V-1043-02

Central Washington Comprehensive Mental Health Phase II Environmental Site Assessment Yakima, Washington

October 1996

Central Washington Comprehensive Mental Health

321 East Yakima Avenue
Yakima, Washington 98901

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

1354 N. Grandridge Boulevard
Kennewick, Washington 99336-1037
509-735-1280

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

SEATTLE
RICHLAND
TACOMA
FAIRBANKS
ANCHORAGE
SAINT LOUIS
BOSTON

October 18, 1996

Central Washington Comprehensive Mental Health
321 East Yakima Avenue
Yakima, Washington 98901

Attn: Ms. Leta Conner

RE: PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR THE CLINIC PROPERTY IN YAKIMA, WASHINGTON

The attached report provides the results of the Phase II Environmental Site Assessment (ESA) on the site located at 401 South 5th Avenue in Yakima, Washington. The ESA was conducted in accordance with our proposal dated August 30, 1996 for the proposed upgrade and expansion of the Central Washington Comprehensive Mental Health facility.

The purpose of the Phase II ESA was to determine the degree and extent of subsurface contamination, if any. The ultimate objective of the project was to accomplish site remediation, if necessary, to meet the requirements of the owner and appropriate regulatory agency(s).

Thank you for the opportunity to provide these services. If you have any questions, please contact our office.

Sincerely,

SHANNON & WILSON, INC.

Dee J. Burrie, P.E.
Branch Manager

GRG:DJB/cvm

10-18-96/v-1043-02.ltr/V-1043-02/cvm

303 WELLSIAN WAY · P.O. BOX 967
RICHLAND, WASHINGTON 99352
509·946·6309 FAX 509·946·6580
TDD: 1-800-833-6388

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PHASE II ENVIRONMENTAL SITE ASSESSMENT
CENTRAL WASHINGTON COMPREHENSIVE MENTAL HEALTH SITE
YAKIMA, WASHINGTON

1.0 INTRODUCTION

Shannon & Wilson, Inc., performed a Phase II Environmental Site Assessment (ESA) on property located in Yakima, Washington. The assessment was conducted on behalf of the present owner, Central Washington Comprehensive Mental Health (Comprehensive Health), as a condition of a pending project to upgrade and expand the Yakima facility. The anticipated improvements to the Yakima clinic include constructing a building addition and a new parking lot, plus remodeling the existing structure. The Phase II ESA included sampling and analysis for probable regulated materials in the site's environment. The scope of services as presented is based on our proposal dated August 30, 1996.

2.0 SCOPE OF SERVICES

The purpose of the Phase II ESA was to determine the degree and extent of subsurface contamination, if any. The ultimate objective of the project was to accomplish site remediation, if necessary, to meet the requirements of the owner and appropriate regulatory agency(s).

2.1 Subsurface Exploration

Test pits were excavated with a standard backhoe capable of excavating to a depth of about 10 to 15 feet. Excavation services were provided by a subcontract to Tri-Ply Construction in Yakima, Washington. Near-surface soil samples were obtained using hand-sampling methods.

Test pits were excavated in the vicinity of the former trolley barn, debris pile, fill piles, and the waste oil container. A drum containing used hydraulic oil and several buckets observed at the site earlier this year had been removed and the area where these waste materials had been stored was observed. However, because there was no apparent staining of the asphalt surfacing, a test pit was not excavated at this location.

2.2 Field Screening and Analysis

Selected samples were screened with a photoionization detector (PID) for an indication of organic vapors. Field screening and analysis was used by the field engineer to select samples for submittal to a laboratory for analytical testing and to assist with characterization of the subsurface contamination, if any.

2.3 Laboratory Analysis

Selected soil samples were submitted to a qualified laboratory for analysis. The number of samples was based somewhat on the findings of the field screening, as well as other field observations. Analyses for total petroleum hydrocarbons (TPH), metals, polycyclic aromatic hydrocarbons (PAH), and/or polychlorinated biphenyls (PCB) were performed on selected samples.

2.4 Report

This report summarizes our field activities, observations, and results of laboratory analyses. It includes a sample location map, laboratory reports, and discussions regarding potential sources. The extent of contamination and recommendations for further studies are also presented.

3.0 SITE OVERVIEW

3.1 Location

The site is located in the central portion of the city of Yakima at 401 South 5th Avenue, southwest of Yakima's central business district. The site is in the southeast quarter of Section 24, T 13 North, R 18 East Willamette Meridian, Yakima County, Washington. The approximate boundaries of the site are 5th Avenue on the west, Pine Street on the north, and the Yakima Valley Transportation Company (YVT) car barn on the east. The approximate southern boundary is the Yakima Valley Credit Union property between 4th and 5th Avenues, and an extension of Tieton Drive between 4th Avenue and the east boundary of the site. A map showing the approximate location of the site is included as Figure 1, and a site layout is included as Figure 2.

3.2 Site Description

The western portion of the site, between South 4th and 5th Avenues, contains one building with approximately 24,000 square feet of ground-floor space. The building was the former Fuller-O'Brien Paint Company store and warehouse. A portion of the building has been converted for use as a mental health clinic with a ground floor and an upstairs level. Some of the former warehouse area has remained unused and does not have an upstairs level. Dependency Health Services also provides services from the building. The county tax assessor's identification number for the property is 18-13-24-44455, and the use code is "retail hardware." The lot dimensions are approximately 360 feet from east to west and 220 feet from north to south, containing approximately 1.8 acres.

The eastern portion of the site, located east of South 4th Avenue, is part of a larger parcel that was the former YVT rail operations and equipment maintenance facility. The parcel is presently operated by the Yakima Trolley Commission (Commission). The portion of the former YVT property that is part of the site contains a metal shed. According to information contained in a pre-purchase assessment prepared in August 1991 by PLSA Engineering & Surveying (PLSA), the site formerly contained a streetcar barn and rail siding used to move cars in and out of a metal storage building just south of the site. The portion of the YVT property included in the ESA is approximately 500 feet from north to south and averages about 180 feet from east to west, containing approximately 2 acres. It is shown as Proposed Parking Lot on Figure 2.

3.3 Adjacent Properties

The site is in a mixed land use area with commercial, bulk fuel storage, railroad, residential, and school properties in the immediate vicinity. For the purposes of this ESA, the site included that portion of the property owned by Comprehensive Health that will be involved in the expansion and building upgrading activities, including a new parking lot on the east end of the site. Additional property owned by Comprehensive Health, located east and southeast of the site, is leased to the Trolley Commission and to Cascade Truss Company and is not specifically included in the ESA.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

The field work was conducted at the clinic property on September 24, 1996. A sketch indicating the location of site activities is presented in Figure 2.

4.1 Field Screening

Field sampling and analyses were performed by a qualified, experienced engineer. Field instruments were calibrated by manufacturer's specifications or in accordance with standard industrial practices.

A Microtip PID was used with the headspace sampling method for measurement of total organic vapors (TOVs) in parts per million (ppm) on all soil samples collected. This instrument provides a crude measurement of combined vapors. Both audible and visual alarms were set at 200 ppm. The test indicated the presence of TOVs ranging between 1.3 and 12.8 ppm. One soil sample from each test pit was submitted to the analytical laboratory for further analysis.

4.2 Analytical Methods

In order to characterize a waste, identification and quantification of contaminants is essential. The analyses specified in the following table were used to assess potential environmental contamination.

ANALYTICAL TESTING REQUIREMENTS

ANALYSIS	EPA METHOD
TPH-Diesel	WTPH-D
TPH-Oils	WTPH-418.1
Polychlorinated Biphenyls (PCBs)	8081
Halogenated Volatile Organics (HVOs)	8260
RCRA Metals	6010/7471
Polycyclic Aromatic Hydrocarbons (PAHs)	8270

EPA = U.S. Environmental Protection Agency
RCRA = Resource Conservation and Recovery Act
TPH = Total Petroleum Hydrocarbon
WTPH = Washington Total Petroleum Hydrocarbon or Diesel

4.3 Field Activities

Shannon & Wilson representatives George Gardner and Donna Parkes visited the site on Tuesday, September 24, 1996, and met with the backhoe operator from Ken Leingang Excavating, Inc. The dry well located just northeast of the mental health facility was inaccessible and not sampled. A summary of the test pit data can be found in Table 3.

4.3.1 Test Pit No. 1

Test pit No. 1 (TP-1) was located 20 feet from the west edge of the car barn and 25 feet north of the south edge of the gravel surface. From 0 to 3 feet, the material was concrete rubble and wood debris with gravel. At 3 feet, a solid surface was encountered and the test pit was abandoned.

4.3.2 Test Pit No. 2

Test pit No. 2 (TP-2)was located 20 feet north from the south edge of the car barn and 40 feet west of TP-1. From 0 to 3 feet, the material was concrete rubble and wood debris with large rounded gravel and sand. From 3 to 5 feet, the material was concrete rubble and wire mixed in a sandy gravel with cobbles. From 5 to 10 feet, undisturbed native material consisting of well-graded gravel with coarse sand and cobbles was encountered. Total depth was 10 feet.

4.3.3 Test Pit No. 3

Test pit No. 3 (TP-3) was located approximately 75 feet east of the curb of 4th Avenue and on a line approximately the midpoint of the metal building. From 0 to 2.5 feet, the material was brick rubble and wood debris with light brown sand and gravel. From 2.5 to 5 feet, the material was concrete rubble and wire mixed in a sandy gravel with cobbles. From 5 to 10 feet, undisturbed native material consisting of well-graded gravel with coarse sand and cobbles was encountered. Total depth was 10 feet.

4.3.4 Test Pit No. 4

Test pit No. 4 (TP-4) was located approximately 45 feet west of the railroad tracks under the debris pile described in the Level I ESA completed in July 1996. From 0 to 4 feet, the material was silty soil with some gravels. At about 0.5 and 1.5 feet, layers of wood chips were encountered and sampled. Undisturbed soil was encountered at about 4 feet. Total depth was 5 feet.

4.3.5 Test Pit No. 5

Test pit No. 5 (TP-5) was located at the north end of the former trolley barn. The pit was about 48 feet west of the existing trolley barn and 20 feet south of the north edge of the demolished trolley barn. From 0 to 5 feet, a large number of bricks and extensive brick rubble were encountered along with poorly graded gravel and sand. Undisturbed soil was encountered at about 5 feet. The test pit was excavated to a depth of 7.5 feet.

4.4 Sampling Activities

4.4.1 Test Pits

Sampling was conducted in areas likely to be contaminated based on former use or current features. A John Deere 410D backhoe was used to dig the test pits. The backhoe bucket was decontaminated between test pits to reduce cross-contamination. A precleaned spoon was used to collect each sample from the backhoe bucket. The samples were collected in clean, gallon-size, zip-lock plastic bags and allowed to sit. The Microtip PID was then used with the headspace sampling method for measuring TOVs in ppm. This screening method helped identify samples to be sent to the analytical laboratory. A summary of the PID screening results is presented in Table 1. The selected samples were then placed in laboratory-certified, 4-ounce or 8-ounce, borosilicate, wide-mouth, glass jars with teflon-lined lids. Each sample container was immediately placed on ice for shipment to the laboratory. A summary of the analytical results is presented in Table 2.

4.4.2 Waste Oil Tank

A galvanized metal tank was located next to a platform connected to the metal shed on the Yakima trolley site. The tank has a spigot and a 3-foot by 1.5-foot stained soil area was observed under this spigot. A soil sample was collected six inches below the surface, screened with the PID, and sent to the analytical laboratory. The results of laboratory analyses are presented in Table 2.

5.0 FINDINGS AND CONCLUSIONS

The laboratory test results on samples from Test pits Nos. 2, 4, and 5 indicate that metals were not detected above either the Model Toxics Control Act (MTCA) screening levels or the potential regulatory criteria for any test parameters. The test results for the soil sample from beneath the waste oil tank indicated cadmium and lead concentrations above MTCA screening levels. No PAHs were detected within test detection limits in any of the soil samples.

Petroleum heavier than diesel was detected in soil samples from Test pit Nos. 2 and 5 and the waste oil tank. The TPH concentrations in soil samples from Test pits Nos. 2 and 5 were below MTCA screening levels for petroleum heavier than diesel. The soil sample from beneath the waste oil tank had TPH concentrations above MTCA screening levels. Hydrocarbons in the diesel range were not detected within the test detection limits in the soil samples from TP-3. PCBs were not detected within the test detection limits for any of the soil samples analyzed because soil contamination was not found at or near the bottom of the test pits, the potential that the groundwater at the site has been impacted is determined to be relatively low. Therefore, monitoring wells are not recommended at this time.

Based on the results of this Phase II investigation, impacts on the site from its past uses appear to be minimal. The one area of concern on the site is the waste oil tank and the stained soil beneath the spigot (as seen in Photo 5 of the Level I ESA). Soil samples from that area analyzed for RCRA metals indicated concentrations of cadmium and lead above MTCA screening levels. Additional analyses performed for petroleum products heavier than diesel using method WTPH-418.1 also indicated concentrations above MTCA screening levels. It is therefore recommended that when the tank and metal building are removed prior to construction of the parking lot, the stained soil should also be removed and disposed of in an approved commercial landfill.

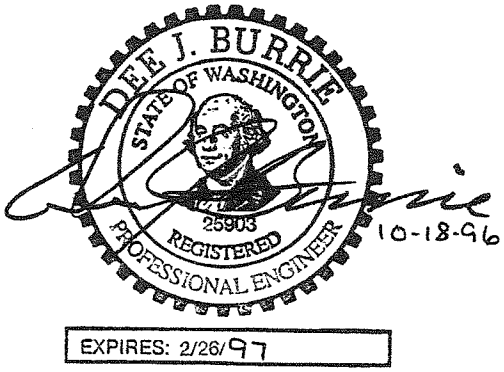
6.0 CLOSURE

This report was prepared for the exclusive use of Central Washington Comprehensive Mental Health and its representatives. The findings presented within this report are based on limited sampling, observing, and testing. The data should be considered representative at the time of our field observations. The analyses and sampling results can provide you with only our best judgment as to the general environmental characteristics of the property at this time and should not be construed as a definitive conclusion regarding soil quality at the site.

As an integral part of our report, we have prepared the attached "Important Information About Your Environmental Site Assessment/Evaluation," to assist you and others in understanding its use and limitations.

SHANNON & WILSON, INC.

George R. Gardner
Senior Environmental Engineer



Dee J. Burrie, P.E.
Branch Manager

GRG:DRP:DJB:JFZ/grg

10-18-96/v1043-02.rpt/V-1043-02/cvm

TABLE 1
PID SCREENING RESULTS

Sample Location	Sample Depth (feet)	PID Reading (ppm)	Sample Disposition
Test Pit No. 2	2.5	4.9	Held pending lab results.
	4.5	12.8	Sent to analytical lab.
	7.5	6.7	Held pending lab results.
	10	6.7	Held pending lab results.
Test Pit No. 3	2.5	2.1	Held pending lab results.
	5	1.5	Held pending lab results.
	7.5	2.9	Sent to analytical lab.
	10	1.8	Held pending lab results.
Test Pit No. 4	1.5	1.5	Combined and sent to analytical lab.
	2.5	1.6	
	5	1.2	Held pending lab results.
Test Pit No. 5	2.5	2.5	Held pending lab results.
	5	2.5	Sent to analytical lab.
	7.5	1.3	Held pending lab results.
Oil Tank Soil Sample		2.4	Sent to analytical lab.

PID = photoionization detector
ppm = parts per million

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

Analytical Test Parameters	TP-2	TP-3	TP-4	TP-5	Oil Tank Soil Sample	MTCA Screening Levels
METALS:						
Antimony	5 U		5 U	6 U	5 U	
Arsenic	6		6	6 U	5 U	20.0
Beryllium	0.4		0.6	0.5	0.3	
Cadmium	0.3		0.2 U	0.3	5.0	2.0
Chromium	18.4		16.6	16.8	13.3	100.0
Copper	21.6		35.6	25.1	266	
Lead	6		94	11	544	250.0
Mercury	0.05 U		0.05 U	0.06 U	0.05 U	1.0
Nickel	12		17	14	42	
Selenium	13		15	10	8	
Silver	0.7		0.7	0.8	1.9	
Thallium	5 U		5 U	6 U	5 U	
Zinc	55.8		57.9	66.4	1370	
PAH:						1000.0
Naphthalene		71 U	72 U			
2-Methylnaphthalene		71 U	72 U			
Acenaphthylene		71 U	72 U			
Acenaphthene		71 U	72 U			
Fluorene		71 U	72 U			
Phenanthrene		71 U	72 U			
Anthracene		71 U	72 U			
Fluoranthene		71 U	72 U			
Pyrene		71 U	72 U			
Benzo(a)anthracene		71 U	72 U			
Chrysene		71 U	72 U			
Benzo(b)fluoranthene		71 U	72 U			
Benzo(k)fluoranthene		71 U	72 U			
Benzo(a)pyrene		71 U	72 U			
Indeno(1,2,3-cd)pyrene		71 U	72 U			
Dibenz(a,h)anthracene		71 U	72 U			
Benzo(g,h,i)perylene		71 U	72 U			
Dibenzofuran		71 U	72 U			
WTPH:						
Diesel		5.2 U				200.0
Other	29			18	34,000	200.0
PCB:						1,000.0
Aroclor 1016		850 U		1,200 U	840 U	
Aroclor 1242		850 U		1,200 U	840 U	
Aroclor 1248		850 U		1,200 U	840 U	
Aroclor 1254		850 U		1,200 U	840 U	
Aroclor 1260		850 U		1,200 U	840 U	
Aroclor 1221		1,700 U		1,200 U	1,700 U	
Aroclor 1232		850 U		1,200 U	840 U	

U = Compound not detected at the given detection limit.
MTCA = The Model Toxics Control Act, Method A Screening Levels for Soils

TABLE 3
SUMMARY OF TEST PIT DATA

Test Pit No.	Total Depth (feet)	Soil Depths (feet)	Soil Type(s)
1	3.0	0 - 3.0 3.0	Poorly graded gravel with concrete rubble and wood. Weathered asphalt layer.
2	10.0	0 - 2.5 2.5 - 4.5 4.5 - 10.0	Poorly graded gravel with sand and concrete rubble. Poorly graded gravel with coarse sand, wood, and metal debris. Undisturbed well-graded gravel with cobbles and coarse sand.
3	10.0	0 - 2.5 2.5 - 5.0 4.5 - 10.0	Poorly graded gravel with brick and wood debris. Poorly graded gravel with coarse sand, concrete rubble, and wire. Undisturbed well-graded gravel with cobbles and coarse sand.
4	5.0	0 - 0.5 0.5 - 0.75 0.75 - 1.5 1.5 - 1.75 1.75 - 4.0 4.0 - 5.0	Silty sand with gravel. Wood chips. Silty sand with gravel. Wood chips. Silty sand with gravel. Undisturbed well-graded gravel with coarse sand.
5	7.5	0 - 5.0 5.0 - 7.5	Poorly graded gravel with brick debris. Undisturbed well-graded gravel with coarse sand.

N

From USGS Topographic Maps, Yakima East and West Quadrangles

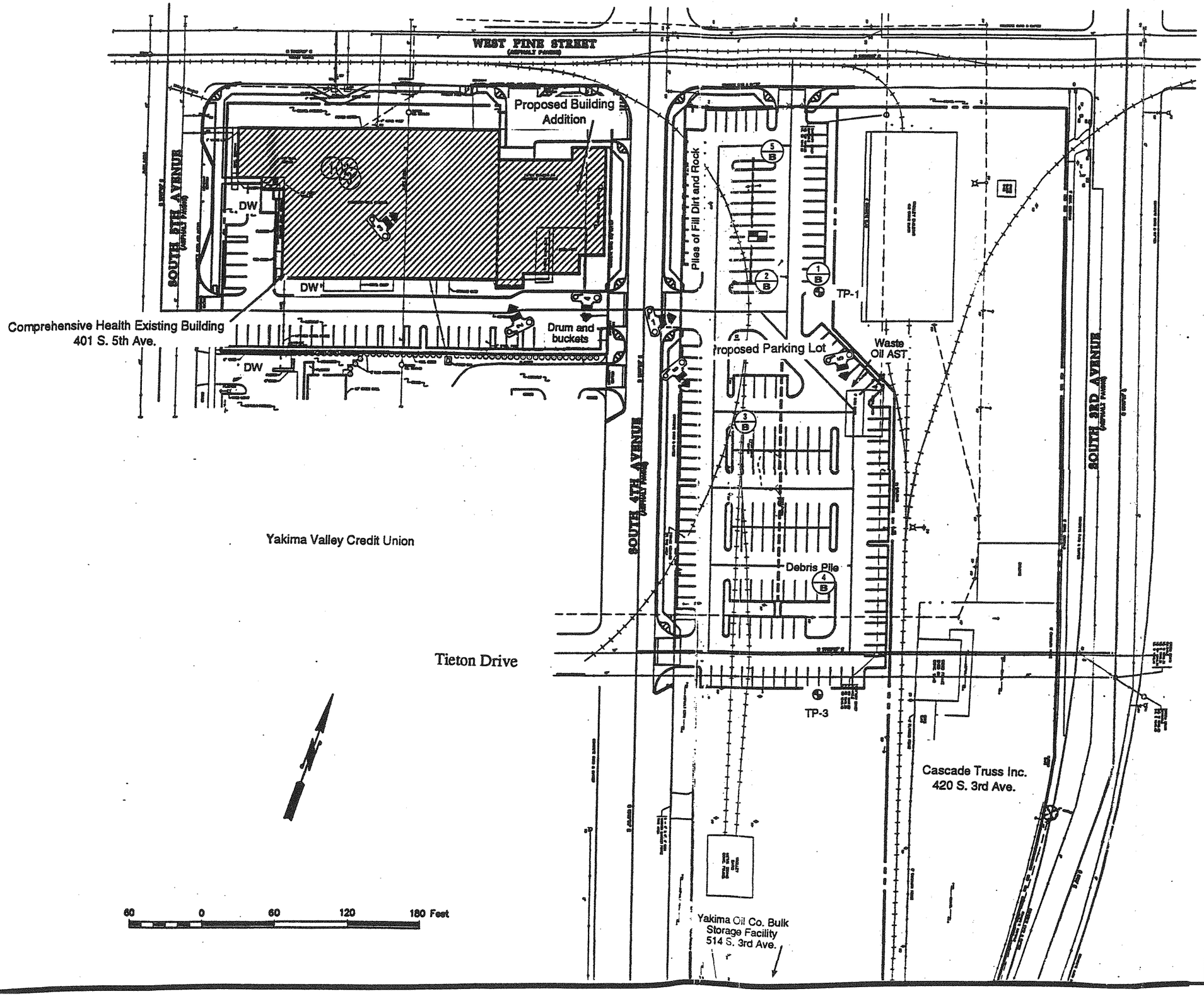
Central Washington Comprehensive Mental Health
Phase II Environmental Site Assessment
Yakima, Washington

SITE LOCATION MAP

October 1996 V-1043-02

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 1



Basic map from PLSA Cover Sheet for Proposed Central Washington Comprehensive Mental Health Improvement Project

LEGEND

(1)	Approximate location and identification number of sample for asbestos testing.
	Approximate location and identification number of photographs.
DW	Drywell
TP-1	Test pit location and number (PLSA Investigation)
B	Test Pits
	Former UST No. 8

Phase II ESA - Central Washington Comprehensive Mental Health
Yakima, Washington

SITE LAYOUT

October 1996 V-1043-02

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2

APPENDIX A

ANALYTICAL RESULTS

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 7, 1996

Donna Parkes
Shannon & Wilson, Inc.
303 Wellsian Way
Richland, WA 99352

RE: Project: V-1043-02, Comprehensive Health
ARI Job No. Q251

Dear Donna:

Please find enclosed the original chain-of-custody record and final results for the project referenced above. Analytical Resources, Inc. accepted thirteen water samples and one trip blank in good condition on September 25, 1996. All samples were received intact. The trip blank was not required for any of these analyses. The samples were analyzed for PAHs, PCBs, WTPH-D, WTPH-418.1 and Priority Pollutant Metals as requested.

No analytical complications were noted. It was noted during the extraction and preparation of Samples SS-1-01 and SS-1-03 that these samples consisted primarily of oily rocks. The respective analyses of these samples did not appear to be affected by the matrices.

As always, copies of these reports and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/340-2866, ext. 113

Enclosures
cc: File Q251
MDH/mdh

96-16125/16138-7 (03) 5 0°C Q 251

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN OF CUSTODY RECORD

Page 1 of ____
Laboratory ARI
Attn: M. Harris

400 N. 34th Street, Suite 100, Seattle, WA 98103, (206) 632-8020
11500 Olive Blvd., Suite 276, St. Louis, MO 63141, (314) 872-8170
1354 N. Grandridge Blvd., Kennewick, WA 99336, (509) 735-1280
2055 Hill Road, Fairbanks, AK 99709, (907) 479-0600
5430 Fairbanks Street, Suite 3, Anchorage, AK 99518, (907) 561-2120
2412 N. 30th St., Suite 201, Tacoma, WA 98407, (206) 759-0156
303 Wellsian Way, Richland WA 99352, (509)946-6309, Fax 946-6580

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	418.1 TPH	PP metals	PCBs	PAH	WTPH-D	Total Number of Containers	Remarks/Matrix
TP-2-01		10:30	9/24/96			X						Soil
TP-2-02		"					X					
TP-2-03		"						X				
TP-3-01		1130								X		
TP-3-02		"							X			
TP-4-01		1200							X			
TP-4-02		"					X					
TP-5-01		1330				X						
TP-5-02		"					X					
TP-5-03		"						X				

Project Information	Sample Receipt
Project Number: V-1043-02	Total Number of Containers
Project Name: Comprehensive Hea[illegible]	COC Seals/Intact? Y/N/NA
Contact: Donna Parkos	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☑	Delivery Method:
Sampler: George Gardner	(attach shipping bill, if any)

Instructions

Requested Turn Around Time:

Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1615	Signature: Time:	Signature: Time:
Printed Name: GEORGE R. GARDNER Date: 9.24.96	Printed Name: Date:	Printed Name: Date:
Company: SHANNON & WILSON, INC.	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 1400	Signature: Time:	Signature: Time:
Printed Name: JASON SOUZA Date: 9/25/96	Printed Name: Date:	Printed Name: Date:
Company: ARI	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
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Anchorage, AK 99518
(907) 561-2120

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

CHAIN OF CUSTODY RECORD

Laboratory ART
Attn: M. Harris

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PP Metals	TPH 418.1	PCBs				Total Number of Containers	Remarks/Matrix
SS-1-01		1415	9/24/96				X						Soil
SS-1-02		1	1			X							1
SS-1-03		1	1					X					
CUSTOMER SUPPLIED TB'S BUT													
NOT NEEDED.													

Project Information		Sample Receipt	
Project Number:	V-1013-02	Total Number of Containers	
Project Name:		COC Seals/Intact? Y/N/NA	
Contact:		Received Good Cond./Cold	
Ongoing Project?	Yes ☐ No ☐	Delivery Method:	
Sampler:	George Gardner	(attach shipping bill, if any)	

Instructions

Requested Turn Around Time:

Special Instructions:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1615	Signature: Time:	Signature: Time:
Printed Name: GEORGE R. GARDNER Date: 9.24.96	Printed Name: Date:	Printed Name: Date:
Company: SHANNON & WILSON, INC.	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 1406	Signature: Time:	Signature: Time:
Printed Name: JASON SOZA Date: 92596	Printed Name: Date:	Printed Name: Date:
Company: ART	Company:	Company:

F-19-91/UR

No

ANALYTICAL
RESOURCES
INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC COMPOUND
DATA REPORTING QUALIFIERS

U Indicates the compound was analyzed for, but not detected at the given detection limit.

J Indicates an estimated value when the result is less than the calculated detection limit.

D Indicates the surrogate/spike(s) was not detected, due to dilution of extract.

NR Indicates the surrogate recovery cannot be reported due to matrix interference.

E Indicates a value above the linear range of the detector. Sample dilution required.

S Indicates no value reported due to saturation of the detector. Dilution required.

Y Indicates a raised detection limit due to matrix interferences.

NA Indicates compound was not analyzed.

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.

B Indicates compound was found in the associated method blank.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by GC/MS

Sample No: Method Blank

Lab Sample ID: 093096MB
LIMS ID: 96-16129
Matrix: Soil
Data Release Authorized: BWB
Reported: 10/01/96

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: NA
Date Received: NA

Date extracted: 09/27/96 12:00
Date analyzed: 09/30/96
Instrument: FINN2
GPC Cleanup: NO

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Conc/Dilution Factor: 1:1
Moisture: NA
pH: NA

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	67 U
91-57-6	2-Methylnaphthalene	67 U
208-96-8	Acenaphthylene	67 U
83-32-9	Acenaphthene	67 U
86-73-7	Fluorene	67 U
85-01-8	Phenanthrene	67 U
120-12-7	Anthracene	67 U
206-44-0	Fluoranthene	67 U
129-00-0	Pyrene	67 U
56-55-3	Benzo(a)anthracene	67 U
218-01-9	Chrysene	67 U
205-99-2	Benzo(b)fluoranthene	67 U
207-08-9	Benzo(k)fluoranthene	67 U
50-32-8	Benzo(a)pyrene	67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67 U
53-70-3	Dibenz(a,h)anthracene	67 U
191-24-2	Benzo(g,h,i)perylene	67 U
132-64-9	Dibenzofuran	67 U

Base/Neutral Surrogate Recovery	
d14-p-Terphenyl	72.3%
d10-Diphenyl	58.2%

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: TP-3-02**
PNAs by GC/MS

Lab Sample ID: Q251E
LIMS ID: 96-16129
Matrix: Soil
Data Release Authorized: AMP
Reported: 10/01/96

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Date extracted: 09/27/96 12:00
Date analyzed: 09/30/96
Instrument: FINN2
GPC Cleanup: NO

Sample Amount: 7.08 g-dry-wt
Final Extract Volume: 0.5 mL
Conc/Dilution Factor: 1:1
Moisture: 6.0%
pH: 5.8

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	71 U
91-57-6	2-Methylnaphthalene	71 U
208-96-8	Acenaphthylene	71 U
83-32-9	Acenaphthene	71 U
86-73-7	Fluorene	71 U
85-01-8	Phenanthrene	71 U
120-12-7	Anthracene	71 U
206-44-0	Fluoranthene	71 U
129-00-0	Pyrene	71 U
56-55-3	Benzo(a)anthracene	71 U
218-01-9	Chrysene	71 U
205-99-2	Benzo(b)fluoranthene	71 U
207-08-9	Benzo(k)fluoranthene	71 U
50-32-8	Benzo(a)pyrene	71 U
193-39-5	Indeno(1,2,3-cd)pyrene	71 U
53-70-3	Dibenz(a,h)anthracene	71 U
191-24-2	Benzo(g,h,i)perylene	71 U
132-64-9	Dibenzofuran	71 U

Base/Neutral Surrogate Recovery	
d14-p-Terphenyl	62.7%
d10-Diphenyl	74.1%

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: TP-4-01**
PNAs by GC/MS

Lab Sample ID: Q251F
LIMS ID: 96-16130
Matrix: Soil
Data Release Authorized: MB
Reported: 10/01/96

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Date extracted: 09/27/96 12:00
Date analyzed: 09/30/96
Instrument: FINN2
GPC Cleanup: NO

Sample Amount: 6.94 g-dry-wt
Final Extract Volume: 0.5 mL
Conc/Dilution Factor: 1:1
Moisture: 7.4%
pH: 5.4

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	72 U
91-57-6	2-Methylnaphthalene	72 U
208-96-8	Acenaphthylene	72 U
83-32-9	Acenaphthene	72 U
86-73-7	Fluorene	72 U
85-01-8	Phenanthrene	72 U
120-12-7	Anthracene	72 U
206-44-0	Fluoranthene	72 U
129-00-0	Pyrene	72 U
56-55-3	Benzo(a)anthracene	72 U
218-01-9	Chrysene	72 U
205-99-2	Benzo(b)fluoranthene	72 U
207-08-9	Benzo(k)fluoranthene	72 U
50-32-8	Benzo(a)pyrene	72 U
193-39-5	Indeno(1,2,3-cd)pyrene	72 U
53-70-3	Dibenz(a,h)anthracene	72 U
191-24-2	Benzo(g,h,i)perylene	72 U
132-64-9	Dibenzofuran	72 U

Base/Neutral Surrogate Recovery	
d14-p-Terphenyl	64.0%
d10-Diphenyl	58.4%

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
SVOA by METHOD 625/8270

Lab Sample ID: Q251SB
LIMS ID: 96-16129
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized:
Reported: 10/01/96

LABORATORY CONTROL SAMPLE CONSTITUENT	SPIKE VALUE	SPIKE ADDED	% RECOVERY
Naphthalene	1030	1670	61.7%
Acenaphthene	825	1670	49.4%
Fluoranthene	959	1670	57.4%
Benzo(a)anthracene	933	1670	55.9%

Spike Blank Surrogate Recovery

d14-p-Terphenyl	53.2%
d10-Diphenyl	45.2%

Values reported in ppb (ug/kg) dry weight

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
WA TPHd Range C12 to C24 by GC/FID

Matrix: Soil

Data Release Authorized:
Reported: 10/02/96

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Received: 09/25/96

Lab ID	Client Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range Hydrocarbons		*Diesel ID	Surr Recovery
Q251-0927MB	Method Blank	09/27/96	09/27/96	1:1	5.0	U	--	114%
96-16128-Q251D	TP-3-01	09/27/96	09/27/96	1:1	5.2	U	--	115%

Values reported in ppm (mg/kg) on a dry weight basis.

Surrogate is Methyl-Arachidate.

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products. Diesel quantitation on total peaks in the range from C12 to C24.

Data Qualifiers

U	Compound not detected at the given detection limit.
E	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
WA TPHd Range C12 to C24 by GC/FID

Lab Sample ID: Q251SB
LIMS ID: 96-16128
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized:
Reported: 10/02/96

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Date extracted: 09/27/96
Date analyzed: 09/27/96

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
Diesel Range Hydrocarbons	111	100	111%

TPHd Surrogate Recovery

Methylarachidate	104%

Values reported in ppm (mg/kg) on a dry weight basis.

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 418.1 - IR Scan

Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Batch ID: IR0819B-02

Date Received: 09/25/96

Data Release Authorized:
Reported: 10/02/96

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Total Petroleum Hydrocarbons (mg/kg)
Q251-1002MB	Method Blank	10/02/96	1:1	10 U
96-16125	**TP-2-01**	**10/02/96**	**1:1**	**29**
96-16132	**TP-5-01**	**10/02/96**	**1:1**	**18**
96-16135	**SS-1-01**	**10/02/96**	**1:100**	**34,000**

Values reported in ppm (mg/kg) on a dry weight basis.

Data Qualifiers

U Compound not detected at the given detection limit.

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 418.1 - IR Scan

Lab Sample ID: Q251-SB
LIMS ID: 96-16125
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized:
Reported: 10/02/96

LABORATORY CONTROL SAMPLE RECOVERY REPORT

Date Analyzed: 10/02/96

CONSTITUENT	SPIKE VALUE	SPIKE AMT	% RECOVERY
LABORATORY CONTROL SAMPLE			
Total Petroleum Hydrocarbons	106	100	106%

Values reported in parts per million (mg/kg)

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: Q251MB
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

Sample Amount: 5.00 g-dry-wt
Final Ext Vol: 40 mL
pH: NA

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: NA

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	800 U
53469-21-9	Aroclor 1242	800 U
12672-29-6	Aroclor 1248	800 U
11097-69-1	Aroclor 1254	800 U
11096-82-5	Aroclor 1260	800 U
11104-28-2	Aroclor 1221	1,600 U
11141-16-5	Aroclor 1232	800 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	80.0%
Tetrachlorometaxylene	72.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: TP-2-03

Lab Sample ID: Q251C
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

Sample Amount: 4.72 g-dry-wt
Final Ext Vol: 40 mL
pH: 6.0

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 5.8 %

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	850 U
53469-21-9	Aroclor 1242	850 U
12672-29-6	Aroclor 1248	850 U
11097-69-1	Aroclor 1254	850 U
11096-82-5	Aroclor 1260	850 U
11104-28-2	Aroclor 1221	1,700 U
11141-16-5	Aroclor 1232	850 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	79.5%
Tetrachlorometaxylene	74.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: TP-5-03

Lab Sample ID: Q251J
LIMS ID: 96-16134
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

Sample Amount: 3.38 g-dry-wt
Final Ext Vol: 40 mL
pH: 5.4

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 32.3%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	1,200 U
53469-21-9	Aroclor 1242	1,200 U
12672-29-6	Aroclor 1248	1,200 U
11097-69-1	Aroclor 1254	1,200 U
11096-82-5	Aroclor 1260	1,200 U
11104-28-2	Aroclor 1221	2,400 U
11141-16-5	Aroclor 1232	1,200 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	72.5%
Tetrachlorometaxylene	65.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: SS-1-03

Lab Sample ID: Q251M
LIMS ID: 96-16137
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

Sample Amount: 4.77 g-dry-wt
Final Ext Vol: 40 mL
pH: 5.6

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 5.0 %

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	840 U
53469-21-9	Aroclor 1242	840 U
12672-29-6	Aroclor 1248	840 U
11097-69-1	Aroclor 1254	840 U
11096-82-5	Aroclor 1260	840 U
11104-28-2	Aroclor 1221	1,700 U
11141-16-5	Aroclor 1232	840 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	75.5%
Tetrachlorometaxylene	58.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by METHOD 8080

Lab Sample ID: Q251
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized:
Reported: 10/02/96

LABORATORY CONTROL SAMPLE SPIKE RECOVERY
Date extracted: 09/27/96

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Aroclor 1242	6310	8000	78.9%

Aroclor Surrogate Recoveries

Decachlorobiphenyl	84.5%
Tetrachlorometaxylene	74.5%

Values Reported in Total ug/kg Dry Weight

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: Q251MB
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	5 U
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.1 U
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2 U
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	0.5 U
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	0.2 U
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	2 U
CLP	09/26/96	7470	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	1 U
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	5 U
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.3 U
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	0.4 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: TP-2-02**
TOTAL METALS

Lab Sample ID: Q251B
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: 93.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	6
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.4
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	18.4
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	21.6
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	6
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	12
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	13
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.7
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	55.8

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: TP-4-02**
TOTAL METALS

Lab Sample ID: Q251G
LIMS ID: 96-16131
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: 91.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	**7440-38-2**	**Arsenic**	5	**6**
3050	09/26/96	6010	10/05/96	**7440-41-7**	**Beryllium**	0.1	**0.6**
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2 U
3050	09/26/96	6010	10/05/96	**7440-47-3**	**Chromium**	0.5	**16.6**
3050	09/26/96	6010	10/05/96	**7440-50-8**	**Copper**	0.2	**35.6**
3050	09/26/96	6010	10/05/96	**7439-92-1**	**Lead**	2	**94**
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	**7440-02-0**	**Nickel**	1	**17**
3050	09/26/96	6010	10/05/96	**7782-49-2**	**Selenium**	5	**15**
3050	09/26/96	6010	10/05/96	**7440-22-4**	**Silver**	0.3	**0.7**
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	**7440-66-6**	**Zinc**	0.4	**57.9**

U Analyte undetected at given RL

RL Reporting Limit

APPENDIX

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL SITE ASSESSMENT/EVALUATION

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: TP-5-02**
TOTAL METALS

Lab Sample ID: Q251I
LIMS ID: 96-16133
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: 85.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	6	6	U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	6	6	U
3050	09/26/96	6010	10/05/96	**7440-41-7**	**Beryllium**	0.1	**0.5**	
3050	09/26/96	6010	10/05/96	**7440-43-9**	**Cadmium**	0.2	**0.3**	
3050	09/26/96	6010	10/05/96	**7440-47-3**	**Chromium**	0.6	**16.8**	
3050	09/26/96	6010	10/05/96	**7440-50-8**	**Copper**	0.2	**25.1**	
3050	09/26/96	6010	10/05/96	**7439-92-1**	**Lead**	2	**11**	
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.06	0.06	U
3050	09/26/96	6010	10/05/96	**7440-02-0**	**Nickel**	1	**14**	
3050	09/26/96	6010	10/05/96	**7782-49-2**	**Selenium**	6	**10**	
3050	09/26/96	6010	10/05/96	**7440-22-4**	**Silver**	0.3	**0.8**	
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	6	6	U
3050	09/26/96	6010	10/05/96	**7440-66-6**	**Zinc**	0.5	**66.4**	

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: SS-1-02**
TOTAL METALS

Lab Sample ID: Q251L
LIMS ID: 96-16136
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: 93.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	5 U
3050	09/26/96	6010	10/05/96	**7440-41-7**	**Beryllium**	0.1	**0.3**
3050	09/26/96	6010	10/05/96	**7440-43-9**	**Cadmium**	0.2	**5.0**
3050	09/26/96	6010	10/05/96	**7440-47-3**	**Chromium**	0.5	**13.3**
3050	09/26/96	6010	10/05/96	**7440-50-8**	**Copper**	0.2	**266**
3050	09/26/96	6010	10/05/96	**7439-92-1**	**Lead**	2	**544**
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	**7440-02-0**	**Nickel**	1	**42**
3050	09/26/96	6010	10/05/96	**7782-49-2**	**Selenium**	5	**8**
3050	09/26/96	6010	10/05/96	**7440-22-4**	**Silver**	0.3	**1.9**
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	**7440-66-6**	**Zinc**	0.4	**1,370**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Lab Sample ID: Q251LCS
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized:
Reported: 10/07/96

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike mg/kg-dry	Spike Added	% Recovery	Q
Antimony	6010	246	250	98.4%	
Arsenic	6010	247	250	98.8%	
Beryllium	6010	4.8	5.0	96.0%	
Cadmium	6010	9.5	10.0	95.0%	
Chromium	6010	24.8	25.0	99.2%	
Copper	6010	10.2	10.0	102.0%	
Lead	6010	97	100	97.0%	
Mercury	7471	0.42	0.50	84.0%	
Nickel	6010	49	50	98.0%	
Selenium	6010	252	250	100.8%	
Silver	6010	23.9	25.0	95.6%	
Thallium	6010	243	250	97.2%	
Zinc	6010	47.9	50.0	95.8%	

'Q' codes: N = control limit not met

Control Limits: 75-125%

APPENDIX B

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL SITE ASSESSMENT/EVALUATION

Important Information About Your Environmental Site Assessment/Evaluation Report

ENVIRONMENTAL SITE ASSESSMENTS/EVALUATIONS ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

This report was prepared to meet the needs you specified with respect to your specific site and your risk management preferences. Unless indicated otherwise, we prepared your report expressly for you and for the purposes you indicated. No one other than you should use this report for any purpose without first conferring with us. No one is authorized to use this report for any purpose other than that originally contemplated without our prior written consent.

The findings and conclusions documented in this site assessment/evaluation have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in this area. The conclusions presented are based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

UR REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Our environmental site assessment is based on several factors and may include (but not be limited to): reviewing public documents to chronicle site ownership for the past 30, 40, or more years; investigating the site's regulatory history to learn about permits granted or citations issued; determining prior uses of the site and those adjacent to it; reviewing available topographic and real estate maps, historical aerial photos, geologic information, and hydrologic data; reviewing readily available published information about surface and subsurface conditions; reviewing federal and state lists of known and potentially contaminated sites; evaluating the potential for naturally occurring hazards; and interviewing public officials, owners/operators, and/or adjacent owners with respect to local concerns and environmental conditions.

Except as noted within the text of the report, no sampling or quantitative laboratory testing was performed by us as part of this site assessment. Where such analyses were conducted by an outside laboratory, Shannon & Wilson relied upon the data provided and did not conduct an independent evaluation regarding the reliability of the data.

CONDITIONS CAN CHANGE.

Site conditions, both surface and subsurface, may be affected as a result of natural processes or human influence. An environmental site assessment/evaluation is based on conditions that existed at the time of the evaluation. Because so many aspects of a historical review rely on third party information, most consultants will refuse to certify (warrant) that a site is free of contaminants, as it is impossible to know with absolute certainty if such a condition exists. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas that showed no signs of contamination at the time they were studied.

Unless your consultant indicates otherwise, your report should not be construed to represent geotechnical subsurface conditions at or ''acent to the site and does not provide sufficient information for construction-related activities. Your report also should not be used ..llowing floods, earthquakes, or other acts of nature; if the size or configuration of the site is altered; if the location of the site is modified; or if there is a change of ownership and/or use of the property.

INCIDENTAL DAMAGE MAY OCCUR DURING SAMPLING ACTIVITIES.

Incidental damage to a facility may occur during sampling activities. Asbestos and lead-based paint sampling often require destructive sampling of pipe insulation, floor tile, walls, doors, ceiling tile, roofing, and other building materials. Shannon & Wilson does not provide for paint repair. Limited repair of asbestos sample locations are provided. However, Shannon & Wilson neither warranties repairs made by our field personnel, nor are we held liable for injuries or damages as a result of those repairs. If you desire a specific form of repair, such as those provided by a licensed roofing contractor, you need to request the specific repair at the time of the proposal. The owner is responsible for repair methods that are not specified in the proposal.

READ RESPONSIBILITY CLAUSES CAREFULLY.

Environmental site assessments/evaluations are less exact than other design disciplines because they are based extensively on judgment and opinion, and there may not have been any (or very limited) investigation of actual subsurface conditions. Wholly unwarranted claims have been lodged against consultants. To limit this exposure, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses may appear in this report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

Consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed, or conditions at the site have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of the final assessment/evaluation.

An assessment/evaluation of a site helps reduce your risk, but does not eliminate it. Even the most rigorous professional assessment may fail to identify all existing conditions.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, HEALTH, PROPERTY, AND WELFARE OF THE PUBLIC.

If our environmental site assessment/evaluation discloses the existence of conditions that may endanger the safety, health, property, or welfare of the public, we may be obligated under rules of professional conduct, statutory law, or common law to notify you and others of these conditions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland