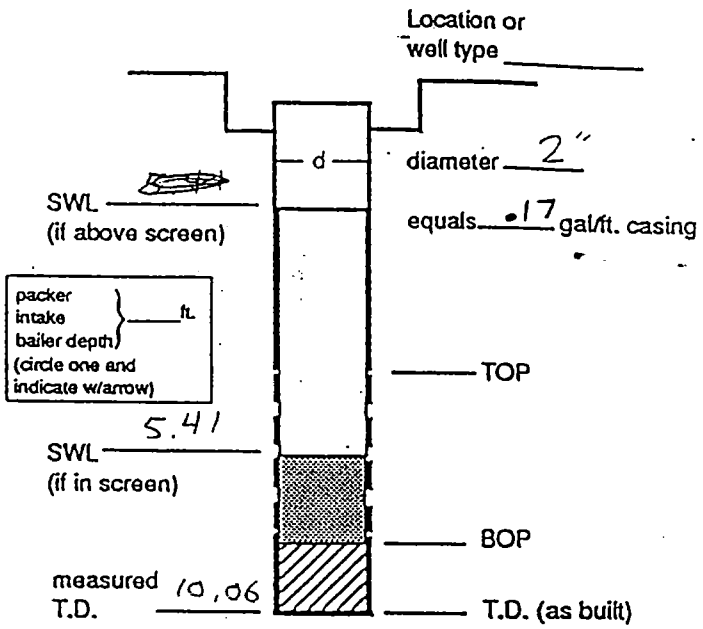
Purge calculation

.17 gal/ft. (SWL to BOP or packer to BOP) * 4.65 ft. = .79 gals (one volume) x 3 = 2.37 gals. (purge volume-3 casings)

Head purge calculation (Airlift)

_____ gal/ft. (packer to SWL) * _____ ft. = _____ gals.

Well / Hydrologic statistics



Method and Equipment Used: 2" Stainless Bailer

Event Description: moderate odor, moderate turbidity

Actual gallons purged 10

Actual volumes purged 12

Well yield ⊕ HY

Additional comments:
slight odor
mod. turbidity

COC #		
Sample I.D.	Analysis	Lab
MW-2	8015, 8020	NorthCreek

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1.						
2.						
3.						
4.						
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-3

PROJECT Fed/Whitley EVENT _____ SAMPLER J Jones DATE 8-12-91

Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	14:30 - 14:45		
Sampled			

Purge calculation

.17 gal/ft. * ~~4.31~~ ft. = .73 gals x 3 = 2.20 gals.

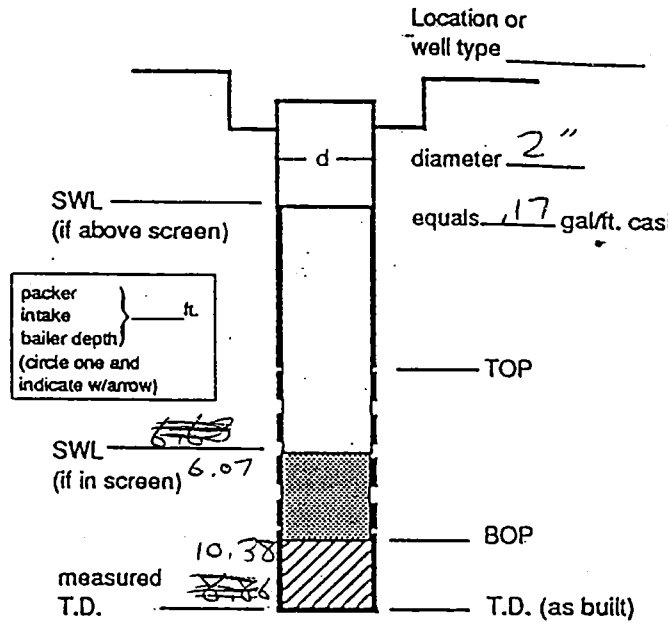
(SWL to BOP or packer to BOP) (one volume) (purge volume- 3 casings)

Head purge calculation (Airlift)

____ gal/ft. * ____ ft. = ____ gals.

(packer to SWL)

Well / Hydrologic statistics



Method and Equipment Used: 2" Stainless Bailer

Event Description: 3 VOA's

Actual gallons purged 12

Actual volumes purged 16

Well yield ⊕ HY

COC # _____

Sample I.D.	Analysis	Lab
MW-3	8015, 8020	North Creek

Additional comments:

slight odor

mod turbidity

Gallons purged *	TEMP °C / °F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1.						
2.						
3.						
4.						
5.						

* Take measurement at approximately each casing volume purged.

⊕ HY- Minimal W.L. drop

MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.

VLY - Minimal recharge - unable to purge 3 volumes.

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011
Phone (206) 481-9200 • FAX (206) 485-2992

SEACOR	Client Project ID:	Federated Whitley Fuels	Sampled:	Aug 12, 1991
330 112th Avenue N.E., #104	Matrix Descript:	Water	Received:	Aug 13, 1991
Bellevue, WA 98004	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 15, 1991
Attention: Gordon Shaffer	First Sample #:	108-0665	Reported:	Aug 20, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION

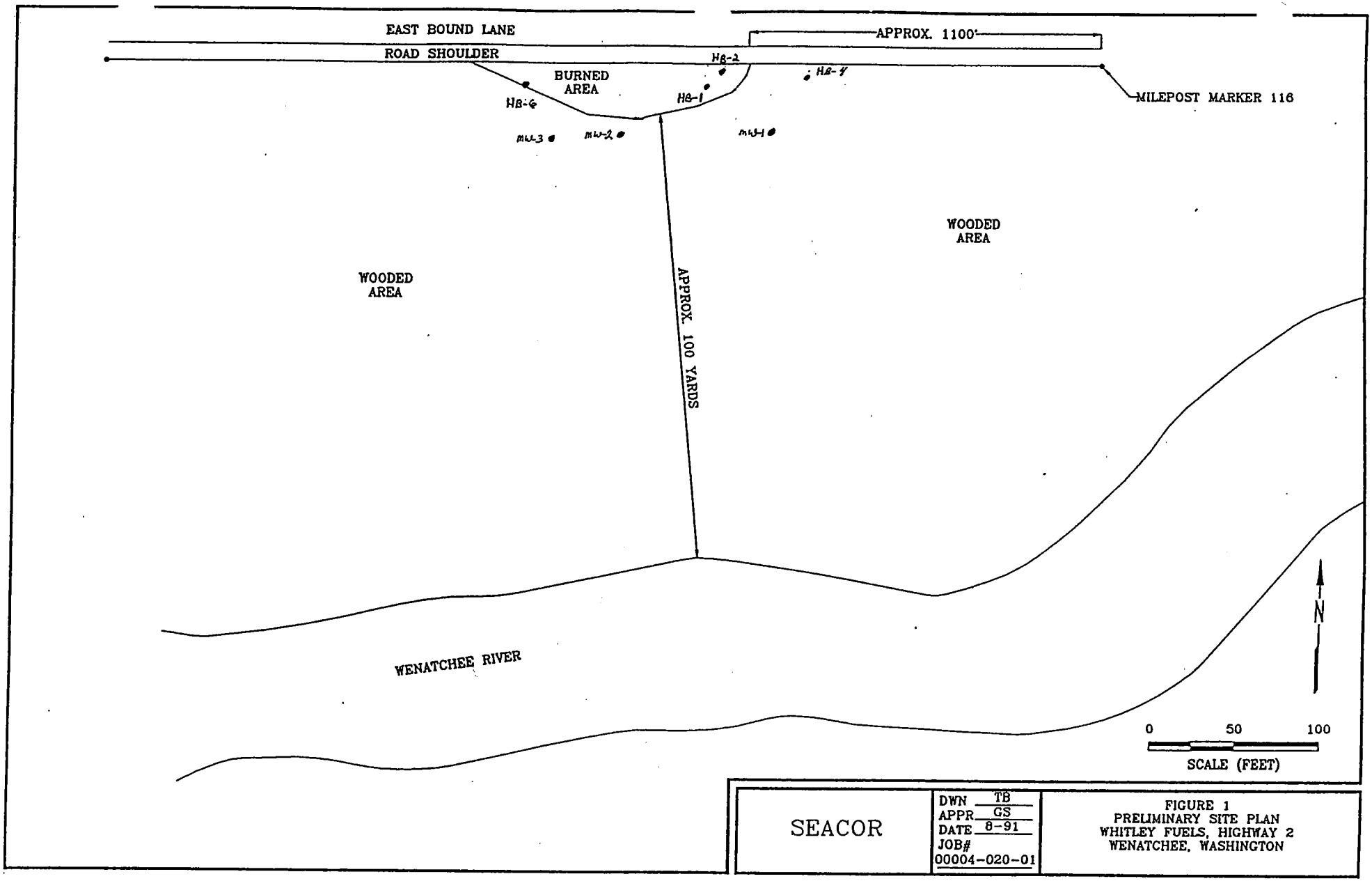
Sample Number	Sample Description	Purgeable Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
108-0665	MW-1	110,000	13,000	20,000	2,000	11,000	105
108-0666	MW-2	2,200	290	260	13	60	87
108-0667	MW-3	16,000	3,500	2,700	140	1,000	96
108-0668	Trip Blank	26	4.5	4.9	0.50	2.8	101
BLK081591	Method Blank	N.D.	N.D.	N.D.	N.D.	N.D.	92 (88)

Detection Limits:	50	0.50	0.50	0.50	0.50

Purgeable Hydrocarbons are quantitated against a gasoline standard (nC5 - nC14). Surrogate recovery reported is for Bromofluorobenzene.
Analytes reported as N.D. were not present above the stated limit of detection.

NORTH CREEK ANALYTICAL

Scot Cocanour
Laboratory Director



SEACOR	DWN TB APPR GS DATE 8-91 JOB# 00004-020-01	FIGURE 1 PRELIMINARY SITE PLAN WHITLEY FUELS, HIGHWAY 2 WENATCHEE, WASHINGTON

Job file
00004-020

SEACOR

August 12, 1991

Mr. Greg Pfeifer
Washington State Department of Ecology
N4601 Monroe, Suite 100
Spokane, WA 99205-1295

GROUNDWATER REMEDIATION AT GASOLINE TANK TRUCK ACCIDENT SITE, MILE MARKER 116, HIGHWAY 2 WEST OF WENATCHEE.

Dear Mr. Pfeifer:

Pursuant to your request, this letter transmits SEACOR's conceptual remedial design and estimated not-to-exceed volatile air emissions from the preliminary design air stripping tower. We now believe that discharging treated water to the Wenatchee River is not feasible due to prolonged NPDES permitting procedures. The remediation system will include the following proven remediation techniques:

- Groundwater depression and extraction;
- Free product separation with an oil/water separator;
- Air stripping; and
- Carbon treatment (optional).

The conceptual design of the treatment system is shown on the attached Figure 1 and the layout of the accident site is shown on Figure 2.

We are currently discussing the option of discharging treated groundwater at the Cashmere POTW. The petroleum hydrocarbon concentration limits imposed by Cashmere may not be as strict as the assumed discharge from the preliminary system design. The preliminary air stripper design is expected to produce treated water that contains no more than 98.31 μg/L (parts per billion or ppb) total petroleum hydrocarbons as gasoline and no more than 2.93 ppb benzene. Emission calculations are attached.

330 - 112th Avenue N.E.,
Suite 104
Bellevue, WA 98004
(206) 646-0280

Estimated not-to-exceed airborne emissions are 16.8 pounds per day of TPH (gasoline) and 0.96 pounds per day of benzene. These air emission rates and treated water quality data are based on a maximum TPH (gasoline) concentration of 140 mg/L (parts per million or ppm) and a maximum benzene concentration of 8 ppm in the discharge water from the oil/water separator and on the final treated water quality criteria as stated above. If the Cashmere POTW can accept treated water with a benzene concentration of 5 μg/L (ppb) then the expected emissions of TPH (gasoline) and benzene should be no more than 9.8 pounds per day and 0.56 pounds per day respectively. Of course, as groundwater concentrations of TPH and benzene decrease over time then resultant air emissions will also decrease.

We appreciate your prompt review and response to our proposal.

Sincerely

Gordon W. Shaffer
Associate Scientist

GWS:hp:mkl

Attachments

cc: Ben Whitley, Whitley Fuels

******* ANALYSIS OF STRIPPING TOWER *******

PROJECT : Winatchee

ENGINEER : Gordon Shaffer

DATE : 8/6/1991

PAGE : 1/2

PHYSICAL CONSTANTS

Design temperature	:	50.0 degrees F.
Density of water	:	62.4 lb/ft^3
Density of air	:	0.0724 lb/ft^3
Viscosity of water	:	8.80E-04 lb/ft.s
Viscosity of air	:	1.16E-05 lb/ft.s
Surface tension of water	:	74 dyne/cm
Atmospheric pressure	:	0.93 atm

CONTAMINANT PROPERTIES

Name	:	p-Xylene
Molecular weight	:	106.2 g/mol
Boiling point	:	280 degrees F.
Molal volume at boiling point	:	0.1404 L/mol
Henry's Constant	:	0.29000
Temperature Constant	:	1904 deg K
Molecular diffusivity in air	:	8.14E-05 ft^2/s
Molecular diffusivity in water	:	5.65E-09 ft^2/s

PACKING PROPERTIES

Name	:	Jaeger Tripacks
Packing Material	:	Plastic
Nominal Size	:	2.00 inch
Specific Area	:	47.9 ft^2/ft^3
Critical surface tension	:	33 dyne/cm
Packing depth	:	20.0 ft
Air friction factor	:	15

******* ANALYSIS OF STRIPPING TOWER *******

PROJECT : Winatchee

ENGINEER : Gordon Shaffer

DATE : 8/6/1991

PAGE : 2/2

LOADING RATES

Water mass loading rate	0.44 lb/ft^2.s	*
Air mass loading rate	0.206 lb/ft^2.s	*
Water volumetric loading rate	3.18 gpm/ft^2	*
Air volumetric loading rate	1274 gpm/ft^2	*
Air pressure gradient	<.06 " H2O/ft	#
Volumetric air/water ratio	400.0	
Stripping factor	70.8	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	28.5 %	
Wetted packing area	13.7 ft^2/ft^3	*
Transfer rate constant in water	0.000199 ft/s	
Transfer rate constant in air	0.025237 ft/s	
Overall transfer rate constant	0.000191 ft/s	
Overall mass transfer coefficient	0.0026 1/s	
NTU	7.3509	
HTU	2.7208 ft	

CONTAMINANT REMOVAL

Influent concentration	140.00 mg/L	
Effluent concentration	98.31 ug/L	
Fraction removed	99.9 %	
Mass of contaminant removed	5.34713 lb/ft^2.day	*
Concentration in airstream	0.91985 mg/ft^2.ft^3	

* Expressed per unit of stripping tower cross-sectional area
Expressed per unit of tower length

******* A N A L Y S I S OF S T R I P P I N G T O W E R *******

PROJECT : Winatchee

DATE : 8/6/1991

ENGINEER : Gordon Shaffer

PAGE : 1/2

PHYSICAL CONSTANTS

Design temperature	:	50.0 degrees F.
Density of water	:	62.4 lb/ft^3
Density of air	:	0.0724 lb/ft^3
Viscosity of water	:	8.80E-04 lb/ft.s
Viscosity of air	:	1.16E-05 lb/ft.s
Surface tension of water	:	74 dyne/cm
Atmospheric pressure	:	0.93 atm

CONTAMINANT PROPERTIES

Name	:	Benzene
Molecular weight	:	78.1 g/mol
Boiling point	:	176 degrees F.
Molal volume at boiling point	:	0.0960 L/mol
Henry's Constant	:	0.23000
Temperature Constant	:	1849 deg K
Molecular diffusivity in air	:	1.02E-04 ft^2/s
Molecular diffusivity in water	:	7.10E-09 ft^2/s

PACKING PROPERTIES

Name	:	Jaeger Tripacks
Packing Material	:	Plastic
Nominal Size	:	2.00 inch
Specific Area	:	47.9 ft^2/ft^3
Critical surface tension	:	33 dyne/cm
Packing depth	:	20.0 ft
Air friction factor	:	15

******* ANALYSIS OF STRIPPING TOWER *******

PROJECT : Winatchee

DATE : 8/6/1991

ENGINEER : Gordon Shaffer

PAGE : 2/2

LOADING RATES

Water mass loading rate	:	0.44 lb/ft^2.s	*
Air mass loading rate	:	0.154 lb/ft^2.s	*
Water volumetric loading rate	:	3.18 gpm/ft^2	*
Air volumetric loading rate	:	955 gpm/ft^2	*
Air pressure gradient	:	<.06 " H2O/ft	#
Volumetric air/water ratio	:	300.0	
Stripping factor	:	42.8	

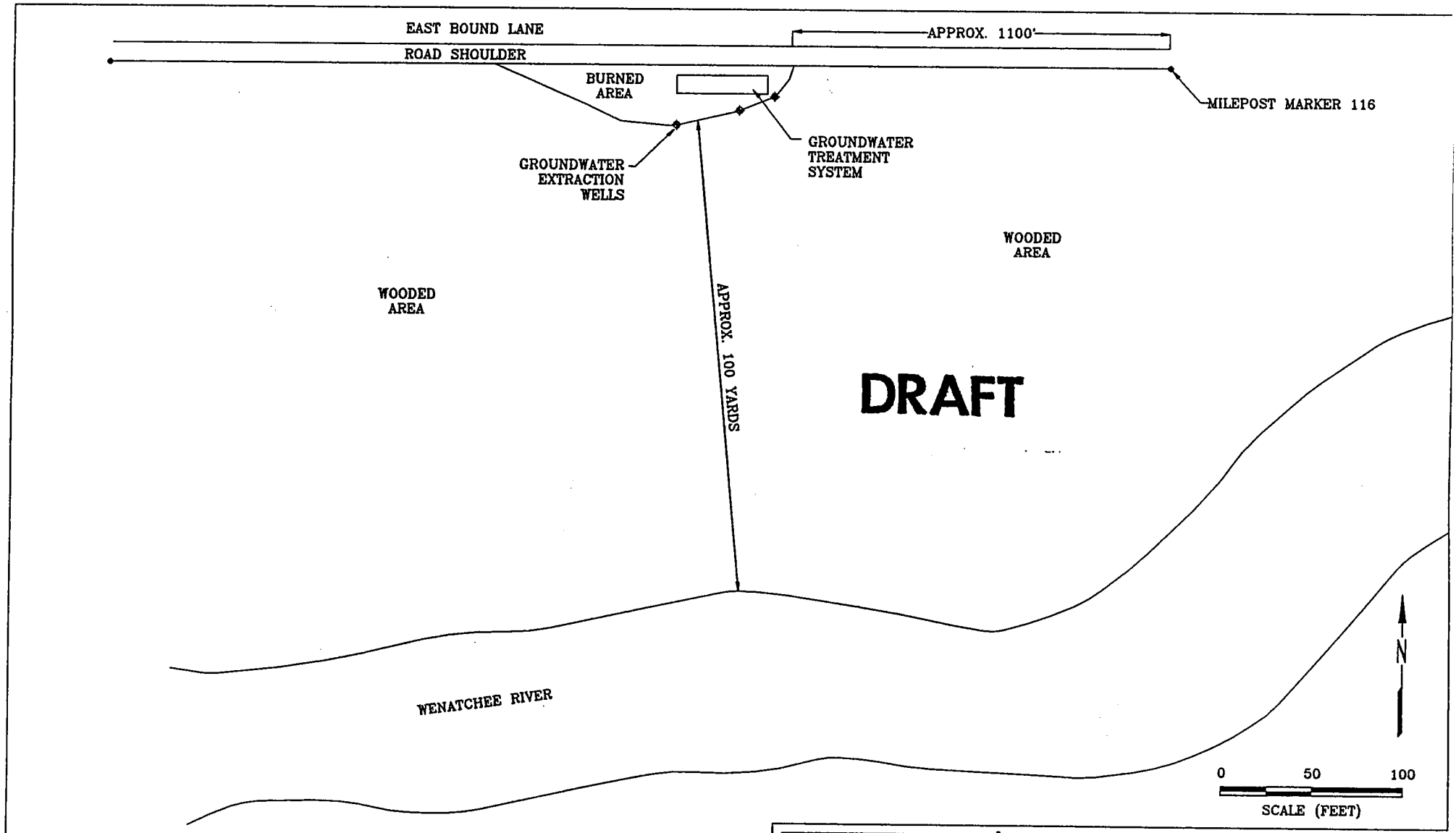
MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	28.5 %	
Wetted packing area	:	13.7 ft^2/ft^3	*
Transfer rate constant in water	:	0.000223 ft/s	
Transfer rate constant in air	:	0.023897 ft/s	
Overall transfer rate constant	:	0.000210 ft/s	
Overall mass transfer coefficient	:	0.0029 1/s	
NTU	:	8.0766	
HTU	:	2.4763 ft	

CONTAMINANT REMOVAL

Influent concentration	:	8.00 mg/L	
Effluent concentration	:	2.93 ug/L	
Fraction removed	:	100.0 %	
Mass of contaminant removed	:	0.30565 lb/ft^2.day	*
Concentration in airstream	:	0.07011 mg/ft^2.ft^3	

* Expressed per unit of stripping tower cross-sectional area
Expressed per unit of tower length

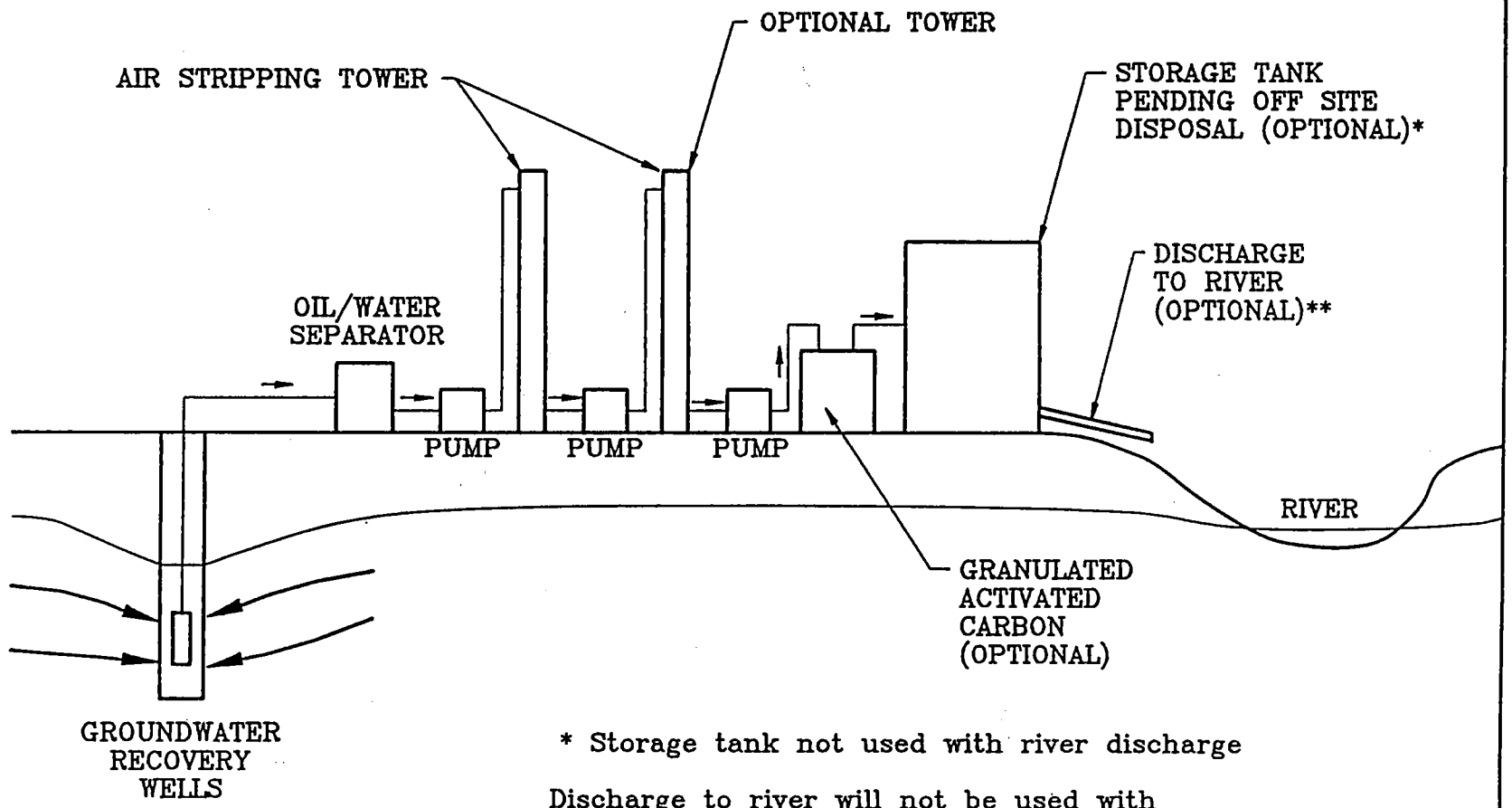


SEACOR	DWN TB APPR GS DATE 8-91 JOB# 00004-020-01	FIGURE 1 PRELIMINARY SITE PLAN WHITLEY FUELS, HIGHWAY 2 WENATCHEE, WASHINGTON

SEACOR

DWN TB
APPR GS
DATE 8-91
JOB# 00004-020-01

FIGURE 2
CONCEPTUAL DESIGN
GROUNDWATER REMEDIATION SYSTEM
WHITLEY FUELS, HIGHWAY 2
WENATCHEE, WASHINGTON



* Storage tank not used with river discharge

Discharge to river will not be used with off site disposal

DRAFT

DISC0003 DWG-FIGFUEL02 LAYER-LINES025

January 16, 1992

Mr. Ben Whitley
Whitley Fuels
P.O. Box 907
Okanogon, Washington 98840

INTERIM REMEDIATION OF TANKER ACCIDENT SITE NEAR WENATCHEE, WASHINGTON

Dear Mr. Whitley:

This letter describes our proposed scope of work to initiate soil and groundwater remediation at the tanker accident site on Highway 2 west of Wenatchee, Washington.

SCOPE OF WORK

SEACOR proposes to design and install a vacuum extraction system (VES) and air sparging system to volatilize and remove gasoline constituents from the soil and shallow groundwater at the accident site. The system will also help remove any free product residual that may remain on the groundwater surface.

Our proposed scope of work includes the following items:

- Prepare a conceptual design (completed)
- Design the vapor extraction and air sparging system
- Coordinate proper permitting for the system
- Manage the installation of the system
- Provide operation and maintenance
- Feasibility study of further groundwater remediation

PREPARE CONCEPTUAL DESIGN

Our conceptual design for interim source remediation consists of a VES installed in the soil at the accident site. The soil predominantly consists of sand that overlies boulders and large gravel. This soil type is generally well suited to VES technology. Our proposed system will use several horizontal lines (laterals) of perforated pipe that will be buried at approximately two feet and five feet deep. The laterals will be manifolded to a common vacuum header line. System vacuum will be generated by an appropriately sized electric blower that is designed for this purpose. The extracted gasoline vapors will be exhausted directly to the atmosphere through an appropriately sized stack.

During periods of low groundwater levels, gasoline vapors can be extracted from the lower laterals. During periods of high groundwater levels, clean air can be injected through the lower laterals in order to sparge the contaminated groundwater. The ground surface at the site would be covered with an impermeable liner to prevent short circuiting of the vapors.

This system should be able to operate within expected permit requirements without using expensive granulated activated carbon or thermal destruction emission treatments on the VES exhaust. In addition, the flexibility of the bi-level lateral system will allow the system to operate more efficiently, thereby promoting a shorter remediation period and low overall costs.

SYSTEM DESIGN

SEACOR's engineering staff will work with reputable remediation equipment suppliers and builders to design a cost effective remediation system at the site. Formal design specifications will be prepared on which to base estimated construction and installation costs.

COORDINATE PERMITTING

SEACOR will coordinate the permitting process with the appropriate state and county agencies. At this time, we anticipate that a construction and operation permit will be needed from the Washington Department of Transportation. We also anticipate obtaining an air quality permit or waiver from the Washington Department of Ecology. A building permit may be required from Chelan County depending on whether or not the VES is considered to be a "permanent" facility. A Wetlands permits may also be required from the county and/or the Washington Department of Natural Resources.

INSTALL SYSTEM

SEACOR will act as your general contractor to manage the appropriate subcontractors to purchase and install the remediation system. When the installation is completed, appropriate as-built drawings will be prepared.

OPERATION, MAINTENANCE AND MONITORING

SEACOR will provide the labor and management to operate and maintain the system throughout the period of operation. We anticipate that operation and maintenance (O&M) will include weekly sampling and analysis and appropriate equipment adjustments during the first three months of operation. Twice-monthly O&M trips are anticipated thereafter.

SEACOR recommends quarterly sampling of the Wenatchee River downstream from the site. It is unlikely that the river has been affected, however, it is prudent to collect data to support this assumption. Two samples will be collected quarterly with an additional upstream sample collected initially.

GROUNDWATER TREATMENT FEASIBILITY STUDY

This proposal may not be sufficient to completely remediate all affected groundwater. Additional groundwater treatment methods may be necessary. SEACOR will evaluate the feasibility of other available options, including groundwater extraction from wells and/or trenches, treatment of extracted groundwater using carbon and air stripping, and infiltration of treated groundwater.

ESTIMATED COSTS

SEACOR will perform the above described services on a time and materials basis in accordance with the attached rate schedule. Final costs cannot be estimated until the actual VES design is completed; however, we have prepared an estimated cost based on our past experiences and typical industry costs. We believe that our estimate is a reasonable budgetary estimate of expected fees and costs to design, permit, install and operate the proposed system. A breakdown of the estimated costs is attached.

CLOSING

SEACOR appreciates the opportunity to assist you with this project. Please feel free to contact us if you have any questions.

Very truly yours,

Chris L. Jones
Senior Technician

James H. Flynn
Principal Hydrogeologist

ESTIMATED COSTS FOR INTERIM SOIL AND GROUNDWATER REMEDIATION

Task	Estimated Costs ($)
• Conceptual Design	500
• Detailed VES Design	3,000
• Coordinate Permitting (does not include actual permit fees or license costs)	3,500
• Install System	
- H & S Plan	300
- Site Preparation and Fencing	3,500
- Traffic Control	1,000
- Electric Service (Chelan PUD)	6,500
- SEACOR Field Manager	4,500
- As-built Drawings	1,000
- Electrical Contractor	1,200
- Installation Contractor	4,200
Installation Subtotal	22,200
• Equipment Purchase	
- 40 mil Lines	3,000
- Piping and Fittings	2,200
- Sand and Gravel	2,000
- Blowers	8,000
Equipment Purchase Subtotal	15,200
• Project Management for Design, Permitting and Construction Phases	2,500
• Operation and Maintenance (1st Year)	
1st Quarter:	
- SEACOR (travel and technician)	7,000
- Laboratory (1 sample/week)	1,600
- River Samples	300
- Electric Service	400
- Reporting to Agencies	3,000
1st Quarter Subtotal	12,300
2nd Quarter through 4th Quarter:	
($4,500 each)	14,100
Reporting to Agencies	4,500
Subtotal	18,600
• Groundwater Treatment Feasibility Study	2,000
Estimated Total 1st Year Costs	79,800

SPECTRUM CONTRACTING INC
WA St. Lic. # PDRPCI*090NK
P.O. Box 33962
Seattle, WA 98133

W O R K O R D E R

* * * * * * * * * * * * * * * * * * *

Date: January 6, 1992

Job No. PDRP 92- 6

Seacor
11040 Main St , Suite 240
Bellevue, WA 98104

Contact: Chris Jones

FAX 646 0283
Phone: 646 5744

PROJECT Roadside gasoline spill
SR 2 near Cashmere, WA

WOEK ORDER

Provide materials and equipment and install 60' by 120' VES consisting of three parallel trenches with two tiers of 2-inch pvc piping, covered with 40 mil HDPE geosynthetic and two inch sand cover. Requiree cutting and fitting boots around several trees.

QUOTE

Mobilization				$ 400.00
40 mil HDPE	7200 sq ft	@	$ .50	3600.00
2-inch PVC slotted pipe	500 ft	@	$ 2.80	1400.00
2-inch PVC blank pipe	100 ft	@	$ .53	53.00
Fittings (tees,elbows, etc)	estimate			200.00
Ball valves	6	@	$ 26.00	156.00
Bentonite	12 bgs	@	$ 7.00	84.00
Sand, pit run	50 yds	@	$ 11.20	560.00
Pea gravel	60 yds	@	$ 18.00	1080.00
Labor *	40 hrs	@	$ 55.00	2200.00
Backhoe	4 dys	@	$250.00	1000.00
Subsistence	5 dys	@	$100.00	500.00
			TOTAL	$11233.00

* : 10 % surcharge for level C safety conditions

Note: Does not include highway traffic control, temporary power, water or sanitary facilites.

TAKEN BY: P. Weber

TIME: 12-20-91

WHITLEY FUEL

325 VAN DUYN N. P.O. BOX 907
OKANOGAN 422-3120

OKANOGAN, WASHINGTON 98840
689-3224 BREWSTER

January 30, 1992

Chris Jones
Seacor
11040 Main Street
Suite 240
Bellevue, Washington 98004

Re: Clean up Highway 2
Monitor, Wash.

Dear Chris,

I recieved a letter dated January 23, 1992, from Federated Insurance. They stated they could see no reason why Secor's plan of remediation could not be inmplemented. Under that basis, I will advise Seacor to proceed with the clean up as described in Seacor's proposed scope of work, dated January 16, 1992, to initiate soil and ground water remediation at the tanker accident site on Highway 2, west of Wenatchee.

Sincerely

Ben Whitley
Whitley Fuel

[redacted] 6/16/92 9:05

[redacted]

Mr. Nick Prime
Aegis Environmental
8196 SW Hall Suite 300
Beaverton, OR 97005
(503) 644 [redacted] 1696
He said John Fox said to
send all Whitley Fuels info to him as he is
the new consultant.

I said that we would need to be directed by our client
Ben Whitley to forward information.

He said that he would have them contact us.

Chris Jones

WHITLEY FUEL

325 VAN DUYN N. P.O. BOX 907
OKANOGAN 422-3120

OKANOGAN, WASHINGTON 98840
689-3224 BREWSTER

June 14, 1992

Seacor
P.O. Box 84365
Seattle, Wash. 98124-5665

Re: Fuel spill sight.

Dear Sir,

I am requesting that Seacor release all files and information pertinent to the tanker accident and fuel spill located on Highway 97 and Highway 2, between Wenatchee and Cashmere. I want this information given to Nick Prime, with Aegis Enviromental.

For my best interest I have chosen Aegis Enviromental to complete the cleanup at the above-stated sight.

Sincerely,

Ben Whitley

00004-020-01
Gordon Shaffer PM

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-2569
Phone (206) 481-9200 • FAX (206) 485-2992

SEACOR	Client Project ID:	00004-020-01	Sampled:	Apr 29, 1992
11040 Main Street, #240	Matrix Descript:	Water	Received:	Apr 29, 1992
Bellevue, WA 98004	Analysis Method:	EPA 5030/8015/8020	Analyzed:	May 1, 1992
Attention: Gordon Shaffer	First Sample #:	204-1693	Reported:	May 6, 1992

TOTAL PETROLEUM HYDROCARBONS with BTEX DISTINCTION (WTPH-G/BTEX)

Sample Number	Sample Description	Volatile Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
204-1693	R-1	N.D.	N.D.	N.D.	N.D.	N.D.	87
204-1694	R-2	N.D.	N.D.	N.D.	N.D.	N.D.	85
204-1695	R-3	N.D.	N.D.	N.D.	N.D.	N.D.	85
BLK050192	Method Blank	N.D.	N.D.	N.D.	N.D.	N.D.	84
Detection Limits:		**50**	**0.50**	**0.50**	**0.50**	**0.50**	

Volatile Hydrocarbons are quantitated as gasoline range organics (nC5 - nC12). Surrogate recovery reported is for Bromofluorobenzene.
Analytes reported as N.D. were not present above the stated limit of detection.

NORTH CREEK ANALYTICAL inc

Scot Cocanour
Laboratory Director

Please Note:
The detection limit for Xylenes in #204-1693 = 0.60 µg/L.

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-2569
Phone (206) 481-9200 • FAX (206) 485-2992

SEACOR	Client Project ID: 00004-020-01	Analyst :	M. Essig
11040 Main Street, #240	Method : EPA 5030/8020		K. Wilke
Bellevue, WA 98004	Sample Matrix : Water		
Attention: Gordon Shaffer	Units : µg/L	Analyzed:	May 1, 1992
	QC Sample #: 204-1654	Reported:	May 6, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl benzene	Xylenes
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	5.0	5.0	5.0	15.0
Conc. Matrix Spike:	5.2	4.8	4.8	14.0
Matrix Spike % Recovery:	104	96	96	93
Conc. Matrix Spike Dup.:	5.0	4.8	4.8	14.0
Matrix Spike Duplicate % Recovery:	100	96	96	93
Relative % Difference:	3.9	0	0	0

ORTH CREEK ANALYTICAL inc

Scot Cocanour
Laboratory Director

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

Chain-of-Custody Number: A 207

SEACOR Chain-of-Custody Record

Address: #001
Bellevue, WA

Project # 00004-020-01 Task # ____
Project Manager G. Shaffer
Laboratory NCA
Turn-around time: Standard

Sampler's Name: Chris Jones
Sampler's Signature: [signature]

Analysis Request

Sample ID	Date	Time	Matrix	TPHg/BTEX 8015 (modified)/8020	TPHd 8015 (modified)	TPH 418.1	Aromatic Volatiles 602/8020	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Semi-volatile Organics 625/8270 (GC/MS)	Pesticides/PCB's 608/8080	Total Lead 7421	Priority Pollutant Metals (13)	TCLP Metals				Comments/ Instructions	Number of Containers
RB-1	4/29/92	9:45	W	X														2041693	2
RB-2	↓	10:00	W	X														2041694	2
RB-3	↓	12:50	W	X														2041695	2

Special Instructions/Comments:

Relinquished by:
Sign [signature]
Print Chris Jones
Company SEACOR
Time 16:40 Date 4/29/92

Received by:
Sign [signature]
Print [signature]
Company NCA
Time 4:50 Date 04-29-92

Relinquished by:
Sign ____
Print ____
Company ____
Time ____ Date ____

Received by:
Sign ____
Print ____
Company ____
Time ____ Date ____

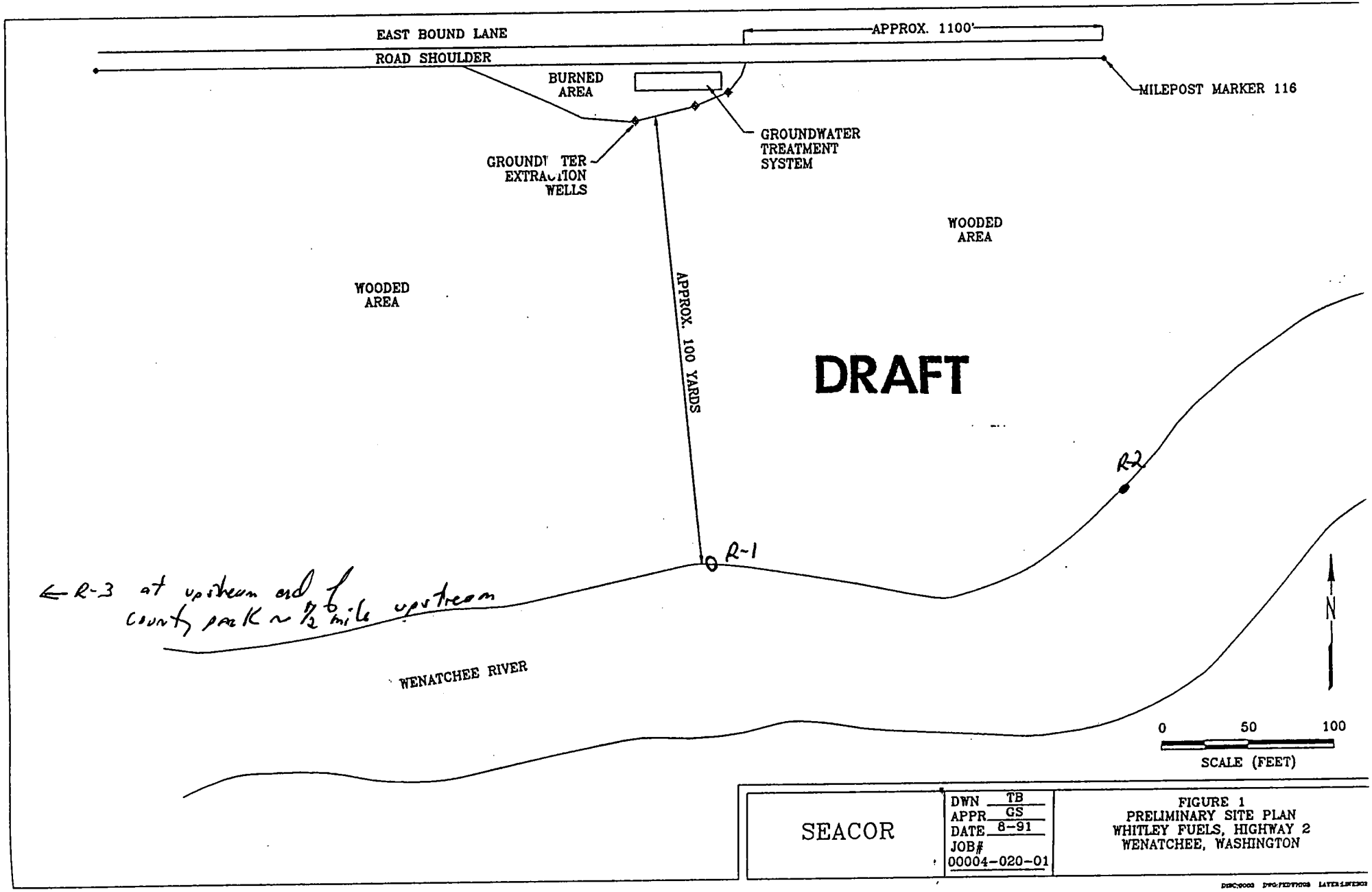
Sample Receipt

Total no. of containers	6
Chain of custody seals:	
Rec'd good condition/cold:	YES
Conforms to record:	

Client: ____
Client Contact: ____
Client Phone Number: ____

Date ____ / ____ / ____ Page ____ of ____

Location of River samples 4/20/92



SEACOR	DWN TB APPR GS DATE 8-91 JOB# 00004-020-01	FIGURE 1 PRELIMINARY SITE PLAN WHITLEY FUELS, HIGHWAY 2 WENATCHEE, WASHINGTON

SEACOR

June 22, 1992

Mr. Ben Whitley
Whitley Fuels
325 Van Duyn
P.O. Box 907
Okanogan, WA 98840

RE: TANKER ACCIDENT CLEANUP

Mr. Ben Whitley:

This letter transmits our final invoice for consulting services associated with remediation of the tanker accident near Wenatchee, Washington.

Chris Jones and I were disappointed to learn that you have selected another consulting firm to assist you with remediation of the accident site. We sincerely hope that the project proceeds smoothly and leads to a successful site closure.

As you and Chris Jones discussed during your recent telephone conversation, we will call you in a few months to check on project progress. In the meantime feel free to contact us if you have any questions.

Sincerely,

Science & Engineering Analysis Corporation

Chris Jones
Staff Geologist

Gordon W. Shaffer
Associate Scientist

11040 Main Street
Suite 240
Bellevue, WA 98004
(206) 646-0280
(206) 646-0283 FAX

FI6043.LTR/1
06/22/92

FINAL BILLING
FILE NO. 00004-020-01
INVOICE NO. 1920692
DATE 06/24/92
SEACOR Federal Tax Identification No.: 33-0385098

SEACOR

Whitley Fuels
325 Van Duyn N.
PO Box 907
Okanogan, Washington 98840

Attention: Ben Whitley

I N V O I C E

Previously Billed:	$21,390.58
Invoice Amount:	$130.00
Received To Date:	$16,369.99
Outstanding Balance:	$5,150.59

Description: Whitley

Assess and supervise gasoline spill cleanup.

BILLING PERIOD 05/16/92 TO 06/12/92

General

LABOR		
Project Staff 1.00 @ $60.00	$60.00	
	$60.00	
General Task Subtotal		$60.00

Task WF03 Permitting

LABOR		
Associate Staff 1.00 @ $70.00	$70.00	
	$70.00	
Permitting Task Subtotal		$70.00
TOTAL DUE THIS INVOICE		$130.00

THANK YOU FOR YOUR BUSINESS

rto
sld

11040 Main Street
Suite 240
Bellevue, WA 98004
(206) 646-0280
(206) 646-0283 FAX

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental
Travis Trent
406 N. 2nd Street
Yakima, WA 98901

RE: Whitley Fuel
Work Order Number: 1809343

September 28, 2018

Attention Travis Trent:

Fremont Analytical, Inc. received 10 sample(s) on 9/21/2018 for the analyses presented in the following report.

Gasoline by NWTPH-Gx
Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

CC:
Kyle Ames

Date: *09/28/2018*

CLIENT: Fulcrum Environmental
Project: Whitley Fuel
Work Order: 1809343

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1809343-001	92018-01	09/20/2018 9:00 AM	09/21/2018 9:03 AM
1809343-002	92018-02	09/20/2018 9:00 AM	09/21/2018 9:03 AM
1809343-003	92018-03	09/20/2018 9:00 AM	09/21/2018 9:03 AM
1809343-004	92018-04	09/20/2018 9:30 AM	09/21/2018 9:03 AM
1809343-005	92018-05	09/20/2018 9:30 AM	09/21/2018 9:03 AM
1809343-006	92018-06	09/20/2018 9:30 AM	09/21/2018 9:03 AM
1809343-007	92018-07	09/20/2018 10:30 AM	09/21/2018 9:03 AM
1809343-008	92018-08	09/20/2018 10:30 AM	09/21/2018 9:03 AM
1809343-009	92018-09	09/20/2018 11:00 AM	09/21/2018 9:03 AM
1809343-010	92018-10	09/20/2018 11:00 AM	09/21/2018 9:03 AM

Case Narrative

WO#: **1809343**

Date: **9/28/2018**

CLIENT: Fulcrum Environmental

Project: Whitley Fuel

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:00:00 AM
Project: Whitley Fuel
Lab ID: 1809343-001
Matrix: Soil
Client Sample ID: **92018-01**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	ND	5.71		mg/Kg-dry	1	9/22/2018 5:39:00 AM
Surr: 4-Bromofluorobenzene	103	65 - 135		%Rec	1	9/22/2018 5:39:00 AM
Surr: Toluene-d8	110	65 - 135		%Rec	1	9/22/2018 5:39:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0228		mg/Kg-dry	1	9/22/2018 5:39:00 AM
Toluene	ND	0.0228		mg/Kg-dry	1	9/22/2018 5:39:00 AM
Ethylbenzene	ND	0.0285		mg/Kg-dry	1	9/22/2018 5:39:00 AM
m,p-Xylene	ND	0.0571		mg/Kg-dry	1	9/22/2018 5:39:00 AM
o-Xylene	ND	0.0285		mg/Kg-dry	1	9/22/2018 5:39:00 AM
Surr: Dibromofluoromethane	98.4	56.5 - 129		%Rec	1	9/22/2018 5:39:00 AM
Surr: Toluene-d8	90.0	64.5 - 151		%Rec	1	9/22/2018 5:39:00 AM
Surr: 1-Bromo-4-fluorobenzene	97.2	54.8 - 168		%Rec	1	9/22/2018 5:39:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	7.00	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:00:00 AM
Project: Whitley Fuel
Lab ID: 1809343-002
Matrix: Soil
Client Sample ID: **92018-02**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	441	77.1	D	mg/Kg-dry	10	9/24/2018 4:11:00 PM
Surr: 4-Bromofluorobenzene	104	65 - 135	D	%Rec	10	9/24/2018 4:11:00 PM
Surr: Toluene-d8	110	65 - 135	D	%Rec	10	9/24/2018 4:11:00 PM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0308		mg/Kg-dry	1	9/22/2018 6:11:00 AM
Toluene	ND	0.0308		mg/Kg-dry	1	9/22/2018 6:11:00 AM
Ethylbenzene	ND	0.0385		mg/Kg-dry	1	9/22/2018 6:11:00 AM
m,p-Xylene	ND	0.0771		mg/Kg-dry	1	9/22/2018 6:11:00 AM
o-Xylene	ND	0.0385		mg/Kg-dry	1	9/22/2018 6:11:00 AM
Surr: Dibromofluoromethane	95.7	56.5 - 129		%Rec	1	9/22/2018 6:11:00 AM
Surr: Toluene-d8	86.3	64.5 - 151		%Rec	1	9/22/2018 6:11:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	54.8 - 168		%Rec	1	9/22/2018 6:11:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	21.3	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:00:00 AM
Project: Whitley Fuel
Lab ID: 1809343-003
Matrix: Soil
Client Sample ID: **92018-03**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	151	112	D	mg/Kg-dry	20	9/22/2018 9:22:00 AM
Surr: 4-Bromofluorobenzene	98.5	65 - 135	D	%Rec	20	9/22/2018 9:22:00 AM
Surr: Toluene-d8	108	65 - 135	D	%Rec	20	9/22/2018 9:22:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0224		mg/Kg-dry	1	9/24/2018 4:43:00 PM
Toluene	0.0811	0.0224		mg/Kg-dry	1	9/24/2018 4:43:00 PM
Ethylbenzene	0.256	0.0280		mg/Kg-dry	1	9/24/2018 4:43:00 PM
m,p-Xylene	0.695	0.0559		mg/Kg-dry	1	9/24/2018 4:43:00 PM
o-Xylene	0.0531	0.0280		mg/Kg-dry	1	9/24/2018 4:43:00 PM
Surr: Dibromofluoromethane	98.1	56.5 - 129		%Rec	1	9/24/2018 4:43:00 PM
Surr: Toluene-d8	93.2	64.5 - 151		%Rec	1	9/24/2018 4:43:00 PM
Surr: 1-Bromo-4-fluorobenzene	74.7	54.8 - 168		%Rec	1	9/24/2018 4:43:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	9.51	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:30:00 AM
Project: Whitley Fuel
Lab ID: 1809343-004
Matrix: Soil
Client Sample ID: **92018-04**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	52.7	42.5	D	mg/Kg-dry	10	9/22/2018 9:54:00 AM
Surr: 4-Bromofluorobenzene	102	65 - 135	D	%Rec	10	9/22/2018 9:54:00 AM
Surr: Toluene-d8	104	65 - 135	D	%Rec	10	9/22/2018 9:54:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0170		mg/Kg-dry	1	9/24/2018 5:14:00 PM
Toluene	ND	0.0170		mg/Kg-dry	1	9/24/2018 5:14:00 PM
Ethylbenzene	0.0301	0.0212		mg/Kg-dry	1	9/24/2018 5:14:00 PM
m,p-Xylene	0.0926	0.0425		mg/Kg-dry	1	9/24/2018 5:14:00 PM
o-Xylene	ND	0.0212		mg/Kg-dry	1	9/24/2018 5:14:00 PM
Surr: Dibromofluoromethane	98.4	56.5 - 129		%Rec	1	9/24/2018 5:14:00 PM
Surr: Toluene-d8	90.3	64.5 - 151		%Rec	1	9/24/2018 5:14:00 PM
Surr: 1-Bromo-4-fluorobenzene	86.8	54.8 - 168		%Rec	1	9/24/2018 5:14:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	9.15	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:30:00 AM
Project: Whitley Fuel
Lab ID: 1809343-005
Matrix: Soil
Client Sample ID: **92018-05**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	841	84.1	D	mg/Kg-dry	20	9/22/2018 10:26:00 AM
Surr: 4-Bromofluorobenzene	97.9	65 - 135	D	%Rec	20	9/22/2018 10:26:00 AM
Surr: Toluene-d8	106	65 - 135	D	%Rec	20	9/22/2018 10:26:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.337	D	mg/Kg-dry	20	9/22/2018 10:26:00 AM
Toluene	ND	0.337	D	mg/Kg-dry	20	9/22/2018 10:26:00 AM
Ethylbenzene	0.244	0.421	JD	mg/Kg-dry	20	9/22/2018 10:26:00 AM
m,p-Xylene	0.875	0.841	D	mg/Kg-dry	20	9/22/2018 10:26:00 AM
o-Xylene	0.210	0.421	JD	mg/Kg-dry	20	9/22/2018 10:26:00 AM
Surr: Dibromofluoromethane	107	56.5 - 129	D	%Rec	20	9/22/2018 10:26:00 AM
Surr: Toluene-d8	97.2	64.5 - 151	D	%Rec	20	9/22/2018 10:26:00 AM
Surr: 1-Bromo-4-fluorobenzene	93.0	54.8 - 168	D	%Rec	20	9/22/2018 10:26:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	6.55	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 9:30:00 AM
Project: Whitley Fuel
Lab ID: 1809343-006
Matrix: Soil
Client Sample ID: **92018-06**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	325	43.8	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
Surr: 4-Bromofluorobenzene	108	65 - 135	D	%Rec	10	9/22/2018 10:57:00 AM
Surr: Toluene-d8	107	65 - 135	D	%Rec	10	9/22/2018 10:57:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.175	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
Toluene	ND	0.175	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
Ethylbenzene	ND	0.219	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
m,p-Xylene	ND	0.438	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
o-Xylene	ND	0.219	D	mg/Kg-dry	10	9/22/2018 10:57:00 AM
Surr: Dibromofluoromethane	97.4	56.5 - 129	D	%Rec	10	9/22/2018 10:57:00 AM
Surr: Toluene-d8	93.0	64.5 - 151	D	%Rec	10	9/22/2018 10:57:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	54.8 - 168	D	%Rec	10	9/22/2018 10:57:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	11.2	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 10:30:00 AM
Project: Whitley Fuel
Lab ID: 1809343-007
Matrix: Soil
Client Sample ID: **92018-07**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	82.3	4.32		mg/Kg-dry	1	9/22/2018 7:15:00 AM
Surr: 4-Bromofluorobenzene	105	65 - 135		%Rec	1	9/22/2018 7:15:00 AM
Surr: Toluene-d8	111	65 - 135		%Rec	1	9/22/2018 7:15:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0173		mg/Kg-dry	1	9/22/2018 7:15:00 AM
Toluene	ND	0.0173		mg/Kg-dry	1	9/22/2018 7:15:00 AM
Ethylbenzene	ND	0.0216		mg/Kg-dry	1	9/22/2018 7:15:00 AM
m,p-Xylene	ND	0.0432		mg/Kg-dry	1	9/22/2018 7:15:00 AM
o-Xylene	ND	0.0216		mg/Kg-dry	1	9/22/2018 7:15:00 AM
Surr: Dibromofluoromethane	92.0	56.5 - 129		%Rec	1	9/22/2018 7:15:00 AM
Surr: Toluene-d8	90.9	64.5 - 151		%Rec	1	9/22/2018 7:15:00 AM
Surr: 1-Bromo-4-fluorobenzene	97.2	54.8 - 168		%Rec	1	9/22/2018 7:15:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46467		Analyst: EAS
Percent Moisture	16.4	0.500		wt%	1	9/25/2018 12:50:00 PM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 10:30:00 AM
Project: Whitley Fuel
Lab ID: 1809343-008
Matrix: Soil
Client Sample ID: **92018-08**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	11.3	4.48		mg/Kg-dry	1	9/24/2018 3:07:00 PM
Surr: 4-Bromofluorobenzene	107	65 - 135		%Rec	1	9/24/2018 3:07:00 PM
Surr: Toluene-d8	119	65 - 135		%Rec	1	9/24/2018 3:07:00 PM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0179		mg/Kg-dry	1	9/22/2018 7:46:00 AM
Toluene	ND	0.0179		mg/Kg-dry	1	9/22/2018 7:46:00 AM
Ethylbenzene	ND	0.0224		mg/Kg-dry	1	9/22/2018 7:46:00 AM
m,p-Xylene	ND	0.0448		mg/Kg-dry	1	9/22/2018 7:46:00 AM
o-Xylene	ND	0.0224		mg/Kg-dry	1	9/22/2018 7:46:00 AM
Surr: Dibromofluoromethane	93.6	56.5 - 129		%Rec	1	9/22/2018 7:46:00 AM
Surr: Toluene-d8	85.4	64.5 - 151		%Rec	1	9/22/2018 7:46:00 AM
Surr: 1-Bromo-4-fluorobenzene	97.4	54.8 - 168		%Rec	1	9/22/2018 7:46:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46487		Analyst: NG
Percent Moisture	15.7	0.500		wt%	1	9/26/2018 9:21:41 AM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 11:00:00 AM
Project: Whitley Fuel
Lab ID: 1809343-009
Matrix: Soil
Client Sample ID: **92018-09**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	27.2	5.61		mg/Kg-dry	1	9/24/2018 3:39:00 PM
Surr: 4-Bromofluorobenzene	108	65 - 135		%Rec	1	9/24/2018 3:39:00 PM
Surr: Toluene-d8	118	65 - 135		%Rec	1	9/24/2018 3:39:00 PM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0224		mg/Kg-dry	1	9/22/2018 8:18:00 AM
Toluene	ND	0.0224		mg/Kg-dry	1	9/22/2018 8:18:00 AM
Ethylbenzene	ND	0.0280		mg/Kg-dry	1	9/22/2018 8:18:00 AM
m,p-Xylene	ND	0.0561		mg/Kg-dry	1	9/22/2018 8:18:00 AM
o-Xylene	ND	0.0280		mg/Kg-dry	1	9/22/2018 8:18:00 AM
Surr: Dibromofluoromethane	92.8	56.5 - 129		%Rec	1	9/22/2018 8:18:00 AM
Surr: Toluene-d8	86.8	64.5 - 151		%Rec	1	9/22/2018 8:18:00 AM
Surr: 1-Bromo-4-fluorobenzene	102	54.8 - 168		%Rec	1	9/22/2018 8:18:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46487		Analyst: NG
Percent Moisture	14.1	0.500		wt%	1	9/26/2018 9:21:41 AM

Analytical Report

Work Order: **1809343**
Date Reported: **9/28/2018**

Client: Fulcrum Environmental
Collection Date: 9/20/2018 11:00:00 AM
Project: Whitley Fuel
Lab ID: 1809343-010
Matrix: Soil
Client Sample ID: **92018-10**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 22039		Analyst: TN
Gasoline	ND	5.36		mg/Kg-dry	1	9/22/2018 8:50:00 AM
Surr: 4-Bromofluorobenzene	104	65 - 135		%Rec	1	9/22/2018 8:50:00 AM
Surr: Toluene-d8	119	65 - 135		%Rec	1	9/22/2018 8:50:00 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 22039		Analyst: TN
Benzene	ND	0.0214		mg/Kg-dry	1	9/22/2018 8:50:00 AM
Toluene	ND	0.0214		mg/Kg-dry	1	9/22/2018 8:50:00 AM
Ethylbenzene	ND	0.0268		mg/Kg-dry	1	9/22/2018 8:50:00 AM
m,p-Xylene	ND	0.0536		mg/Kg-dry	1	9/22/2018 8:50:00 AM
o-Xylene	ND	0.0268		mg/Kg-dry	1	9/22/2018 8:50:00 AM
Surr: Dibromofluoromethane	94.7	56.5 - 129		%Rec	1	9/22/2018 8:50:00 AM
Surr: Toluene-d8	86.4	64.5 - 151		%Rec	1	9/22/2018 8:50:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	54.8 - 168		%Rec	1	9/22/2018 8:50:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R46487		Analyst: NG
Percent Moisture	6.86	0.500		wt%	1	9/26/2018 9:21:41 AM

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	**LCS-22039**	SampType: **LCS**		Units: **mg/Kg**		Prep Date: **9/21/2018**		RunNo: **46420**			
Client ID:	**LCSS**	Batch ID: **22039**				Analysis Date: **9/21/2018**		SeqNo: **901808**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	27.8	5.00	25.00	0	111	65	135				
Surr: Toluene-d8	1.40		1.250		112	65	135				
Surr: 4-Bromofluorobenzene	1.22		1.250		97.7	65	135				

Sample ID	**MB-22039**	SampType: **MBLK**		Units: **mg/Kg**		Prep Date: **9/21/2018**		RunNo: **46420**			
Client ID:	**MBLKS**	Batch ID: **22039**				Analysis Date: **9/21/2018**		SeqNo: **901809**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.44		1.250		115	65	135				
Surr: 4-Bromofluorobenzene	1.26		1.250		101	65	135				

Sample ID	**1809348-001BDUP**	SampType: **DUP**		Units: **mg/Kg-dry**		Prep Date: **9/21/2018**		RunNo: **46420**			
Client ID:	**BATCH**	Batch ID: **22039**				Analysis Date: **9/21/2018**		SeqNo: **901795**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	4.68						0		30	
Surr: Toluene-d8	1.37		1.170		117	65	135		0		
Surr: 4-Bromofluorobenzene	1.23		1.170		105	65	135		0		

Sample ID	**1809348-007BMS**	SampType: **MS**		Units: **mg/Kg-dry**		Prep Date: **9/21/2018**		RunNo: **46420**			
Client ID:	**BATCH**	Batch ID: **22039**				Analysis Date: **9/22/2018**		SeqNo: **901802**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	26.7	5.44	27.22	0	98.2	65	135				
Surr: Toluene-d8	1.57		1.361		116	65	135				
Surr: 4-Bromofluorobenzene	1.40		1.361		103	65	135				

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	1809348-007BMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	9/21/2018	RunNo:	46420
Client ID:	BATCH	Batch ID:	22039			Analysis Date:	9/22/2018	SeqNo:	901803

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	25.4	5.44	27.22	0	93.1	65	135	26.72	5.25	30	
Surr: Toluene-d8	1.58		1.361		116	65	135		0		
Surr: 4-Bromofluorobenzene	1.38		1.361		101	65	135		0		

Sample ID	1809343-002BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/21/2018	RunNo:	46420
Client ID:	92018-02	Batch ID:	22039			Analysis Date:	9/22/2018	SeqNo:	901785

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	502	7.71						427.6	16.1	30	E
Surr: Toluene-d8	2.18		1.926		113	65	135		0		
Surr: 4-Bromofluorobenzene	2.04		1.926		106	65	135		0		

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-22039** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **LCSS** Batch ID: **22039** Analysis Date: **9/21/2018** SeqNo: **901753**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.861	0.0200	1.000	0	86.1	64.3	133				
Toluene	0.816	0.0200	1.000	0	81.6	67.3	138				
Ethylbenzene	0.958	0.0250	1.000	0	95.8	74	129				
m,p-Xylene	2.03	0.0500	2.000	0	101	70	124				
o-Xylene	0.988	0.0250	1.000	0	98.8	68.1	139				
Surr: Dibromofluoromethane	1.23		1.250		98.3	56.5	129				
Surr: Toluene-d8	1.15		1.250		92.1	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.28		1.250		103	54.8	168				

Sample ID **MB-22039** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **MBLKS** Batch ID: **22039** Analysis Date: **9/21/2018** SeqNo: **901811**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.00699									MDL
Toluene	ND	0.0200									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Surr: Dibromofluoromethane	1.21		1.250		96.5	56.5	129				
Surr: Toluene-d8	1.09		1.250		87.0	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.20		1.250		96.2	54.8	168				

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Sample ID **1809348-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **BATCH** Batch ID: **22039** Analysis Date: **9/21/2018** SeqNo: **901743**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.00654						0		30	MDL
Toluene	ND	0.0187						0		30	
Ethylbenzene	ND	0.0234						0		30	

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1809348-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **BATCH** Batch ID: **22039** Analysis Date: **9/21/2018** SeqNo: **901743**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	ND	0.0468						0		30	
o-Xylene	ND	0.0234						0		30	
Surr: Dibromofluoromethane	1.12		1.170		95.8	56.5	129		0		
Surr: Toluene-d8	1.02		1.170		87.4	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.15		1.170		98.6	54.8	168		0		

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Sample ID **1809343-002BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **92018-02** Batch ID: **22039** Analysis Date: **9/22/2018** SeqNo: **901731**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0108						0		30	MDL
Toluene	ND	0.0308						0		30	
Ethylbenzene	ND	0.0385						0		30	
m,p-Xylene	ND	0.0771						0		30	
o-Xylene	ND	0.0385						0		30	
Surr: Dibromofluoromethane	1.84		1.926		95.6	56.5	129		0		
Surr: Toluene-d8	1.69		1.926		87.6	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.93		1.926		100	54.8	168		0		

NOTES:
MDL - Analyte reported to Method Detection Limit (MDL)

Sample ID **1809343-008BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **92018-08** Batch ID: **22039** Analysis Date: **9/22/2018** SeqNo: **901738**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.864	0.0179	0.8958	0	96.5	63.5	133				
Toluene	0.780	0.0179	0.8958	0.006719	86.3	63.4	132				
Ethylbenzene	0.973	0.0224	0.8958	0	109	54.5	134				
m,p-Xylene	2.03	0.0448	1.792	0	113	53.1	132				
o-Xylene	0.998	0.0224	0.8958	0	111	53.3	139				

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1809343-008BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **92018-08** Batch ID: **22039** Analysis Date: **9/22/2018** SeqNo: **901738**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	1.09		1.120		97.0	56.5	129				
Surr: Toluene-d8	1.01		1.120		90.4	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.14		1.120		101	54.8	168				

Sample ID **1809343-008BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **9/21/2018** RunNo: **46419**
Client ID: **92018-08** Batch ID: **22039** Analysis Date: **9/22/2018** SeqNo: **901739**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.901	0.0179	0.8958	0	101	63.5	133	0.8645	4.16	30	
Toluene	0.826	0.0179	0.8958	0.006719	91.4	63.4	132	0.7803	5.63	30	
Ethylbenzene	0.983	0.0224	0.8958	0	110	54.5	134	0.9729	1.05	30	
m,p-Xylene	2.06	0.0448	1.792	0	115	53.1	132	2.028	1.47	30	
o-Xylene	1.03	0.0224	0.8958	0	115	53.3	139	0.9979	3.35	30	
Surr: Dibromofluoromethane	1.09		1.120		97.0	56.5	129		0		
Surr: Toluene-d8	1.01		1.120		90.6	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.17		1.120		104	54.8	168		0		

Work Order: 1809343
CLIENT: Fulcrum Environmental
Project: Whitley Fuel

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID **1809373-011ADUP** SampType: **DUP** Units: **wt%** Prep Date: **9/25/2018** RunNo: **46467**
Client ID: **BATCH** Batch ID: **R46467** Analysis Date: **9/25/2018** SeqNo: **902824**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.47	0.500						6.805	9.31	20	

Sample ID **1809087-013ADUP** SampType: **DUP** Units: **wt%** Prep Date: **9/25/2018** RunNo: **46467**
Client ID: **BATCH** Batch ID: **R46467** Analysis Date: **9/25/2018** SeqNo: **902834**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	19.0	0.500						19.35	1.58	20	

Sample ID **1809394-006ADUP** SampType: **DUP** Units: **wt%** Prep Date: **9/26/2018** RunNo: **46487**
Client ID: **BATCH** Batch ID: **R46487** Analysis Date: **9/26/2018** SeqNo: **903294**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	6.81	0.500						7.175	5.16	20	

Sample ID **1809343-010ADUP** SampType: **DUP** Units: **wt%** Prep Date: **9/26/2018** RunNo: **46487**
Client ID: **92018-10** Batch ID: **R46487** Analysis Date: **9/26/2018** SeqNo: **903306**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.44	0.500						6.861	8.11	20	

Sample Log-In Check List

Client Name:	**FE**	Work Order Number:	**1809343**
Logged by:	**Brianna Barnes**	Date Received:	**9/21/2018 9:03:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☑	Not Required ☐
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C *	Yes ☐	No ☑	NA ☐
		Please refer to item information.		
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
				MeOH added to VOAs.
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	18.0
Sample	17.1

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record and Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N. Tel: 206-352-3790
Seattle, WA 98103 Fax: 206-352-7178

Date: 9/20/2018 Laboratory Project No (internal): 1809343

Page: 1 of: 1

Client: Fulcrum Environmental Consulting, Inc.
Address: 406 North 2nd Street
City, State, Zip: Yakima, WA 98901
Telephone: (509)574-0839 Fax: (509) 459-9219

Project Name: Whitley Fuel
Project No: 141310 Collected by: Kyle Ames
Location: Monitor, WA
Report To (PM): Travis Trent
PM Email: ttrent@efulcrum.net, cc: kames@efulcrum.net

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Alkalinity	Methane	1,2-Dibromoethane	1,2-dibromo-3-chloropropane	Comments
92018-01	9/20/2018	900	S		X																
92018-02	9/20/2018	900	S		X																
92018-03	9/20/2018	900	S		X																
92018-04	9/20/2018	930	S		X																
92018-05	9/20/2018	930	S		X																
92018-06	9/20/2018	930	S		X																
92018-07	9/20/2018	1030	S		X																
92018-08	9/20/2018	1030	S		X																
92018-09	9/20/2018	1100	S		X																
92018-10	9/20/2018	1100	S		X																

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	9-20-18	x	9/21/18 0903
x		x	

TAT → SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance