PD CONSULTANTS

(509) 545-0181, P.O. BOX 2188, PASCO, WA 99302

(NOT AN UST)

SITE ASSESSMENT
FOR
KLICKITAT COUNTY ROAD DEPARTMENT
GOLDENDALE, WASHINGTON

Prepared for:

Steve Nygaard
Klickitat County Road Dept.
Goldendale, Washington
under contract to E.P. Johnson Construction and Environmental, Inc.

Prepared by:

Mike Black, P.E., R.E.A.
P-D CONSULTANTS

January 9, 1994

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1.0 INTRODUCTION AND BACKGROUND

As part of a building addition for the Klickitat County Shops, the construction sequence required removal of a washdown slab. Suspected contamination was evident under the slab.

Figure 1 presents the areal topographic map of the geographical location of the facility, and Figure 2 presents the site map for the facilities. The facilities abut Highway 241 to the west of Goldendale. The facilities consist of existing shops, a yard, and the proposed maintenance shop that replaced the former washdown slab.

2.0 SCOPE OF WORK

Our scope included (1) defining the types of contaminants, (2) the extent of contaminants, (3) an analysis of contaminants relative to cleanup requirements, (4) assessment of the success of excavation of contaminated soil, and (5) preparation of this report. Disposition of the stockpiled, contaminated soil is not part of our work scope.

3.0 INVESTIGATION

3.1 SITE DESCRIPTION

For the purposes of our investigation, we performed (1) a historical evaluation to determine contaminant sources, (2) literature searches to determine the local geology and hydrology impacting the site, and examination of the topography.

Geology: Figure 3 presents a copy of a portion of the GEOLOGIC MAP OF THE NORTHWEST PART OF THE GOLDENDALE QUADRANGLE, Phillips and Walsh, 1987. Features impacting the site include a north-northeast trending anticline/strike slip structure just east of Goldendale and an alluvial deposit intersecting the anticline to the north of Goldendale that trends west-southwest. The site is located on the Priest Rapids Member of the Columbia River basalts and the alluvium is just to the west of the site.

Geohydrology: Comparing figures 1 and 3 demonstrates that Bloodgood Creek follows the west toe of the anticlinal structure to the north and then follows the alluvium trough to the west.

Historical Evaluation: Mr. Steve Nygaard provided a candid history of operations impacting contaminant sources on the site. The facility has operated for decades and the washdown pad served a facility to washdown vehicles and dispose of unwanted contaminants.

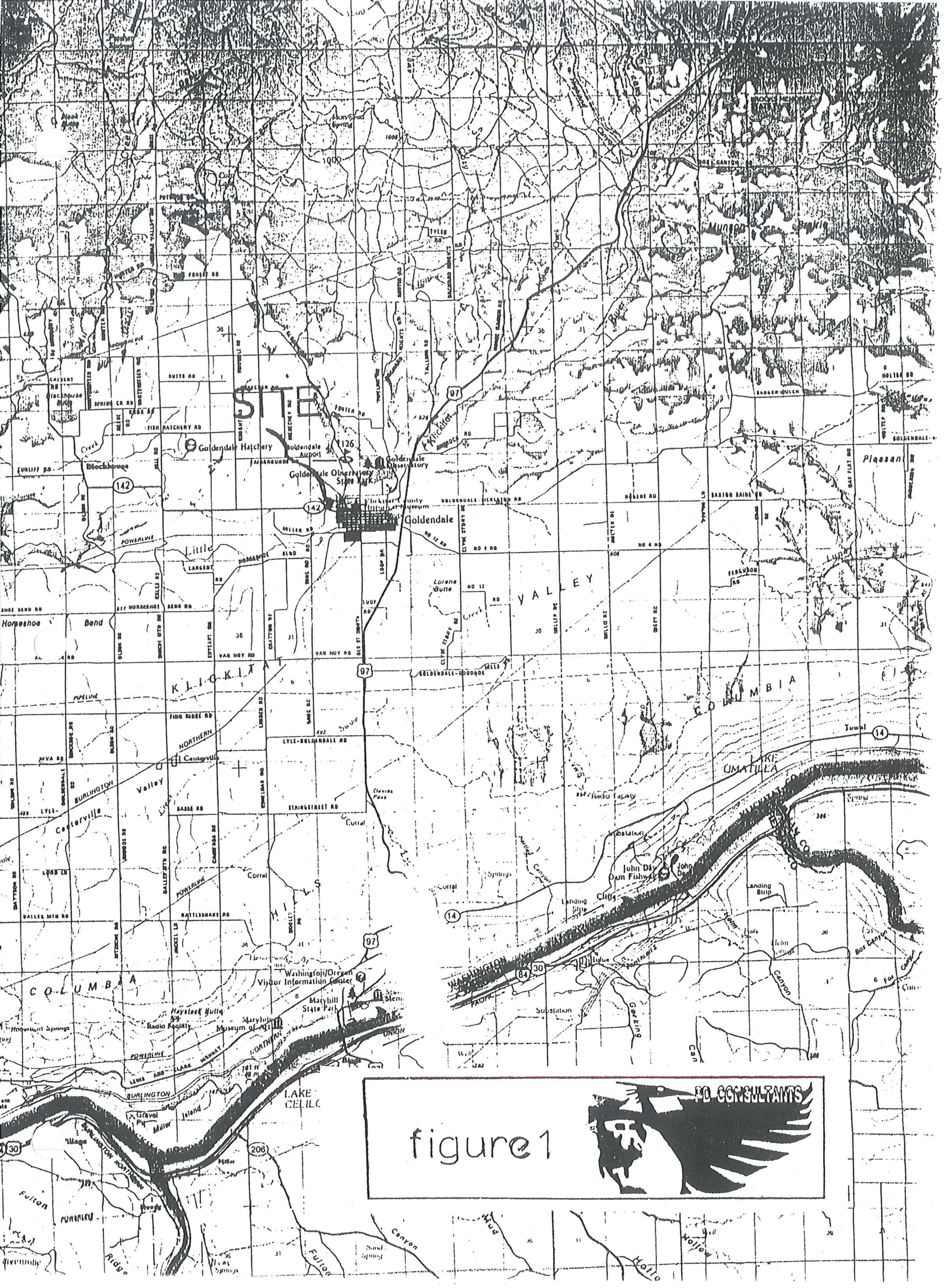

SITE
Goldendale
Goldendale Hatchery
Goldendale Airport
Goldendale Observatory State Park
Klickitat
Blockhouse
Horseshoe Bend
Little
VALLEY
KLICKITAT
COLUMBIA
Centerville
Centerville Valley
Lorena Butte
Davies Pass
HILLS
Pleasant
LAKE UMATILLA
John Day Dam Fishway
Radio Facility
Landing Strip
Washington/Oregon Visitor Information Center
Maryhill State Park
Maryhill Museum of Art
Haystack Butte
LAKE CELILO
Miller Island
Gravel Pit
Substation
WASHINGTON
UNION PACIFIC
BURLINGTON NORTHERN
POWERLINE
PIPELINE
Canyon
Fulton
PD CONSULTANTS

figure1

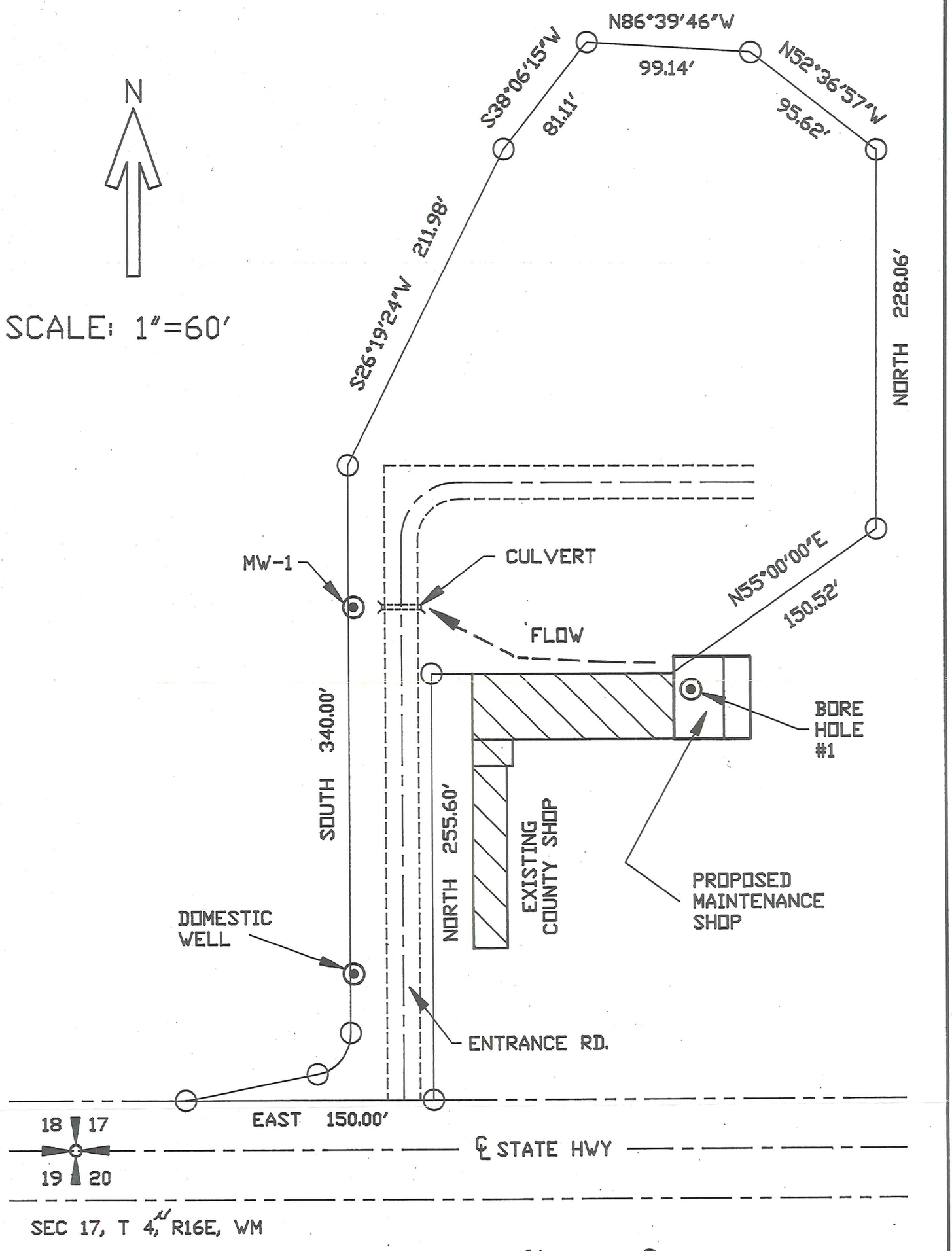


figure 2

KLICKITAT COUNTY	P-D CONSULTANTS
MAINTENANCE SHOP	P.O. BOX 2188 PASCO, WA. 99302
SITE LOCATION	APPROVALS: DESIGN: MB 12/17/93 CONTRACTOR: DNA OWNER: DNA CITY/COUNTY: DNA REVISIONS: R000 KLICKITAT COUNTY SHOP BUILDING DWG=KL-WASTE 11-28-93 1 OF 1

figure 3

PD CONSULTANTS

A drain near the north end of the pad discharged to the surface of ground near the northeast corner of the existing facility. Water and contaminants either flowed or were absorbed into the soil column as part of the natural drainage path, to the west, along the north end of the building (Plate 1). Mr. Nygaard indicated that gasoline, solvents, and herbicides had been discarded at the washdown pad prior to contemporary environmental regulations. Furthermore, washdown of the shop floor and local work station disposal was discharged through the north wall of the facility where it entered the same soil column and topographical feature as the washdown pad (Plate 1).

3.2 FIELD VISIT

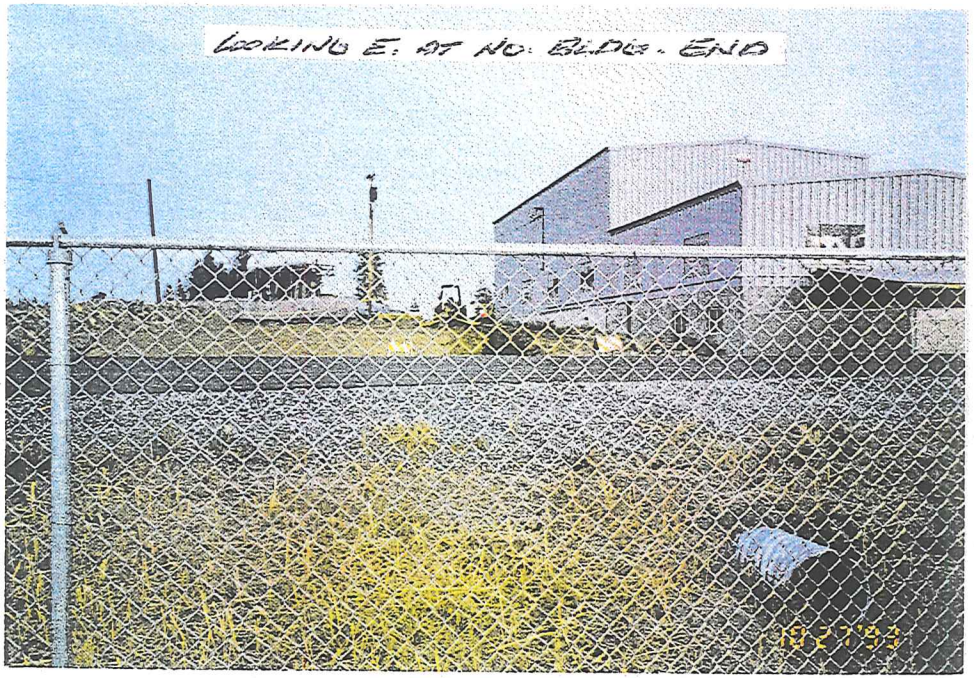
We performed site services on October 21, and 27, 1993. On our first visit we (1) collected samples under or near the removed washdown slab, (2) discussed the operating history with Mr. Nygaard, (3) estimated the fate and transport of contaminants, and (4) established remedial containment procedures with the contractor. On our second visit, we confirmed the success of remedial containment procedures and evaluated the groundwater system.

Referring to Figure 2, I noticed dark staining of the soil along the path marked "flow" to the east side of the culvert and an area of about 200 sq. ft. to the west of the culvert during my first visit. In concert with the Owner and Contractor, we determined that all soil removed from near the pad area, and a trench following the darkened soil to the east side of the culvert should be stockpiled on plastic and bermed on site.

On my second visit I (1) performed environmental engineering services for construction and sampling of a borehole and monitoring well, (2) examined excavation completed to date, and (3) collected samples associated with the excavation final lines. The excavation determined that approximately 1 to 3 feet of soil covered the basalt throughout most of the soil line. At the east end of the culvert the soil was approximately 7 feet deep. The construction of the monitoring well on the west side of the culvert determined a soil depth of 7 feet deep and a total well depth of 9 ft. deep. Water inflow was extremely slow at the soil/rock interface and is best classified as a slow seep. Appendix A contains copies of our drilling logs. A domestic well is located near the southwest corner of the facility (fig. 2)


CONTAM. LEAK - WASHDOWN
10 27'93


NO. DISCHARGE FROM FACIL.
10 27'93


LOOKING E. AT NO. BLDG. END
10 27'93

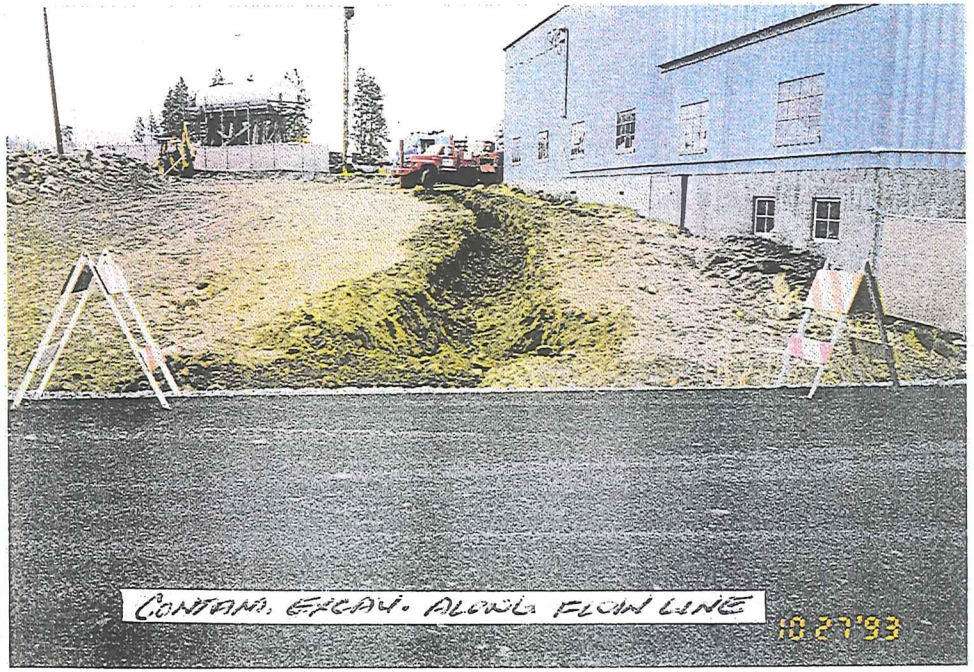

CONTAM. EXCAV. ALONG FLOW LINE
10 27'93

PLATE 1

3.3 SAMPLING PROGRAM

3.3.1 Description and Procedures

Appendix C contains copies of our sampling protocols for soil and groundwater.

3.3.2 Results

Tables 1 through 9 contain our analytical laboratory results. Appendix B contains copies of the analytical laboratory results.

Sample No.	Location	Matrix	Lab Test Types	Cleanup Confirmation
KLC-4-1a	30 ft. no. of NE bldg. corner	Soil	WTPH 418.1	no
KLC-4-1b	"	Soil	WTPH 418.1	no
KL-5-1a,b	Borehole 1-15 ft. deep	Soil	WTPH-HCID	yes
KL-6-1a,b	Borehole 1-17 ft. deep	Soil	WTPH-HCID	yes
KL-7	west end of culvert	Soil	WTPH-HCID	yes
KL-8	east end of culvert-bottom of trench	Soil	USEPA SW-846 Method 8150	yes
"	35 ft. east of KL-8 in bottom of trench	Soil	WTPH-HCID	yes
KL-9	70 ft. east of KL-8 in bottom of trench	Soil	WTPH-HCID	yes
KL-10	100 ft. east of KL-8 in bottom of trench	Soil	WTPH-HCID	yes
KL-11	MW-1	Soil	WTPH-HCID	yes
KL-12a,b,c	"	Water	EPA Method 8010	yes
KL-13	"	Water	EPA Method 7421	yes
"	"	Water	WTPH 418.1	yes

Sample No.	Location	Matrix	Lab Test Types	Cleanup Confirmation
KL-14a,b,c	"	Water	EPA 602 & WTPH-G	yes

TABLE 2 - SOIL ANALYTICAL RESULTS SUMMARY

Sample No.	WTPH-G (ppm)	WTPH-D (ppm)	TPH (ppm)
KLC-2-1	**590**	**3100**[C,D]	--
KLC-1-1a,b	--	--	**1600**
KLC-2-2	--	--	**6400**
KLC-4-1a	--	--	**910**
KLC-4-1b	--	--	92
MTCA Method A Cleanup Levels	100	200	200

TPH - Total Petroleum Hydrocarbons.
C - Hydrocarbons in the gasoline region(C7-toluene) present in the sample.
D - Hydrocarbons in the heavy oil region(> C24) present in the sample.

TABLE 3 - GROUNDWATER ANALYTICAL RESULTS SUMMARY

Sample No.	Tetrachloro -ethylene (ppm)	Chloro-benzene (ppm)	1,2 Dichloro-benzene (ppm)	1,4 Dichloro-benzene (ppm)	o-Xylene (ppb)	TPH-Gas (ppb)
KLC-2-3 (10/21/93)	.002	.012	.012	.001	--	--
KLC-2-4 (10/21/93)	--	--	--	--	2.9	**490**[T]
Method A Cleanup Levels	5.0	DNA	5.0	DNA	DNA	1.0

T - The chromatogram is not similar to a typical gasoline chromatogram.
DNA - Does not apply.

TABLE 4 - SUMMARY OF ANALYTICAL RESULTS IN SOIL

Sample No.	Compound	Concentration (ppb)	MTCA Method A Cleanup Levels (ppb) ppm
KLC-3-1 (10/21/93)	1,1-Dichloroethane	160*	DNA
	2-Butanone	230*[B1]	DNA
	1,1,1-Trichloroethane	**450**	20.0
	Benzene	140*	0.5
	Tetrachloroethene	330	DNA
	Toluene	**2,600**	40.0
	Chlorobenzene	510	DNA
	Ethylbenzene	**930**	20.0
	Total Xylenes	**7,800**	20.0
KLC-3-2 (10/21/93)	2,4-Dichlorophenol	2,400*	DNA
	Naphthalene	1,100*	DNA
	2-Methylnaphthalene	3,100*	DNA
	Fluorene	780*	DNA
	N-Nitrosodiphenylamine	900*	DNA
	Phenanthrene	2,300*	DNA
	Butyl benzyl phthalate	660*	DNA
	bis(2-ethylhexyl)phthalate	17,000[B1]	DNA
	Di-n-octyl phthalate	2,600*	DNA

* - The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

B1 - This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

TABLE 5 - ORGANOCHLORINE PESTICIDES AND PCBS

Sample No.	Compound	Concentration (ppm)	MTCA Method A Cleanup Levels (ppm)
KLC-3-3 (10/21/93)	y-BHC (Lindane)	0.052	1.0
	4,4'-DDD	0.026	DNA
	Endosulfan II	0.077	DNA
	Heptachlor epoxide	0.057	DNA

.769
4.17
480
0.11

DNA - Does not apply.

TABLE 6 - PHENOXYL HERBICIDES

(USEPA SW - 846 Method 8150)

Sample No.	Compound	Concentration (ppb)	MTCA Method A Cleanup Levels (ppb)
KLC-3-3 (10/22/93)	2,4,5-T	300	--
KL-8 (10/28/93)	ND	--	--

640

ND - Compounds not detected.

TABLE 7 - WATER ANALYSIS

Sample No.	EPA 602 & WTPH-G	WTPH 418.1
KL-14a,b,c	ND	--
KL-13	--	ND

TABLE 8 - ICP METALS

Sample No.	Compound	Concentration (ppm)	MTCA Method A Cleanup Levels (ppm)
KLC-3-4 (10/21/93)	Antimony	3.0	DNA
	Arsenic	5.2	20.0
	Cadmium	**12.0**	2.0
	Chromium	17.0	100.0
	Copper	81	DNA
	Lead	98	250.0
	Nickel	13	DNA
	Silver	1.2	DNA
	Zinc	380	DNA

DNA - Does not apply.

TABLE 9 - WTPH-HCID SOIL RESULTS

Sample No.	WTPH-HCID
KL-5-1a,b	ND
KL-6-1a,b	ND
KL-7	ND
KL-8	ND
KL-9	ND
KL-10	ND
KL-11	ND

ND - No detect.

4.0 ANALYSIS

4.1 SOIL

The laboratory analysis show concentration of gasoline, diesel, solvents, semi-volatiles, herbicides, and heavy metals above published cleanup levels under or near the washdown slab. Although some of the soil remains discolored along the flow lines the data indicate a lack of contaminants remaining in the soil. Given the variety and concentrations of the contaminants near the washdown slab, we evaluated the soils for a Dangerous Waste Classification under the Washington State, Department of Ecology, Dangerous Waste Regulations, Chapter 173-303 WAC. Using the Registry of Toxic Effects of Chemical Substances published by NIOSH, along with presumptive values from similar compounds for unpublished substances, we generated Table 9. Table 9 ascribes the substance, federal number, and classification into extremely or moderately dangerous. We found no acutely dangerous substances. Table 10 shows a total concentration of 8,140 ppb (0.008% by wt.) and 35,850 ppb (0.004% by wt.) extremely hazardous and moderately dangerous waste. For scoping purposes, consider the entire concentrations as extremely hazardous substances at 0.012% concentration by weight with "B" categories. This provides an equivalent concentration of 0.00012% which falls into the "undesignated" category under WAC 173-303-9906, TOXIC DANGEROUS WASTE MIXTURES GRAPH. After reviewing the Land Disposal Restrictions, OWSER 9934.0-1A, no substances are present, in sufficient concentrations, to require the "Land Banned" disposal designation. Borehole 1 demonstrated a basalt thickness of approximately 15 ft. The soil sample below the bedrock indicated no migration of contaminants.

4.2 GROUNDWATER

The groundwater analysis for the KLC-2 series samples represent perched water immediately below the removed washdown slab and should not be considered indicative of groundwater concentrations. In fact, Monitoring Well No. 1 represents the only valid sampling of the perched water and the samples were "clean." The domestic well draws water from an aquifer over 100 ft. deep. The perched water, found on site, represents local accumulations of stormwater and surface discharges from the old washdown slab, which is confined to the near surface by the basalt bedrock below.

Table 10 - Dangerous Waste Analysis[1]

Sample No.	Federal No.	Substance	Extremely Hazardous (ppb)	Moderately Dangerous (ppb)	Reason for Designation
KLC-3-1 (10/21/93)	U077	1,1 Dichloroethane (Ethylidene Dichloride)	160		D,H
	U226	1,1,1-Trichloroethane	450		C,H
	U019	Benzene	140		C+I
	U159	2-Butanone		230	D,I
	U220	Toluene	2,600		C,I
	U037	Chlorobenzene	510		B,H,I
	--	Tetrachloroethene		330	D[2]
	--	Ethyl Benzene		930	D[2]
	--	Total Xylenes		7,800	D[2]
KLC-3-2 (10/21/93)	U081	2,4-Dichlorophenol	2,400		D,H
	U165	Naphthalene	1,100		B
	U028	bis(2-ethylhexyl) phthalate		17,000	?
	U107	Di-n-octyl phthalate		2,600	?

Sample No.	Federal No.	Substance	Extremely Hazardous (ppb)	Moderately Dangerous (ppb)	Reason for Designation
	--	2-Methylnaphthalene		3,100*	D[2]
	--	Fluorene	780*		A[2]
	--	N-Nitrosodiphenylamine		900*	D[2]
	--	Phenanthrene		2,300*	D[2]
	--	Butyl benzyl phthalate		660*	D[2]

1 - Dangerous Waste Regulations, Chapter 173 - 303 WAC
A - Toxic, Category A
B - Toxic, Category B
C - Toxic, Category C
D - Toxic, Category D
? - Toxic, Category not determined
H - Persistent, Halogenated Hydrocarbon
I - Ignitable
+ - IARC Animal or Human, Positive or Suspected Carcinogen
2 - Registry of Toxic Effects of Chemical Substances
* - The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

5.0 CONCLUSIONS

Based on the data contained herein, we find that the site presents no present and significant risk to human health and safety or the environment. The waste stockpiled on site requires disposal or treatment in an approved facility. In the interim, the waste should be covered and protected from migration from outside the stockpile berms via water or wind.

6.0 LIMITATIONS

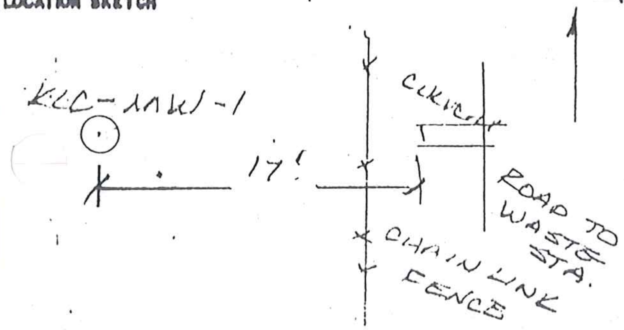
In performing our professional services, we used a degree of care ordinarily exercised under similar circumstances by members of our profession. No warrantee, expressed or implied, is made or intended. Our conclusions and recommendations, developed from our investigation and reported herein represent this firm's understanding of the project requirements and are in concurrence with generally accepted practice.

APPENDIX A- DRILLING LOGS

SHEET ___ OF ___

LOCATION OF BORING	JOB NO.	CLIENT	BORING NO.
KLICKITAT CTY SHOPS	KLC-0193	EPU	MW-1
	PROJECT NAME KLICKITAT CTY SHOP		

LOCATION SKETCH



DRILLING METHOD: SONRANNA T300E, AIR ROTARY

SAMPLING METHOD: BAILER

WATER LEVEL	6.73				START	FINISH
TIME					TIME	TIME
DATE					DATE	DATE
CASING DEPTH						

DATUM

ELEVATION

SURFACE CONDITION: GRASSY

SAMPLE NO. / SAMPLE TYPE	SAMPLE DEPTH	BLOWS PER 6 INCHES	INCHES DRIVEN / INCHES RECOVERED	NUMBER OF RINGS	DEPTH IN FEET	PIEZOMETER	GRAPHIC LOG	CLASSIFICATION / DESCRIPTION
								SANDY CLAY, BLK TO BROWN
					1			
					2			KLC-0193 FROM HAND AUGER - 5' AWAY
					3			
					4			
					5			
					6			TOP OF SCREEN 6' DP.
					7			
					8			BASALT ROCK
					9			
					10			

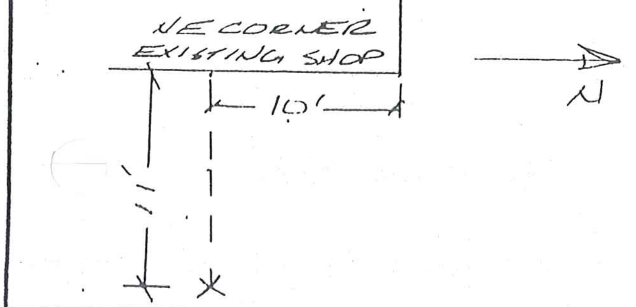
DRILLER Dan Claassen

DATE ________ CHK'D BY ________

KLICKITAT CTY SHOPS

JOB NO.	KLC-0893
CLIENT	EPW
PROJECT NAME	KLICKITAT CTY SHOP
BORING NO.	KLC - BH1
DRILLING METHOD:	SCHRAMM T30GE, AIR ROTARY
SAMPLING METHOD:	S. S. - BRASS 2" I.D. X 24"

LOCATION SKETCH



WATER LEVEL	NOT ENCOUNTERED				START	FINISH
TIME					TIME 1150	TIME
DATE					DATE 10/27/93	DATE
CASING DEPTH						

DATUM

ELEVATION

SURFACE CONDITION

SAMPLE NO. / SAMPLE TYPE	SAMPLE DEPTH	BLOWS PER 6 INCHES	INCHES DRIVEN / INCHES RECOVERED	NUMBER OF RINGS	DEPTH IN FEET	PRIMARY	GRAPHIC LOG	CLASSIFICATION / DESCRIPTION
					1			SOLID BASALT SLOW DRILLING, SMALL CHIPS, DENSE & COMPETENT
					2–8			↓
					9			9 FEET AT 1235 (45 MIN) OR 12 FT/HR
					10–14			↓
					15			RUST COLORED SOIL, SAND, CLAY, WELL GRADED, SUB ROUNDED PEBBLES (~1/4") (CL)
					16			
					17			PLASTIC - 1/8 BEAD
					18			FINE GRAINED
		25						
		50+			19			
		50?						
		100			20			
					21			

APPENDIX B-LABORATORY REPORTS

OnSite Environmental Inc.

November 3, 1993
Lab Traveler #:10-070

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on October 29, 1993 from Project KLC-0193. Please note the samples were stored and handled according to WDOE protocol.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

Date of Report: November 3, 1993
Samples Submitted: October 29, 1993
Lab Traveler: 10-070
Project: KLC-0193

Matrix: Soil
Date Extracted: October 30, 1993
Date Analyzed: October 30, 1993

WTPH-HCID

Sample Number	GC Characterization	o-terphenyl Surrogate Recovery
KL-5-1a,b	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	103%
KL-6-1a,b	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	98%
KL-7	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	103%
KL-8	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	103%
KL-9	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	100%

Date of Report: November 3, 1993
Samples Submitted: October 29, 1993
Lab Traveler: 10-070
Project: KLC-0193

Matrix: Soil
Date Extracted: October 30, 1993
Date Analyzed: October 30, 1993

WTPH-HCID

Sample Number	GC Characterization	o-terphenyl Surrogate Recovery
KL-10	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	104%
KL-11	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	98%

Quality Assurance

Method Blank	<20 ppm Gasoline range hydrocarbons <50 ppm Diesel range hydrocarbons <100 ppm Oil range hydrocarbons	100%

OnSite Environmental Inc.

November 19, 1993
Lab Traveler #:11-004

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on November 2, 1993 from Project KLC-0193. The samples were handled and stored according to WDOE protocol.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

OnSite Environmental Inc.

November 23, 1993
Lab Traveler #:10-051

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on October 22, 1993 from Project KLC-0193. The samples were stored and handled according to WDOE protocol.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

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

TRANSMITTAL MEMORANDUM

DATE: November 9, 1993

TO: Karl Hornyik
OnSite Environmental

PROJECT NUMBER: KLC-0193

LABORATORY NUMBER: 35950

Enclosed are one original and one copy of the Tier I data deliverables package for Laboratory Work Order Number 35950. Two samples were received for analysis at Sound Analytical Services, Inc., on November 3, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Stan P. Palmquist
Project Manager

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: OnSite Environmental Date: November 9, 1993

Report On: Analysis of Water Lab No.: 35950

IDENTIFICATION:
Samples received on 11-03-93
Project: KLC-0193

ANALYSIS:

Lab Sample No. 35950-1 Client ID: KL-12a,b,c

Halogenated Volatile Organics Per EPA Method 8010
Date Analyzed: 11-4-93

Compound	Result, mg/L	PQL
Vinyl Chloride	ND	0.002
Methylene chloride	ND	0.002
1,1-dichloroethylene	ND	0.002
1,1-dichloroethane	ND	0.002
Trans-1,2-dichloroethylene	ND	0.002
1,2-dichloroethane	ND	0.002
Chloroform	ND	0.002
1,1,1-trichloroethane	ND	0.002
Carbon Tetrachloride	ND	0.002
1,2-dichloropropane	ND	0.002
Bromodichloromethane	ND	0.002
Trans-1,3-dichloropropene	ND	0.002
Trichloroethylene	ND	0.002
Cis-1,3-dichloropropene	ND	0.002
1,1,2-trichloroethane	ND	0.002
Tetrachloroethylene	ND	0.002
Chlorodibromomethane	ND	0.002
1,1,2,2-tetrachloroethane	ND	0.002
Bromoform	ND	0.002
Chlorobenzene	ND	0.002
1,2 Dichlorobenzene	ND	0.002
1,3 Dichlorobenzene	ND	0.002
1,4 Dichlorobenzene	ND	0.002
SURROGATE RECOVERY, %		
Bromochloromethane	98	
2-bromo-1-chloropropane	82	
1,4-dichlorobutane	79	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued . . . .

SOUND ANALYTICAL SERVICES, INC.

OnSite Environmental
Project: KLC-0193
Lab No. 35950

November 9, 1993

Lab Sample No. 35950-2 Client ID: KL-13

Dissolved Lead by GFAA Per EPA Method 7421
Date Analyzed: 11-4-93

Parameter	Result, mg/L	PQL
Lead	0.006	0.003

PQL - Practical Quantitation Limit

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

QUALITY CONTROL REPORT

Halogenated Volatile Organics Per EPA Method 8010

Client: OnSite Environmental
Lab No: 35950qc1
Units: mg/L

Date Analyzed: 11-4-93

METHOD BLANK

Parameter	Result	PQL
Vinyl Chloride	ND	0.001
Methylene chloride	ND	0.001
1,1-dichloroethylene	ND	0.001
1,1-dichloroethane	ND	0.001
Trans-1,2-dichloroethylene	ND	0.001
1,2-dichloroethane	ND	0.001
Chloroform	ND	0.001
1,1,1-trichloroethane	ND	0.001
Carbon Tetrachloride	ND	0.001
1,2-dichloropropane	ND	0.001
Bromodichloromethane	ND	0.001
Trans-1,3-dichloropropene	ND	0.001
Trichloroethylene	ND	0.001
Cis-1,3-dichloropropene	ND	0.001
1,1,2-trichloroethane	ND	0.001
Tetrachloroethylene	ND	0.001
1,1,2,2-tetrachloroethane	ND	0.001
Chlorodibromomethane	ND	0.001
Bromoform	ND	0.001
Chlorobenzene	ND	0.001
1,2 Dichlorobenzene	ND	0.001
1,3 Dichlorobenzene	ND	0.001
1,4 Dichlorobenzene	ND	0.001
SURROGATE RECOVERY,%		
Bromochloromethane	95	
2-bromo-1-chloropropane	81	
1,4-dichlorobutane	68	

ND - Not Detected
PQL - Practical Quantitation Limit

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

QUALITY CONTROL REPORT

Dissolved Lead

Client: OnSite Environmental
Lab No: 35950qc2
Units: mg/L

Date Analyzed: 11-4-93

METHOD BLANK

Parameter	Result	PQL
Lead	ND	0.003

PQL - Practical Quantitation Limit
ND - Not Detected

OnSite Environmental Inc.

14924 NE 31st CIRCLE, REDMOND, WA 98052
PHONE (206) 883-3881 FAX (206) 885-4603

CHAIN OF CUSTODY RECORD

OSE TRAVELER #: 11-004

Project Manager: Karl Hammitt

Project #: KLC-0193

Project Name:

dash	Sample Number	Date Sampled	Type	# Jars	Analysis Required	Comments
	KL-12a,b,c		W	3	Total	
	KL-13		W	1	7421 (Dissolved Pb) (Please Filter)	

Submitted: Bonville	date: 11/3/93	Received by: [signature]	date:	11-3-93
Firm: OSE	time: 1015	Firm: SAS	time:	10:15A
Submitted: Sam Hanson	date: 11/3	Received by: [signature]	date:	11-3-93
Firm: SAS	time: 1105	Firm: SAS	time:	11:05.

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

TRANSMITTAL MEMORANDUM

DATE: November 17, 1993

TO: Blair Goodrow
On - Site Environmental

PROJECT NAME: KLC-0193

LABORATORY NUMBER: 36065

Enclosed are one original and one copy of the Tier I data deliverables package for Laboratory Work Order Number 36065. One sample was received for analysis at Sound Analytical Services, Inc., on October 22, 1993, reference Laboratory Work Order Number 35721. Additional testing was requested on November 9, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Stan P. Palmquist
Project Manager

SPP:tm

SOUND ANALYTICAL SERVICES, INC.

Client Name	ONSITE ENVIRONMENTAL INC.
Client ID:	KLC-3-3
Lab ID:	36065-1
Date Received:	11/9/93
Date Extracted:	11/12/93
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2,4,6-Tribromophenol	92		19	122

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	Flags
Dalapon	ND	61	
Dicamba	ND	19	
MCPP	ND	40	
MCPA	ND	45	
Dichloroprop	ND	32	
2,4-D	ND	26	
Silvex (2,4,5-TP)	ND	40	
2,4,5-T	300	33	
Dinoseb	ND	44	
2,4-DB	ND	35	

SOUND ANALYTICAL SERVICES, INC.

Client Name	ONSITE ENVIRONMENTAL INC.
Client ID:	-
Lab ID:	Method Blank - P6368
Date Received:	-
Date Extracted:	11/12/93
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2,4,6-Tribromophenol	119		19	122

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	Flags
Dalapon	ND	50	
Dicamba	ND	16	
MCPP	ND	33	
MCPA	ND	37	
Dichloroprop	ND	26	
2,4-D	ND	21	
Silvex (2,4,5-TP)	ND	33	
2,4,5-T	ND	27	
Dinoseb	ND	36	
2,4-DB	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Name:	ONSITE ENVIRONMENTAL INC.
Client Sample ID:	KL-8
Lab ID:	36062s1
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Dalapon	0	1200	830	68	790	65	5.0	
Dicamba	0	1200	750	62	730	59	4.0	
MCPP	0	1200	890	73	910	75	2.0	
MCPA	0	1200	850	69	870	71	3.0	
Dichloroprop	0	1200	810	66	790	65	2.0	
2,4-D	0	1200	870	71	900	74	4.0	
Silvex (2,4,5-TP)	0	1200	900	73	970	80	8.0	
2,4,5-T	0	1200	520	43	1100	90	71.0	
Dinoseb	0	1200	630	51	690	57	10.0	
2,4-DB	0	1200	810	66	840	69	5.0	

OnSite Environmental Inc.

November 8, 1993
Lab Traveler #:11-004

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on November 2, 1993 from Project KLC-0193. The samples were handled and stored according to WDOE protocol. The results of the additional analysis will follow in a later report.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

Date of Report: November 8, 1993
Samples Submitted: November 2, 1993
Lab Traveler: 11-004
Project: KLC-0193

EPA 602 & WTPH-G

Date Extracted: 11-04-93
Date Analyzed: 11-04-93

Matrix: Water
Units: ug/L (ppb)

Client ID	KL-14a,b,c	Method PQL
Dilution Factor	1	
Benzene	ND	1.00
Toluene	ND	1.00
Ethyl Benzene	ND	1.00
m,p-Xylene	ND	1.00
o-Xylene	ND	1.00
TPH-Gas	ND	300
4-BFB Surrogate Recovery	90%	

Note: Sample PQL(practical quantitation limit)= Method PQL x dilution factor

Date of Report: November 8, 1993
Samples Submitted: November 2, 1993
Lab Traveler: 11-004
Project: KLC-0193

EPA 602 & WTPH-G
QUALITY CONTROL

Date Extracted: 11-04-93
Date Analyzed: 11-04-93

Matrix: Water
Units: ug/L (ppb)

Sample Number	Blank	11-004-3 Original	11-004-3 Duplicate	RPD
Dilution Factor	1	1	1	
Benzene	ND	ND	ND	NA
Toluene	ND	ND	ND	NA
Ethyl Benzene	ND	ND	ND	NA
m,p-Xylene	ND	ND	ND	NA
o-Xylene	ND	ND	ND	NA
TPH-Gas	ND	ND	ND	NA
4-BFB Surrogate Recovery	88%	90%	84%	

Date of Report: November 8, 1993
Samples Submitted: November 2, 1993
Lab Traveler: 11-004
Project: KLC-0193

EPA 602 & WTPH-G
QUALITY CONTROL

Date Extracted: 11-04-93
Date Analyzed: 11-04-93

Matrix: Water
Units: ug/L (ppb)

Sample Number	11-004-3		11-004-3		
spiked @ 50 ppb	**MS**	Percent	**MSD**	Percent	
Dilution Factor	1	Recovery	1	Recovery	RPD
Benzene	**45.1**	**90%**	**45.1**	**90%**	0.022
Toluene	**46.6**	**93%**	**46.6**	**93%**	0.11
Ethyl Benzene	**47.0**	**94%**	**47.0**	**94%**	0.085
m,p-Xylene	**47.1**	**94%**	**47.1**	**94%**	0.021
o-Xylene	**47.0**	**94%**	**46.7**	**93%**	0.56
4-BFB Surrogate Recovery	92%		76%		

Date of Report: November 8, 1993
Samples Submitted: November 2, 1993
Lab Traveler: 11-004
Project: KLC-0193

Matrix: Water
Units: mg/L (ppm)
Date Extracted: November 2, 1993
Date Analyzed: November 2, 1993

WTPH 418.1

Sample Number	Dilution Factor	Total Petroleum Hydrocarbons
KL-13	.136	**<.7**

WTPH 418.1

QUALITY ASSURANCE

	Dilution Factor	Total Petroleum Hydrocarbons
Method Blank	.1	<.5

OnSite Environmental Inc.

November 4, 1993
Lab Traveler #:10-051

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on October 22, 1993 from Project KLC-0193. The samples were stored and handled according to WDOE protocol.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

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

TRANSMITTAL MEMORANDUM

DATE: October 27, 1993

TO: Karl Hornyik
On - Site Environmental

PROJECT NAME: KLC-0193

LABORATORY NUMBER: 35721

Enclosed are one original and one copy of the Tier I data deliverables package for Laboratory Work Order Number 35721. Five samples were received for analysis at Sound Analytical Services, Inc., on October 22, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Stan P. Palmquist
Project Manager

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: On - Site Environmental Date: October 27, 1993

Report On: Analysis of Water & Soil Lab No.: 35721

IDENTIFICATION:

Samples received on 10-22-93

Project: KLC-0193

ANALYSIS:

Lab Sample No. 35721-1 Client ID: KLC-2-3a,b,c

Matrix: Water

Halogenated Volatile Organics Per EPA Method 601

Date Analyzed: 10-22-93

Compound	Concentration, mg/L	PQL	Flag
Vinyl Chloride	ND	0.002	
Methylene chloride	ND	0.002	
1,1-dichloroethylene	ND	0.002	
1,1-dichloroethane	ND	0.002	
Trans-1,2-dichloroethylene	ND	0.002	
1,2-dichloroethane	ND	0.002	
Chloroform	ND	0.002	
1,1,1-trichloroethane	ND	0.002	
Carbon Tetrachloride	ND	0.002	
1,2-dichloropropane	ND	0.002	
Bromodichloromethane	ND	0.002	
Trans-1,3-dichloropropene	ND	0.002	
Trichloroethylene	ND	0.002	
Cis-1,3-dichloropropene	ND	0.002	
1,1,2-trichloroethane	ND	0.002	
Tetrachloroethylene	0.002	0.002	
Chlorodibromomethane	ND	0.002	
1,1,2,2-tetrachloroethane	ND	0.002	
Bromoform	ND	0.002	
Chlorobenzene	0.012	0.002	
1,2 Dichlorobenzene	0.006	0.002	
1,3 Dichlorobenzene	ND	0.002	
1,4 Dichlorobenzene	0.001	0.002	J

SURROGATE RECOVERY, %	
Bromochloromethane	99
2-bromo-1-chloropropane	92
1,4-dichlorobutane	85

ND - Not Detected

PQL - Practical Quantitation Limit

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

(- Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-2 Client ID: KLC-3-1
Matrix: Soil

Volatile Organics Per EPA Method 8240
Date Extracted: 10-25-93
Date Analyzed: 10-25-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	500	
Bromomethane	ND	500	
Vinyl Chloride	ND	500	
Chloroethane	ND	500	
Methylene Chloride	ND	250	
Acetone	ND	1,250	
Carbon Disulfide	ND	250	
1,1-Dichloroethene	ND	250	
1 -Dichloroethane	160	250	J
1,2-Dichloroethene (Total)	ND	250	
Chloroform	ND	250	
1,2-Dichloroethane	ND	250	
2-Butanone	230	1,250	J, B1
1,1,1-Trichloroethane	450	250	
Carbon Tetrachloride	ND	250	
Vinyl Acetate	ND	1,250	
Bromodichloromethane	ND	250	
1,2-Dichloropropane	ND	250	
Cis-1,3-Dichloropropene	ND	250	
Trichloroethene	ND	250	
Dibromochloromethane	ND	250	
1,1,2-Trichloroethane	ND	250	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued . . . .

SOUND ANALYTICAL SERVICES, INC.

(- Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-2 Client ID: KLC-3-1
Matrix: Soil

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	140	250	J
Trans-1,3-Dichloropropene	ND	250	
Bromoform	ND	250	
4-Methyl-2-Pentanone	ND	1,250	
2-Hexanone	ND	250	
Tetrachloroethene	330	250	
1,2,2-Tetrachloroethane	ND	250	
uene	2,600	250	
Chlorobenzene	510	250	
Ethyl Benzene	930	250	
Styrene	ND	250	
Total Xylenes	7,800	250	

ND - Not Detected
PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Flags	Control Limits Water	Soil
Toluene - D8	108		88 - 110	81 - 117
Bromofluorobenzene	68	X9	86 - 115	74 - 121
1,2-Dichloroethane-D4	74		76 - 114	70 - 121

Continued . . . .

SOUND ANALYTICAL SERVICES, INC.

(- Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-3 Client ID: KLC-3-2
Matrix: Soil

Semivolatile Organics Per EPA Method 8270
Date Extracted: 10-22-93
Date Analyzed: 10-23-93

Compound	Concentration ug/kg	PQL	Flag
Phenol	ND	8,100	
bis(2-Chloroethyl) ether	ND	8,100	
2-Chlorophenol	ND	8,100	
1,3-Dichlorobenzene	ND	8,100	
1,4-Dichlorobenzene	ND	8,100	
Benzyl Alcohol	ND	16,000	
1,2-Dichlorobenzene	ND	8,100	
2-Methylphenol	ND	8,100	
bis(2-Chloroisopropyl)ether	ND	8,100	
4-Methylphenol	ND	8,100	
N-Nitroso-Di-N-propylamine	ND	8,100	
Hexachloroethane	ND	8,100	
Nitrobenzene	ND	8,100	
Isophorone	ND	8,100	
2-Nitrophenol	ND	8,100	
2,4-Dimethylphenol	ND	8,100	
Benzoic Acid	ND	4,100	
bis(2-Chloroethoxy)methane	ND	8,100	
2,4-Dichlorophenol	2,400	8,100	J
1,2,4-Trichlorobenzene	ND	8,100	
Naphthalene	1,100	8,100	J
4-Chloroaniline	ND	16,000	
Hexachlorobutadiene	ND	8,100	
4-Chloro-3-methylphenol	ND	16,000	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued . . . .

SOUND ANALYTICAL SERVICES, INC.

O. · Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-3 Client ID: KLC-3-2
Matrix: Soil

EPA Method 8270 Continued

Compound	Concentration ug/kg	PQL	Flag
2-Methylnaphthalene	3,100	8,100	J
Hexachlorocyclopentadiene	ND	8,100	
2,4,6-Trichlorophenol	ND	8,100	
2,4,5-Trichlorophenol	ND	8,100	
2-Chloronaphthalene	ND	8,100	
2-Nitroaniline	ND	4,100	
Dimethyl phthalate	ND	8,100	
Acenaphthylene	ND	8,100	
2,6-Dinitrotoluene	ND	8,100	
3-Nitroaniline	ND	4,100	
Acenaphthene	ND	8,100	
2,4-Dinitrophenol	ND	4,100	
4-Nitrophenol	ND	4,100	
Dibenzofuran	ND	8,100	
2,4-Dinitrotoluene	ND	8,100	
Diethylphthalate	ND	8,100	
4-Chlorophenyl phenyl ether	ND	8,100	
Fluorene	780	8,100	J
4-Nitroaniline	ND	4,100	
4,6-Dinitro-2-methylphenol	ND	4,100	
N-Nitrosodiphenylamine	900	8,100	J
4-Bromophenyl phenyl ether	ND	8,100	
Hexachlorobenzene	ND	8,100	
Pentachlorophenol	ND	4,100	
Phenanthrene	2,300	8,100	J
Anthracene	ND	8,100	
Di-n-butylphthalate	ND	8,100	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued . . . .

SOUND ANALYTICAL SERVICES, INC.

O. · Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-3 Client ID: KLC-3-2
Matrix: Soil

EPA Method 8270 Continued

Compound	Concentration ug/kg	PQL	Flag
Fluoranthene	ND	8,100	
Pyrene	ND	8,100	
Butyl benzyl phthalate	660	8,100	J
3,3'-Dichlorobenzidine	ND	16,000	
Benzo(a)anthracene	ND	8,100	
C[illegible]ysene	ND	8,100	
b[illegible](2-ethylhexyl)phthalate	17,000	8,100	B1
Di-n-octyl phthalate	2,600	8,100	J
Benzo(b)fluoranthene	ND	8,100	
Benzo(k)fluoranthene	ND	8,100	
Benzo(a)pyrene	ND	8,100	
Indeno(1,2,3-cd)pyrene	ND	8,100	
Dibenz(a,h)anthracene	ND	8,100	
Benzo(g,h,i)perylene	ND	8,100	

ND - Not Detected
PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Flags	Control Limits Water	Control Limits Soil
Nitrobenzene - d_5	66	J	35 - 114	23 - 120
2-Fluorobiphenyl	56	J	43 - 116	30 - 115
p-Terphenyl-d_{14}	51	J	33 - 141	18 - 137
Phenol-d_6	26	J	10 - 94	24 - 113
2-Fluorophenol	41	J	21 - 100	25 - 121
[illegible]4,6-Tribromophenol	70	J	10 - 123	19 - 122

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

- Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-4 Client ID: KLC-3-3
Matrix: Soil

Organochlorine Pesticides and PCBs by Method 8080
Date Extracted: 10-22-93
Date Analyzed: 10-25-93

Parameter	Concentration, mg/kg	PQL
Aldrin	ND	0.01
a-BHC	ND	0.01
b-BHC	ND	0.01
d-BHC	ND	0.01
y-BHC (Lindane)	0.052	0.01
Chlordane (technical)	ND	0.1
4,4'-DDD	0.026	0.02
4,4'-DDE	ND	0.02
4,4'-DDT	ND	0.02
[illegible]ldrin	ND	0.02
E[illegible]osulfan I	ND	0.01
Endosulfan II	0.077	0.02
Endosulfan sulfate	ND	0.02
Endrin	ND	0.02
Endrin aldehyde	ND	0.02
Heptachlor	ND	0.01
Heptachlor epoxide	0.057	0.01
Endrin Ketone	ND	0.02
Methoxychlor	ND	0.1
Toxaphene	ND	0.01
Aroclor 1016	ND	0.01
Aroclor 1221	ND	0.01
Aroclor 1232	ND	0.01
Aroclor 1242	ND	0.01
Aroclor 1248	ND	0.01
Aroclor 1254	ND	0.01
Aroclor 1260	ND	0.01
Aroclor 1262	ND	0.01
Aroclor 1268	ND	0.01

ND - Not Detected
PQL - Practical Quantitation Limit

SURROGATE RECOVERY,%	
2[illegible],5,6-Tetrachloro-m-xylene	56
D[illegible]achlorobiphenyl	X9

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

O. Site Environmental
Project: KLC-0193
Lab No. 35721

October 27, 1993

Lab Sample No. 35721-5 Client ID: KLC-3-4
Matrix: Soil

ICP Metals Per EPA Method 6010
Date Digested: 10-22-93
Date Analyzed: 10-25-93

Parameter	Concentration, mg/kg	PQL
Antimony	3.0	1.5
Arsenic	5.2	2.5
Beryllium	ND	0.12
Cadmium	12	0.12
Chromium	17	0.25
Copper	81	0.63
Lead	98	1.2
Nickel	13	1.0
Selenium	ND	3.8
Silver	1.2	0.25
Thallium	ND	3.8
Zinc	380	0.50

Mercury By Cold Vapor AA Per EPA Method 7471
Date Digested: 10-22-93
Date Analyzed: 10-25-93

Parameter	Concentration, mg/kg	PQL
Mercury	ND	0.10

ND - Not Detected
PQL - Practical Quantitation Limit

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

QUALITY CONTROL REPORT

PURGEABLE HALOCARBONS BY EPA SW-846 METHOD 601

Client: OnSite Environmental
Lab No: 35721qc1
Units: mg/L
Date: October 27, 1993

METHOD BLANK

Parameter	Blank Value	PQL
Vinyl Chloride	ND	0.001
Methylene chloride	ND	0.001
1,1-dichloroethylene	ND	0.001
1,1-dichloroethane	ND	0.001
Trans-1,2-dichloroethylene	ND	0.001
1,2-dichloroethane	ND	0.001
Chloroform	ND	0.001
1,1,1-trichloroethane	ND	0.001
Carbon Tetrachloride	ND	0.001
1,2-dichloropropane	ND	0.001
Bromodichloromethane	ND	0.001
Trans-1,3-dichloropropene	ND	0.001
Trichloroethylene	ND	0.001
Cis-1,3-dichloropropene	ND	0.001
1,1,2-trichloroethane	ND	0.001
Tetrachloroethylene	ND	0.001
1,1,2,2-tetrachloroethane	ND	0.001
Chlorodibromomethane	ND	0.001
Bromoform	ND	0.001
Chlorobenzene	ND	0.001
1,2 Dichlorobenzene	ND	0.001
1,3 Dichlorobenzene	ND	0.001
1,4 Dichlorobenzene	ND	0.001
SURROGATE RECOVERY,%		
Bromochloromethane	110	
2-bromo-1-chloropropane	95	
1,4-dichlorobutane	96	

ND - Not Detected

PQL - Practical Quantitation Limit.

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

QUALITY CONTROL REPORT
VOLATILE ORGANICS PER EPA METHOD 8240

Client: OnSite Environmental
Lab No: 35721qc2
Units: ug/kg
Date: October 27, 1993
Blank No: Z4061

Date Extracted: 10-25-93
Date Analyzed: 10-25-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	ND	200	
Acetone	ND	1,000	
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	130	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected
PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Client: OnSite Environmental
Lab No: 35721qc2
Date: October 27, 1993
Blank No: Z4061

Volatile Surrogates

Surrogate Compound	Percent Recovery	Flags	Control Limits Water	Soil
Toluene - D8	103		88 - 110	81 - 117
Bromofluorobenzene	92		86 - 115	74 - 121
1,2-Dichloroethane-D4	77		76 - 114	70 - 121

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

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Client: OnSite Environmental
Lab No: 35721qc3
Units: ug/kg
Date: October 27, 1993
Blank No: P6110

Date Extracted: 10-20-93
Date Analyzed: 10-21-93

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	330	
bis(2-Chloroethyl) ether	ND	330	
2-Chlorophenol	ND	330	
1,3-Dichlorobenzene	ND	330	
1,4-Dichlorobenzene	ND	330	
Benzyl Alcohol	ND	670	
1,2-Dichlorobenzene	ND	330	
2-Methylphenol	ND	330	
bis(2-Chloroisopropyl)ether	ND	330	
4-Methylphenol	ND	330	
N-Nitroso-Di-N-propylamine	ND	330	
Hexachloroethane	ND	330	
Nitrobenzene	ND	330	
Isophorone	ND	330	
2-Nitrophenol	ND	330	
2,4-Dimethylphenol	ND	330	
Benzoic Acid	ND	1,700	
bis(2-Chloroethoxy)methane	ND	330	
2,4-Dichlorophenol	ND	330	
1,2,4-Trichlorobenzene	ND	330	
Naphthalene	ND	330	
4-Chloroaniline	ND	670	
Hexachlorobutadiene	ND	330	
4-Chloro-3-methylphenol	ND	670	
2-Methylnaphthalene	ND	330	
Hexachlorocyclopentadiene	ND	330	
2,4,6-Trichlorophenol	ND	330	
2,4,5-Trichlorophenol	ND	330	
2-Chloronaphthalene	ND	330	
2-Nitroaniline	ND	1,700	
Dimethyl phthalate	ND	330	
Acenaphthylene	ND	330	

PQL - Practical Quantitation Limit
ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Client: OnSite Environmental
Lab No: 35721qc3
Units: ug/kg
Date: October 27, 1993
Blank No: P6110

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	1,700	
Acenaphthene	ND	330	
2,4-Dinitrophenol	ND	1,700	
4-Nitrophenol	ND	1,700	
Dibenzofuran	ND	330	
2,4-Dinitrotoluene	ND	330	
2,6-Dinitrotoluene	ND	330	
Diethylphthalate	ND	330	
4-Chlorophenyl phenyl ether	ND	330	
Fluorene	ND	330	
Nitroaniline	ND	1,700	
4,6-Dinitro-2-methylphenol	ND	1,700	
N-Nitrosodiphenylamine	ND	330	
4-Bromophenyl phenyl ether	ND	330	
Hexachlorobenzene	ND	330	
Pentachlorophenol	ND	1,700	
Phenanthrene	ND	330	
Anthracene	ND	330	
Di-n-butylphthalate	33	330	J
Fluoranthene	ND	330	
Pyrene	ND	330	
Butyl benzyl phthalate	ND	330	
3,3'-Dichlorobenzidine	ND	670	
Benzo(a)anthracene	ND	330	
bis(2-ethylhexyl)phthalate	29	330	J
Chrysene	ND	330	
Di-n-octyl phthalate	ND	330	
Benzo(b)fluoranthene	ND	330	
Benzo(k)fluoranthene	ND	330	
Benzo(a)pyrene	ND	330	
Indeno(1,2,3-cd)pyrene	ND	330	
Dibenz(a,h)anthracene	ND	330	
Benzo(g,h,i)perylene	ND	330	

PQL - Practical Quantitation Limit
ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Client: OnSite Environmental
Lab No: 35721qc3
Date: October 27, 1993
Blank No: P6110

SEMIVOLATILE SURROGATES

Surrogate Compound	Percent Recovery	Flags	Control Limits Water	Control Limits Soil
Nitrobenzene - d_5			35 - 114	23 - 120
2-Fluorobiphenyl			43 - 116	30 - 115
Terphenyl-d_{14}			33 - 141	18 - 137
Phenol-d_6			10 - 94	24 - 113
2-Fluorophenol			21 - 100	25 - 121
2,4,6-Tribromophenol			10 - 123	19 - 122

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

QUALITY CONTROL REPORT

ORGANOCHLORINE PESTICIDES & PCBs PER EPA METHOD 8080

Client: OnSite Environmental
Lab No: 35721qc4
Units: mg/kg
Date: October 27, 1993

Date Extracted: 10-22-93
Date Analyzed: 10-25-93

METHOD BLANK

Compound	Result	PQL
Aldrin	ND	0.01
a-BHC	ND	0.01
b-BHC	ND	0.01
g-BHC	ND	0.01
y-BHC (Lindane)	ND	0.01
Chlordane (technical)	ND	0.10
4,4'-DDD	ND	0.01
4,4'-DDE	ND	0.01
4,4'-DDT	ND	0.01
Dieldrin	ND	0.01
Endosulfan I	ND	0.01
Endosulfan II	ND	0.01
Endosulfan sulfate	ND	0.01
Endrin	ND	0.01
Endrin aldehyde	ND	0.01
Heptachlor	ND	0.01
Heptachlor epoxide	ND	0.01
Endrin Ketone	ND	0.02
Methoxychlor	ND	0.10
Toxaphene	ND	0.1
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1
SURROGATE RECOVERY%		
2,4,5,6-TCMX	98	
Decachlorobiphenyl	118	

ND - Not Detected
PQL - Practical Quantitation Limit

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

QUALITY CONTROL REPORT

Total Metals

Client: OnSite Environmental
Lab No: 35721qc5
Units: mg/kg
Date: October 27, 1993

METHOD BLANK

Parameter	Result	PQL
Antimony	ND	1.5
Arsenic	ND	2.5
Beryllium	ND	0.12
Cadmium	ND	0.12
Chromium	ND	0.25
Copper	ND	0.62
Lead	ND	1.2
Mercury	ND	0.10
Selenium	ND	3.8
Silver	ND	0.25
Thallium	ND	3.8
Zinc	ND	0.50

ND - Not Detected
PQL - Practical Quantitation Limit

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

DATA QUALIFIER FLAGS

ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

C: The identification of this analyte was confirmed by GC/MS.

B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final exract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

E: The concentration of this analyte exceeded the instrument calibration range.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

A: This TIC is a suspected aldol-condensation product.

M: Quantitation Limits are elevated due to matrix interferences.

S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.

X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.

X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside QC limits due to high contaminant levels.

X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside QC limits due to matrix composition.

X10: Surrogate recovery outside QC limits due to high contaminant levels.

Date of Report: October 28, 1993
Samples Submitted: October 22, 1993
Lab Traveler: 10-051
Project: KLC-0193

Matrix: Soil
Units: mg/Kg (ppm)
Date Extracted: October 22, 1993
Date Analyzed: October 22, 1993

WTPH-D

Sample Number	Dilution Factor	TPH	o-terphenyl Surrogate Recovery
KLC-2-1	5	3100[C,D]	F

C-Hydrocarbons in the gasoline region(C7-toluene) present in the sample.

D-Hydrocarbons in the heavy oil region(>C24) present in the sample.

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

Date of Report: October 28, 1993
Samples Submitted: October 22, 1993
Lab Traveler: 10-051
Project: KLC-0193

Matrix: Soil
Units: mg/Kg (ppm)
Date Extracted: October 22, 1993
Date Analyzed: October 22, 1993

WTPH-D
QUALITY ASSURANCE

	Dilution Factor	TPH	o-terphenyl Surrogate Recovery
Method Blank	1	<25	95%
Sample: 10-052-4	1	<25	79%
Duplicate	1	<25	85%
RPD		0%	

	Dilution Factor	TPH	o-terphenyl Surrogate Recovery
Spiked @ 100 ppm			
Spike Blank	1	79.8	102%
Percent Recovery		80%	
Spike Blank Duplicate	1	84.9	105%
Percent Recovery		85%	
RPD		6.2%	

Date of Report: October 28, 1993
Samples Submitted: October 22, 1993
Lab Traveler: 10-051
Project: KLC-0193

Matrix: Soil
Units: mg/Kg (ppm)
Date Extracted: October 22, 1993
Date Analyzed: October 22, 1993

WTPH 418.1

Sample Number	Dilution Factor	Total Petroleum Hydrocarbons
KLC-1-1a,b	10	**1600**
KLC-2-2	25	**6400**
KLC-4-1a	5	**910**
KLC-4-1b	5	**92**

Date of Report: October 28, 1993
Samples Submitted: October 22, 1993
Lab Traveler: 10-051
Project: KLC-0193

Matrix: Soil
Units: mg/Kg (ppm)
Date Extracted: October 22, 1993
Date Analyzed: October 22, 1993

WTPH 418.1

QUALITY ASSURANCE

	Dilution Factor	Total Petroleum Hydrocarbons
Method Blank	5	<25
Sample: KLC-4-1b	5	91.6
Duplicate	5	78.2
RPD		15.7%

10-051

COMPANY PDC

PROJECT # KLC-0193

PROJECT NAME KLICKITAT SHOPS

MANAGER BLACK

TRAVELER (KH)

P-D CONSULTANTS
P.O. BOX 2188
PASCO, WA 99302
(509) 545-0181

ONSITE ENVIRONMENTAL Inc.
2859 152nd Ave. N.E.
Redmond, WA 98052
(206) 883-3881

*1 USE HCID IF NOT ENOUGH SAMPLE MTB

— RUSH ON ALL —

		SAMPLE #	MEDIA	DATE	TYPE	# JARS	WTPH-HCID	WTPH-G/BTEX	WTPH-G	WTPH-D	WTPH-418.1	7421	601 SOLVENTS	DRY WEIGHT	COMMENTS
							ANALYSIS REQUIRED								
1	HOT	KLC-1-1a KLC-1-1b	SOIL	10/21/93	4oz	2					X			X	ONE TEST
2	"	KLC-2-21	"	"	"	1			X	*1 X				X	
3	"	KLC-2-22	"	"	"	1					X			X	
4	?	KLC-2-3 a,b,c	WATER	"	40mL	3							X		
5	?	KLC-2-4	"	"	"	3		X							
6	HOT B.	KLC-3-1	SOIL	"	4oz	1									8240 ~~SEMI~~
7	HOT	KLC-3-2	SOIL	"	"	1									8270
8	?	KLC-3-3	"	"	"	1									PCB + 8080 INSECTICIDES
9	?	KLC-3-4	"	"	"	1									PRIORITY METALS
10	HOT	KLC-4-1a	"	"	"						X			X	
11	HOT	KLC-4-1b	"	"	"						X			X	

SUBMITTED Michael Black DATE 10/21/93 RECEIVED BY [signature] DATE 10/22/93

FIRM PDC TIME 8:07P FIRM OnSite Environmental TIME 8:00AM

UNLINE FOR LABS

OnSite Environmental Inc.

November 23, 1993
Lab Traveler #:10-070

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on October 29, 1993 from Project KLC-0193. The samples were stored and handled according to WDOE protocol.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

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

TRANSMITTAL MEMORANDUM

DATE: November 17, 1993

TO: Karl Hornyik
On - Site Environmental

PROJECT NUMBER: KLC-0193

LABORATORY NUMBER: 36062

Enclosed are one original and one copy of the Tier I data deliverables package for Laboratory Work Order Number 36062. One sample was received for analysis at Sound Analytical Services, Inc., on November 9, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Stan P. Palmquist
Project Manager

SPP:tm

SOUND ANALYTICAL SERVICES, INC.

Client Name	ONSITE ENVIRONMENTAL INC.
Client ID:	KL-8
Lab ID:	36062-1
Date Received:	11/9/93
Date Extracted:	11/12/93
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2,4,6-Tribromophenol	78		19	122

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	Flags
Dalapon	ND	62	
Dicamba	ND	20	
MCPP	ND	41	
MCPA	ND	46	
Dichloroprop	ND	32	
2,4-D	ND	26	
Silvex (2,4,5-TP)	ND	41	
2,4,5-T	ND	33	
Dinoseb	ND	44	
2,4-DB	ND	36	

SOUND ANALYTICAL SERVICES, INC.

Client Name	ONSITE ENVIRONMENTAL INC.
Client ID:	-
Lab ID:	Method Blank - P6368
Date Received:	-
Date Extracted:	11/12/93
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
2,4,6-Tribromophenol	119		19	122

Sample results are on a dry weight basis.

Analyte	Result (ug/kg)	PQL	Flags
Dalapon	ND	50	
Dicamba	ND	16	
MCPP	ND	33	
MCPA	ND	37	
Dichloroprop	ND	26	
2,4-D	ND	21	
Silvex (2,4,5-TP)	ND	33	
2,4,5-T	ND	27	
Dinoseb	ND	36	
2,4-DB	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Name:	ONSITE ENVIRONMENTAL INC.
Client Sample ID:	KL-8
Lab ID:	36062s1
Date Analyzed:	11/16/93

Phenoxy Herbicides by USEPA SW-846 Method 8150

Compound Name	Sample Result (ug/kg)	Spike Amount (ug/kg)	MS Result (ug/kg)	MS % Rec.	MSD Result (ug/kg)	MSD % Rec.	RPD	Flag
Dalapon	0	1200	830	68	790	65	5.0	
Dicamba	0	1200	750	62	730	59	4.0	
MCPP	0	1200	890	73	910	75	2.0	
MCPA	0	1200	850	69	870	71	3.0	
Dichloroprop	0	1200	810	66	790	65	2.0	
2,4-D	0	1200	870	71	900	74	4.0	
Silvex (2,4,5-TP)	0	1200	900	73	970	80	8.0	
2,4,5-T	0	1200	520	43	1100	90	71.0	
Dinoseb	0	1200	630	51	690	57	10.0	
2,4-DB	0	1200	810	66	840	69	5.0	

OnSite Environmental Inc.
14924 NE 31st CIRCLE, REDMOND, WA 98052
PHONE (206) 883-3881 FAX (206) 885-4603

CHAIN OF CUSTODY RECORD

OSE TRAVELER #: 10-07

Project Manager: Karl Hornyik

Project #: KLC-0193

Project Name:

dash	Sample Number	Date Sampled	Type	# Jars	Analysis Required	Comments
	KL-8	10/27/93	S	1	8150 Herbicides	

Submitted:		date: 11/9/93	Received by:	date:	11-9-93
Firm: OnSite Environmental		time: 11:00	Firm: SAS	time:	11:00A
Submitted:		date: 11/9	Received by:	date:	11-9-93
Firm: SAS		time: 12:30P	Firm: SAS	time:	1230pm

COMPANY PDC

PROJECT # KLC-0183

PROJECT NAME KLICKITAT COUNTY SHOP

MANAGER M. BLACK

TRAVELER KH

P-D CONSULTANTS
P.O. BOX 2188
PASCO, WA 99302
(509) 545-0181

ONSITE ENVIRONMENTAL Inc.
2859 152nd Ave. N.E.
Redmond, WA 98052
(206) 883-3881

10-070

	SAMPLE #	MEDIA	DATE	TYPE	# JARS	ANALYSIS REQUIRED: WTPH-HCID	WTPH G/BTEX	WTPH-G	WTPH-D	WTPH-418.1	7421	8150 Herbicides	DRY WEIGHT	COMMENTS
-1	KL-5-1a,b	SOIL	10/27/93	4oz	2	X								
-2	KL-6-1a,b.	SOIL	"	"	2	X								
-3	KL-7	SOIL	"	"	1	X								
-4	KL-8	SOIL	"	"	"	X						X		Added by Mike Black 11/1/93 BLO
-5	KL-9	SOIL	"	"	"	X								
-6	KL-10	SOIL	"	"	"	X								
-7	KL-11	Soil	"	"	~~2~~ 1	X								

SUBMITTED Michael Black DATE 10/28 RECEIVED BY [signature] DATE 10/29/93

FIRM P-D CONSULTANTS TIME _____ FIRM On-Site Environmental TIME 11:40

COMPANY PDC

PROJECT # KLC-0193

PROJECT NAME KLICKITAT SHOPS

MANAGER BLACK

TRAVELER (KH) — RUSH ON ALL —

P-D CONSULTANTS
P.O. BOX 2188
PASCO, WA 99302
(509) 545-0181

ONSITE ENVIRONMENTAL Inc.
2859 152nd Ave. N.E.
Redmond, WA 98052
(206) 883-3881

10 [illegible] 51

*1 USE HCID IF NOT ENOUGH SAMPLE MTB

		SAMPLE #	MEDIA	DATE	TYPE	# JARS	ANALYSIS REQUIRED: WTPH-HCID	WTPH-G/BTEX	WTPH-G	WTPH-D	WTPH-418.1	7421	601 Solvents	DRY WEIGHT	COMMENTS
1	HOT	KLC-1-1a KLC & 1b	SOIL	10/21/93	4oz	2					X			X	ONE TEST
2	"	KLC-2-1	"	"	"	1			X	*1 X				X	
3	"	KLC-2-2	"	"	"	1					X			X	
4	?	KLC-2-3 a,b,c	WATER	"	40ml	3							X		
5	?	KLC-2-4	"	"	"	3		X							
6	HOT ?	KLC-3-1	SOIL	"	4oz	1									8240 ~~8080~~
7	HOT	KLC-3-2	SOIL	"	"	1									8270
8	?	KLC-3-3	"	"	"	1									(X)(1) PCB + 8080 INSECTICIDES
9	?	KLC-3-4	"	"	"	1									PRIORITY METALS
10	HOT	KLC-4-1a	"	"	"						X			X	
11	HOT	KLC-4-1b	"	"	"						X			X	

8150 Herbicides

SUBMITTED Michael Black DATE 10/21/93 RECEIVED BY [signature] DATE 10/22/93

FIRM PDC TIME 8:07 P FIRM OnSite Environmental TIME 8:00 AM

(1) Added by Mike Black 11/2/93 BO

OnSite Environmental Inc.

October 28, 1993
Lab Traveler #:10-051

Mike Black
P-D Consultants
P.O. Box 2188
Pasco, WA 99302

Dear Mike:

Enclosed are the results of the analyses of samples submitted on October 22, 1993 from Project KLC-0193. The results of the additional analysis will follow in a later report.

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

Sincerely,

Karl P. Hornyik
Project Chemist

Enclosures

14924 NE 31st Circle • Redmond, WA 98052 • (206) 883-3881 • Fax (206) 885-4603

Date of Report: October 28, 1993
Samples Submitted: October 22, 1993
Lab Traveler: 10-051
Project: KLC-0193

EPA 602 & WTPH-G

Date Extracted: 10-25-93
Date Analyzed: 10-25-93

Matrix: Water
Units: ug/L (ppb)

Sample Number	KLC-2-4	Method PQL
Dilution Factor	1	
Benzene	ND	1.00
Toluene	ND	1.00
Ethyl Benzene	ND	1.00
m,p-Xylene	ND	1.00
o-Xylene	2.9	1.00
TPH-Gas	490T	300
4-BFB Surrogate Recovery	102%	

Note: Sample PQL(practical quantitation limit)= Method PQL x dilution factor

T-The chromatogram is not similar to a typical gasoline chromatogram.

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EPA 602 & WTPH-G
QUALITY CONTROL

Date Extracted: 10-25-93
Date Analyzed: 10-25-93

Matrix: Water
Units: ug/L (ppb)

Sample Number:

	Blank	Original	Duplicate	RPD
Dilution Factor	1	1	1	
Benzene	ND	ND	ND	NA
Toluene	ND	ND	ND	NA
Ethyl Benzene	ND	ND	ND	NA
m,p-Xylene	ND	ND	ND	NA
o-Xylene	ND	ND	ND	NA
TPH-Gas	ND	ND	ND	NA
4-Bromofluorobenzene Surrogate Recovery	95%	101%	100%	

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EPA 602 & WTPH-G
QUALITY CONTROL

Date Extracted: **10-25-93**

Date Analyzed: **10-25-93**

Matrix: Water

Units: ug/L (ppb)

Sample Number: spiked @ 40 ppb Dilution Factor	MS 1	Percent Recovery	MSD 1	Percent Recovery	RPD
Benzene	**47.5**	**120%**	**49.0**	**120%**	3.0
Toluene	**47.0**	**120%**	**48.2**	**120%**	2.5
Ethyl Benzene	**46.9**	**120%**	**47.9**	**120%**	2.2
m,p-Xylene	**47.4**	**120%**	**48.2**	**120%**	1.5
o-Xylene	**47.0**	**120%**	**47.8**	**120%**	1.6
4-Bromofluorobenzene Surrogate Recovery	89%		90%		

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Matrix: Soil
Units: mg/Kg (ppm)
Date Extracted: October 22, 1993
Date Analyzed: October 22, 1993

WTPH-G

Sample Number	Dilution Factor	TPH	4-Bromoflourobenzene Surrogate Recovery
KLC-2-1	250	590	77%

QUALITY ASSURANCE

	Dilution Factor	TPH	4-Bromoflourobenzene Surrogate Recovery
Method Blank	50	<5.0	94%
Sample: 10-052-2	50	<5.0	93%
Duplicate	50	<5.0	96%
RPD		0%	

COMPANY PDC

PROJECT # KLC-0193

PROJECT NAME KLICKITAT SHOPS

MANAGER BLACK

TRAVELER (KH)

– RUSH ON ALL –

P-D CONSULTANTS
P.O. BOX 2188
PASCO, WA 99302
(509) 545-0181

ONSITE ENVIRONMENTAL Inc.
2859 152nd Ave. N.E.
Redmond, WA 98052
(206) 883-3881

1[illegible]-051

*1 USE HCID IF NOT ENOUGH SAMPLE MTB

		SAMPLE #	MEDIA	DATE	TYPE	# JARS	ANALYSIS REQUIRED: WTPH-HCID	WTPH G/BTEX	WTPH-G	WTPH-D	WTPH-418.1	7421	601 SOLVENTS	DRY WEIGHT	COMMENTS
1	HOT	KLC-1-1a ~~KLC~~ & 1b	SOIL	10/21/93	4oz	2					X			X	ONE TEST
2	"	KLC-2-~~2~~1	"	"	"	1			X	*1 X				X	
3	"	KLC-2-~~3~~2	"	"	"	1					X			X	
4	?	KLC-2-3 a,b,c	WATER	"	40ml	3							X		
5	?	KLC-2-4	"	"	"	3		X							
6	HOT ~~B~~	KLC-3-1	SOIL	"	4oz	1									8240 ~~8260~~
7	HOT	KLC-3-2	SOIL	"	"	1									8270
8	?	KLC-3-3	"	"	"	1									PCB+ 8080 INSECTICIDES
9	?	KLC-3-4	"	"	"	1									PRIORITY METALS
10	Hot	KLC-4-1a	"	"	"						X			X	
11	HOT	KLC-4-1b	"	"	"						X			X	

SUBMITTED Michael Black DATE 10/21/93 RECEIVED BY [signature] DATE 10/22/93

FIRM PDC TIME 8:07 P FIRM OnSite Environmental TIME 8:00 AM

OnSite Environmental Inc.

14924 NE 31st CIRCLE, REDMOND, WA 98052
PHONE (206) 883-3881 FAX (206) 885-4603

CHAIN OF CUSTODY RECORD

OSE TRAVELER #: 10-[illegible]1

Project Manager: Karl Hornyik

Project #: KLC-0193

Project Name:

dash	Sample Number	Date Sampled	Type	# Jars	Analysis Required	Comments
	KLC-2-3a,b,c	10/21/93	W	3	601 Solvents	* Rush *
	KLC-3-1		S	1	8240	
	KLC-3-2				8270	
	KLC-3-3				8080 PCBs + Pesticides	
	KLC-3-4				Priority Pollutant Metals	

Submitted: [signature]	date: 10/22/93	Received by: [signature]	date:	10-22-93
Firm: OnSite Environmental	time: 10:20	Firm: SAS	time:	10:20 AM
Submitted: [signature]	date: 10/22/93	Received by: Mary Custer	date:	10/22/93
Firm: SAS	time: 11:50 A	Firm: SAS	time:	11:50

SAMPLING PROTOCOLS

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SAMPLING PROTOCOLS

In general, soil sample collection and control followed the protocol discussed below:

1. Select a laboratory certified clean sample jar for sample collection.

2. Using clean latex gloves and cleaned sample shovels (Alconex-sodium phosphate, tap water rinse, and distilled water rinse wash cycle) tightly pack the soil in the sample jar (4 oz) to the top of the jar to prevent any air space.

3. Label the jar with the soil sample number, the type of laboratory test that is required, the date, and the site name. Enter the sample on the chain of custody form.

4. Cool the sample in wet ice to 4 approximately degrees centigrade.

5. Repack the samples for shipment to the laboratory in blue ice and a cooler.

6. Prepare the chain-of-custody form for shipping.

We determine our TOV values by using "headspace" measurements that allow the soil contamination to evaporate inside a sealed jar. We puncture the seal (aluminum foil) with a vapor probe and measure the TOV in parts per million (ppm). Any TOV value exceeding 20 ppm indicates cleanup or further testing is required. Unlike the TLC method, TOV values provide a crude correlation to actual values in the soil.

Sampling Techniques

The following steps provide an overview of the water sampling methods used for this project:

1. After cleaning the sampling equipment in a soap solution, alcohol rinse, and distilled water rinse, bail the well until the conductivity measurements stabilize.

2. Collect water samples in the bailer, and transfer the water to the laboratory certified, clean sample bottles. Check each sample to confirm the absence of voids by turning the bottle on its side and looking for bubbles. The presence of bubbles indicates an invalid

sample.

9. Cool the samples to approximately 4 degrees Centigrade in wet ice to prepare them for transportation. Transfer the samples to a cooler with blue ice for transport to the laboratory.

10. Decontaminate the sampling equipment.

11. Prepare the chain-of-custody documentation and shipping manifests for transport to the analytical laboratory.