CENPA-EN-G-MI (200-1c) 26 Feb 93

MEMORANDUM FOR CENPA-EN-EE-TE

SUBJECT: Summary of Fieldwork and Chemical Data Report from November 1992 Sampling Effort, POL Lab Tank, Ft. Richardson, AK.

1. References:

a. Memorandum, CENPA-EN-G-MI, dated 22 Dec 92, subject: Trip Report, POL Lab Tank, Ft. Richardson, Alaska.

b. CC:Mail, CENPA-EN-EE-TE, dated 23 November 1992, SUBJECT: POL LAB TANK.

c. Verbal Request, CENPA-EN-EE-AI dated 23 Nov 92, Johnston/Thomas. subject: Sample Dry Well.

d. Chemical Data Report, ARDL Inc., Mt. Vernon, IL dated: 15 Dec 92 (Report 9305). subject: Ft. Richardson POL Lab Tank.

e. Chemical Data Report, Columbia Analytical Services, Kelso WA., dated: 4 Jan 93, (K927563A) subject: Ft. Richardson POL Lab Tank.

f. Chemical Data Report, North Pacific Division Laboratory, Troutdale, OR, dated: 18 Dec 92, (W.O. 93-HM-472), subject: Ft. Richardson POL Lab Tank.

2. OBJECTIVE: The objective was to sample the water and the sludge in the POL laboratory dry well and to determine concentration and type of contamination present.

3. This memorandum includes 4 enclosures as tabulated below:

a. Enclosure 1 - Chemical Results, in summary tables

b. Enclosure 2 - Project Vicinity Map

c. Enclosure 3 - POL Lab Tank Location Map

d. Enclosure 4 - Quality Assurance Report (QAR)

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4. SUMMARY OF FIELD WORK:

a. CENPA-EN-G was requested by CENPA-EN-EE-AI (reference c) to sample POL Lab dry well located on Ft. Richardson, AK. CENPA-EN-G-MI selected the quantity and type a tests to be performed.

Thomas Reed, chemical engineer CENPA-EN-G-MI, sampled the dry well 30 November 1992. The water in the well was sampled using a decontaminated one liter teflon bailer. The sludge was sampled using a decontaminated clam shell sampler (Petersen dredge). The water had a putrid petroleum odor, was black/grey in color and had chunks of suspended and floating debris in it. The sludge appeared to be 6 to 8 inches deep and was mixed with wood and cobbles. The color of the sludge ranged from grey to black to brown. It had a decaying, petroleum and hydrogen sulfide odor.

5. SUMMARY OF FINDINGS: The water and sludge are highly contaminated with petroleum, oil and lubricants (POLs) and with arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The sludge is approximately 80% water and fluid. An approximately 18" deep water layer covered a layer of sludge 6 to 8 inches deep. It would be extremely difficult to attempt to remove the water and sludge separately.

6. CHEMICAL RESULTS: The data are reported in Enclosure I, Tables I through V. The data and the associated quality control (QC) and quality assurance (QA) materials have been evaluated by chemists at North Pacific Division Laboratory (CENPD-PE-GT-L). The laboratories had great difficulty analyzing the water because of the matrix interference of the suspended sludge particles. The Quality Assurance Report (enclosure 4) states that about one half of the internal quality control of the laboratories did not meet the EPA QC requirements because of the interference of the sample matrix. The liquid sludge and the water came from the same dry well and the interface between the two was not well defined; and therefore it would be expected to find similar levels and types of contamination in the two matrices. Overall the data for the water can be accepted based on the cross comparison of test methods and sample matrixes. The data for the sludge are acceptable.

All the laboratory reports of chemical test results are filed at CENPA-EN-G-MI along with the all field logs, chain of custody forms and site photographs. A summary of findings by test method is as follows:

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a. Volatile Organic Compounds. (Method 8260). Table I

The following was detected for water:

Analyte	Max Concentration ug/L (ppb)
Chloroform	2.3
Toluene	1.6
Ethylbenzene	5.6
Isopropylbenzene	1.8
n-Propylbenzene	1.8
1,3,5-Trimethylbenzene	10.0
1,2,4-Trimethylbenzene	47.0
4-Isopropyltoluene	63.0
1,4-Dichlorobenzene	1.0
1,2-Dichlorobenzene	3.5
Naphthalene	8.1
m & P-Xylene	19.0
o-Xylene	13.0
Total Xylenes	11.0
* TICs:	10.0
Cum. Est. of TICs:	63.0

* TICs = Tenatively Identified Compounds

All of the above concentrations are below the Maximum Contamination Levels (MCL) for drinking water. The listed TICs are components of petroleum, oil and lubricants (POLs). From the odor and visible suspended particles in the water it was apparent that water was contaminated. The gross contamination present in the sample caused matrix interference which resulted in data discrepancies. The project and QC samples did not agree with each other, but the QC and QA samples agreed. The QA laboratory results were out of the acceptable internal QC limits due to matrix interference. Overall the data should be accepted because, all the analytes detected were common components of POLs (except chloroform; which is a common laboratory solvent), almost an identical list of detected analytes were found in the liquid sludge for the same method, and presence of fuel and heavy oils were confirmed with Method 8015 (modified) analysis.

The following was detected for liquid sludge:

Analyte	Max Concentration ug/Kg (ppb)
Toluene	180,000
4-Methyl-2-pentanone(MIBK)	19,000
Ethylbenzene	180,000
Isopropylbenzene	18,000
n-Propylbenzene	28,000
1,3,5-Trimethylbenzene	42,000
1,2,4-Trimethylbenzene	490,000

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sec-Butylbenzene	90,000
4-Isopropyltoluene	360,000
n-Butylbenzene	150,000
Naphthalene	220,000
Hexachlorobutadiene	52,000
m & P-Xylene	840,000
o-Xylene	320,000
Total Xylenes	100,000
TICs:	10
Cum. Est. of TICs:	319,100

The listed TICs are components of POLs. Overall the data were acceptable.

b. Semivolatile Organic Compounds. (Method 8270). Table II.

The following was detected for water:

Analyte	Max Concentration ug/L (ppb)
Naphthalene	120.4
2- Methylnaphthalene	660.0
Di-n-octyl Phthalate	370.0
TICs:	20.0
Cum. Est.	64,600.0

None of the above analytes have MCL limits. Di-n-butylphthalate was detected up to 23.7 ug/L but was due to laboratory contamination and should be ignored. The listed TICs are components of POLs. The QA laboratory had difficulty in analyzing the QA sample, the data is acceptable based on the project lab blind duplicate agreement.

The following was detected for liquid sludge:

Analyte	Max Concentration ug/Kg (ppb)
1, 2-Dichlorobenzene	34.1
Naphthalene	290.0
2- Methylnaphthalene	720.0
Phenanthrene	28.7
Butylbenzyl Phthalate	7.6
Di-n-octyl Phthalate	16.9
TICs:	20.0
Cum. Est. TICs	48,300.0

The listed TICs are components of POLs. All of the project data were reported as estimates, but the data is comparable to the QA data and is acceptable.

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c. Fuel Identification. (Method 8015 modified NPD Lab). Table III.

The following was detected for water:

Analyte	Max Concentration mg/L (ppm)
Jet Fuel/Diesel #2	120,000
Heavy Fuel	380,000
Other (30 weight motor oil)	76,000

From the odor and visible suspended particles the water it was apparent that water was contaminated. The QA laboratory quantified jet fuel as diesel #2. Overall the data are acceptable based on agreement of QC and QA sample for jet fuel/diesel #2, and agreement of the project and QC sample for heavy oil.

The following was detected for liquid sludge:

Analyte	Max Concentration mg/Kg (ppm)
Jet Fuel	120,000
Diesel Fuel (# 2.)	19,000
Heavy Fuel	73,000
Other (30 weight motor oil)	5170

Overall the data is acceptable based on the comparison of the project and QC data.

d. Chlorinated Pesticides and Polychlorinated Biphenyls (PCBs) (Method 8080). Table VI.

For the water, 0.79 ug/L beta-BHC was reported for sample 92FRPOL02WA. According to the Quality Assurance Report (reference d), this analyte was due to laboratory artifacts and should be ignored. No other analytes were detected in the water or the sludge. All the other data are acceptable.

e. 8 RCRA Metals . (Total Concentration). Table V.

The following was detected for water:

Analyte	Max Concentration mg/L (ppm)	MCLs mg/L (ppm)
Arsenic	0.027	0.05
Barium	18.2	2.0
Cadmium	0.070	0.005
Chromium	4.2	0.1
Lead	17.1	0.005
Mercury	0.938	0.002
Silver	0.68	0.09

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For the water, the concentration for seven of the eight metals exceeded the MCLs for drinking water and is likely a RCRA waste. The results for silver are questionable because of unacceptable internal QC data. All the other data are acceptable.

The following was detected for liquid sludge:

Analyte	Max Concentration mg/Kg (ppm)
Arsenic	3.4
Barium	6920
Cadmium	6.6
Chromium	4590
Lead	9220
Mercury	317
Selenium	4.2
Silver	1510

There are no regulatory levels for total metals, but with this level of contamination the liquid sludge would be expected to be above the regulatory levels using an Toxicity Characteristic Leachate Procedure (TCLP) test and is likely a RCRA waste. All the data are acceptable.

7. Questions should be addressed to Thomas Reed, x-1302.

encl

DELWYN F. THOMAS
Chief, Geotechnical Branch

ENCLOSURE 1

Table I
FT. Richardson Pol Lab Tank
November 1992
Method 8260

LOCATION:	DRY WELL	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL–	01WA	01WARE	02WA	03WA	04WA
TESTING LABORATORY:	ARDL	ARDL	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305–1	9305–1RE	9305–2	9305–3	K7563–1
DATE RECEIVED:	12/04/92	12/04/92	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/06/92	12/06/92	12/06/92	12/06/92	12/04/92
CONCENTRATION UNITS:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Dichlorodifluoromethane (freon 12)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.5)
Chloromethane	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.5)
Vinyl Chloride	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.5)
Bromomethane	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.5)
Chloroethane	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
Trichlorofluoromethane (freon 11)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)
Acetone	NR	NR	NR	NR	ND (2)
1,1–Dichloroethene	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
Carbon Disulfide	NR	NR	NR	NR	ND (0.5)
Methylene Chloride	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	A 5
trans–1,2–Dichloroethene	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
1,1–Dichloroethane	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.5)
2–Butanone(MEK)	NR	NR	NR	NR	ND (2)
2,2–Dichloropropane	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.5)
cis–1,2–Dichloroethene	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.5)
Chloroform	ND (1.5)	ND (1.5)	2.3	1.8	1.6
Bromochloromethane	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.5)
1,1,1–Trichloroethane(TCA)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
1,1–Dichloropropene	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
Carbon Tetrachloride	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
1,2–Dichloroethane	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
Benzene	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
Trichloroethene (TCE)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
1,2–Dichloropropane	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
Bromodichloromethane	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
Dibromomethane	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
2–Hexanone	NR	NR	NR	NR	ND (2)
cis–1,3–Dichloropropene	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (0.5)
Toluene	ND (0.6)	ND (0.6)	ND (0.6)	ND (0.6)	1.6
trans–1,3–Dichloropropene	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.5)
1,1,2–Trichloroethane	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
4–Methyl–2–pentanone(MIBK)	NR	NR	NR	NR	ND (2)
1,3–Dichloropropane	ND (0.8)	ND (0.3)	ND (0.8)	ND (0.8)	ND (0.5)
Tetrachloroethene(PCE)	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.5)
Dibromochloromethane	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
1,2–Dibromoethane (EDB)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (2)
Chlorobenzene	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
1,1,1,2–Tetrachloroethane	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.7)	ND (0.5)
Ethylbenzene	13	5.6	ND (0.8)	1.9	1.8
Styrene	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)

Table I
FT. Richardson Pol Lab Tank
November 1992
Method 8260

LOCATION:	DRY WELL	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL-	01WA	01WARE	02WA	03WA	04WA
TESTING LABORATORY:	ARDL	ARDL	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305-1	9305-1RE	9305-2	9305-3	K7563-1
DATE RECEIVED:	12/04/92	12/04/92	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/06/92	12/06/92	12/06/92	12/06/92	12/04/92
CONCENTRATION UNITS:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Bromoform	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
Isopropylbenzene	ND (0.9)	ND (0.9)	ND (0.9)	1.8	ND (2)
1,1,2,2-Tetrachloroethane	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)
1,2,3-Trichloropropane	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)
Bromobenzene	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.8)	ND (0.5)
n-Propylbenzene	ND (1.1)	ND (1.1)	ND (1.1)	1.8	ND (2)
2-Chlorotoluene	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.9)	ND (2)
4-Chlorotoluene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2)
1,3,5-Trimethylbenzene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	10
tert-Butylbenzene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2)
1,2,4-Trimethylbenzene	47.0	16.0	ND (1.0)	6.8	17
sec-Butylbenzene	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (2)
1,3-Dichlorobenzene	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.9)	ND (0.5)
4-Isopropyltoluene	63.0	30.0	ND (1.1)	14.0	3
1,4-Dichlorobenzene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	1.0
n-Butylbenzene	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (2)
1,2-Dichlorobenzene	ND (1.0)	ND (1.0)	ND (1.0)	2.6	3.5
1,2-Dibromo-3-chloropropane(DBCP)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2)
1,2,4-Trichlorobenzene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2)
1,2,3-Trichlorobenzene	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2)
Naphthalene	8.1	2.9	ND (1.2)	ND (1.2)	3
Hexachlorobutadiene	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (2)
m & P-Xylene	19.0	10.0	ND (1.7)	6.2	NR
o-Xylene	ND (0.9)	13.0	ND (0.9)	7.1	NR
Total Xylenes	NR	NR	NR	NR	11
TICs:	10		10	10	NR
Cum. Est. of TICs:	7.4		63.0	8.4	NR

NOTE: TICs: are tentatively identified compounds: the number of TICs and the total amount are listed. CAS: Columbia Analytical Services, Inc. Kelso, WA. ARDL: ARDL Mt. Vernon, Il. NPD: NPD Troutdale, Or. A: MRLs are elevated because the sample required diluting. B: Analyte concentration is an estimate because the result was above the instrument calibration range. And insufficient sample quanity remained for additional analysis. C: Result is from the ananlysis of a diluted sample, performed on December 8, 1992. ND: not detected. NR: not reported. The value in parenthesis is the Method eporting Limit.

Table I
FT. Richardson Pol Lab Tank
November 1992
Method 8260

		QC Dup	QA Dup
LOCATION:	DRY WELL	DRY WELL	DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL-	05SL	06SL	07SL
TESTING LABORATORY:	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305-4	9305-5	K7563-2
DATE RECEIVED:	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/14/92	12/14/92	12/07/92
CONCENTRATION UNITS:	ug/kg (ppb)	ug/kg (ppb)	ug/kg (ppb)
Dichlrorodifluoromethane (freon 12)	ND (35,000)	ND (27,000)	ND (2,500)
Chloromethane	ND (35,000)	ND (27,000)	ND (2,500)
Vinyl Chloride	ND (35,000)	ND (27,000)	ND (2,500)
Bromomethane	ND (35,000)	ND (27,000)	ND (2,500)
Chloroethane	ND (35,000)	ND (27,000)	ND (2,500)
Trichlorofluoromethane (freon 11)	ND (35,000)	ND (27,000)	ND (2,500)
Acetone	NR	NR	ND (25,000)
1,1-Dichloroethene	ND (35,000)	ND (27,000)	ND (2,500)
Carbon Disulfide	NR	NR	ND (2,500)
Methylene Chloride	ND (35,000)	ND (27,000)	ND (2,500)
trans-1,2-Dichloroethene	ND (35,000)	ND (27,000)	ND (2,500)
1,1-Dichloroethane	NR	NR	ND (2,500)
2-Butanone(MEK)	ND (35,000)	ND (27,000)	ND (2,500)
2,2-Dichloropropane	ND (35,000)	ND (27,000)	ND (2,500)
cis-1,2-Dichloroethene	ND (35,000)	ND (27,000)	ND (2,500)
Chloroform	ND (35,000)	ND (27,000)	ND (2,500)
Bromochloromethane	ND (35,000)	ND (27,000)	ND (2,500)
1,1,1-Trichloroethane(TCA)	ND (35,000)	ND (27,000)	ND (2,500)
1,1-Dichloropropene	ND (35,000)	ND (27,000)	ND (2,500)
Carbon Tetrachloride	ND (35,000)	ND (27,000)	ND (2,500)
1,2-Dichloroethane	ND (35,000)	ND (27,000)	ND (2,500)
Benzene	ND (35,000)	ND (27,000)	ND (2,500)
Trichloroethene (TCE)	ND (35,000)	ND (27,000)	ND (2,500)
1,2-Dichloropropane	ND (35,000)	ND (27,000)	ND (2,500)
Bromodichloromethane	ND (35,000)	ND (27,000)	ND (2,500)
Dibromomethane	ND (35,000)	ND (27,000)	ND (2,500)
2-Hexanone	NR	NR	ND (2,500)
cis-1,3-Dichloropropene	ND (35,000)	ND (27,000)	ND (2,500)
Toluene	73,000	180,000	b 25,000
trans-1,3-Dichloropropene	ND (35,000)	ND (27,000)	ND (2,500)
1,1,2-Trichloroethane	ND (35,000)	ND (27,000)	ND (2,500)
4-Methyl-2-pentanone(MIBK)	NR	NR	19,000
1,3-Dichloropropane	ND (35,000)	ND (27,000)	ND (2,500)
Tetrachloroethene(PCE)	ND (35,000)	ND (27,000)	ND (2,500)
Dibromochloromethane	ND (35,000)	ND (27,000)	ND (2,500)
1,2-Dibromoethane (EDB)	ND (35,000)	ND (27,000)	ND (10,000)
Chlorobenzene	ND (35,000)	ND (27,000)	ND (2,500)
,1,1,2-Tetrachloroethane	ND (35,000)	ND (27,000)	ND (2,500)
Ethylbenzene	ND (7,800)	180,000	c 29,000
Styrene	ND (35,000)	ND (27,000)	ND (2,500)

Table I
T. Richardson Pol Lab Tank
November 1992
Method 8260

		QC Dup	QA Dup
LOCATION:	DRY WELL	DRY WELL	DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL-	05SL	06SL	07SL
TESTING LABORATORY:	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305-4	9305-5	K7563-2
DATE RECEIVED:	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/14/92	12/14/92	12/07/92
CONCENTRATION UNITS:	ug/kg (ppb)	ug/kg (ppb)	ug/kg (ppb)
Bromoform	ND (35,000)	ND (27,000)	ND (2,500)
Isopropylbenzene	ND (35,000)	ND (27,000)	18,000
1,1,2,2-Tetrachloroethane	ND (35,000)	ND (27,000)	ND (2,500)
1,2,3-Trichloropropane	ND (35,000)	ND (27,000)	ND (2,500)
Bromobenzene	ND (35,000)	ND (27,000)	ND (2,500)
n-Propylbenzene	ND (35,000)	ND (27,000)	c 28,000
2-Chlorotoluene	ND (35,000)	ND (27,000)	ND (10,000)
4-Chlorotoluene	ND (35,000)	ND (27,000)	ND (10,000)
1,3,5-Trimethylbenzene	ND (35,000)	ND (27,000)	c 42,000
tert-Butylbenzene	ND (35,000)	ND (27,000)	ND (10,000)
1,2,4-Trimethylbenzene	490,000	260,000	c 130,000
sec-Butylbenzene	ND (35,000)	90,000	13,000
1,3-Dichlorobenzene	ND (35,000)	ND (27,000)	ND (2,500)
4-Isopropyltoluene	360,000	300,000	20,000
1,4-Dichlorobenzene	ND (35,000)	ND (27,000)	ND (2,500)
n-Butylbenzene	71,000	150,000	18,000
1,2-Dichlorobenzene	ND (35,000)	ND (27,000)	4,400
1,2-Dibromo-3-chloropropane(DBCP)	ND (35,000)	ND (27,000)	ND (10,000)
1,2,4-Trichlorobenzene	ND (35,000)	ND (27,000)	ND (10,000)
1,2,3-Trichlorobenzene	ND (35,000)	ND (27,000)	ND (10,000)
Naphthalene	170,000	220,000	ND (10,000)
Hexachlorobutadiene	ND (3,500)	ND (27,000)	b 52,000
m & P-Xylene	350,000	840,000	NR
o-Xylene	130,000	320,000	NR
Total Xylenes	NR	NR	c 100,000
TICs:	10	10	NR
Cum. Est. of TICs:	273,000	319,100	NR

NOTE: TICs: are tentatively identified compounds; the number of TICs and the total amount are listed. CAS: Columbia Analytical Services, Inc. Kelso, WA. ARDL: ARDL Mt. Vernon, IL. NPD: NPD Troutdale, Or. A: MRLs are elevated because the sample required diluting. B: Analyte concentration is an estimate because the result was above the Insturment calibration range, And insufficient sample quanity remained for additional analysis. C: Result is from the ananlysis of a diluted sample, performed on December 8, 1992. ND: not detected. NR: not reported. The value in parenthesis is the Method Reporting Limit.

Table II FT. Richardson Pol Lab Tank November 1992 Semi–Volatile Organic Compounds. SW 846 Method 8270

LOCATION:	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL–	01WA	02WA	03WA	04WA
TESTING LABORATORY:	NPD	NPD	NPD	CAS
LABORATORY SAMPLE #:	1999	2000	2001	K7563–1
DATE RECEIVED:	12/03/92	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/16/92	12/16/92	12/16/92	12/16/92
CONCENTRATION UNITS:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
N–Nitrosodimethylamine	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Aniline	ND (400.0)	ND (40.0)	ND (40.0)	ND (1,100)
Bis (2–chloroethyl) Ether	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
1, 2–Dichlorobenzene	65.3 J	ND (10.0)	ND (10.0)	ND (270)
1, 3–Dichlorobenzene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
1, 4–Dichlorobenzene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Bis (2–chloroisopropyl) Ether	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
N–Nitrosodi–n–propylamine	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Hexachloroethane	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Nitrobenzene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Isophorone	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Bis (2–chloroethoxy) methane	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
1,2,4–Trichlorobenzene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Naphthalene	120.4	ND (10.0)	ND (10.0)	ND (270)
4– Chloroaniline	ND (200.0)	ND (20.0)	ND (20.0)	ND (270)
Hexachlorobutadiene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2– Methylnaphthalene	521.0	ND (10.0)	14.1	660
Hexachlorocyclopentadiene	ND (100.0)	ND (10.0)	ND (10.0)	ND (540)
2–Chloronaphthalene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2–Nitroaniline	ND (500.0)	ND (50.0)	ND (50.0)	ND (1,100)
Dimethyl Phthalate	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Acenaphthylene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
3–Nitroaniline	ND (500.0)	ND (50.0)	ND (50.0)	ND (1,100)
Acenaphthene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Dibenzofuran	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2,4–Dinitrotoluene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2,6–Dinitrotoluene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Diethyl Phthalate	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
4–Chlorophenyl Phenyl Ether	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Fluorene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
4–Nitroaniline	ND (200.0)	ND (20.0)	ND (20.0)	ND (1,100)
N–Nitrosodiphenylamine	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
4–Bromophenyl Phenyl Ether	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Hexachlorobenzene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Phenanthrene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Anthracene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Di–n–butyl phthalate	41.6 J,B	18.4 B	23.5 B	ND (270)

Table II FT. Richardson Pol Lab Tank November 1992 Semi–Volatile Organic Compounds. SW 846 Method 8270

LOCATION:	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL–	01WA	02WA	03WA	04WA
TESTING LABORATORY:	NPD	NPD	NPD	CAS
LABORATORY SAMPLE #:	1999	2000	2001	K7563–1
DATE RECEIVED:	12/03/92	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/16/92	12/16/92	12/16/92	12/16/92
CONCENTRATION UNITS:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Fluoranthene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Pyrene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Butylbenzyl Phthalate	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
3, 3'–Dichlorobenzidine	ND (300.0)	ND (30.0)	ND (30.0)	ND (1,100)
Benz (a) anthracene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Bis (2–ethylhexyl) Phthalate	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Chrysene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Di–n–octyl Phthalate	108.0	44.0	53.4	370
Benzo (b) fluoranthene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Benzo (k) fluoranthene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Benzo (a) pyrene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Indeno (1,2,3,–c,d)pyrene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Dibenz (a,h) anthracene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Benzo (g,h,i)perylene	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Phenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2–Chlorophenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Benzo Alcohol	ND (200.0)	ND (20.0)	ND (20.0)	ND (270)
2–Methylphenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
3–and 4–Methylphenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2–Nitrophenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2,4–Dimethylphenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
Benzoic Acid	ND (500.0)	ND (50.0)	ND (50.0)	ND (2,700)
2,4–Dichlorophenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
4–Chloro–3–methylphenol	ND (200.0)	ND (20.0)	ND (20.0)	ND (270)
2, 4, 6–Trichlorophenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2, 4, 5–Trichlorophenol	ND (100.0)	ND (10.0)	ND (10.0)	ND (270)
2, 4–Dinitrophenol	ND (500.0)	ND (50.0)	ND (50.0)	ND (2,700)
4–Nitrophenol	ND (500.0)	ND (50.0)	ND (50.0)	ND (2,700)
2–Methyl–4, 6–dinitrophenol	ND (500.0)	ND (50.0)	ND (50.0)	ND (1,100)
Pentachlorophenol	ND (500.0)	ND (50.0)	ND (50.0)	ND (1,600)
TICs:	16	13	19	20
Cum. Est.	25,752.00	1,742.70	2,697.40	64,600

NOTE: TICs are tentatively identified compounds: the number of tics and the total amount are listed. CAS: Columbia Analytical Services, Inc. Kelso, WA. NPD: NPD Troutdale, Or. ARDL: ARDL Mt. Vernon. II, J: Quantified below detection Limit. B: Present in Method Blank. ND: not detected. NR: not reported. The value in parenthesis is the Method Reporting Limit.

Table II FT. Richardson Pol Lab Tank November 1992 Semi–Volatile Organic Compounds. SW 846 Method 8270

LOCATION:	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL–	05SL	06SL	07SL
TESTING LABORATORY:	NPD	NPD	CAS
LABORATORY SAMPLE #:	2002	2003	K7563–2
DATE RECEIVED:	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/08/92	12/08/92	12/16/92
CONCENTRATION UNITS:	mg/kg	mg/kg	mg/kg
N–Nitrosodimethylamine	ND (10.0)	ND (16.0)	ND (140)
Aniline	ND (10.0)	ND (16.0)	ND (140)
Bis (2–chloroethyl) Ether	ND (10.0)	ND (16.0)	ND (140)
1, 2–Dichlorobenzene	ND (5.0)	34.1	ND (140)
1, 3–Dichlorobenzene	ND (5.0)	ND (8.0)	ND (140)
1, 4–Dichlorobenzene	ND (5.0)	ND (8.0)	ND (140)
Bis (2–chloroisopropyl) Ether	ND (10.0)	ND (16.0)	ND (140)
N–Nitrosodi–n–propylamine	ND (10.0)	ND (16.0)	ND (140)
Hexachloroethane	ND (10.0)	ND (16.0)	ND (140)
Nitrobenzene	ND (10.0)	ND (16.0)	ND (140)
Isophorone	ND (10.0)	ND (16.0)	ND (140)
Bis (2–chloroethoxy) methane	ND (10.0)	ND (16.0)	ND (140)
1,2,4–Trichlorobenzene	ND (5.0)	ND (8.0)	ND (140)
Naphthalene	ND (5.0)	247.2	290
4– Chloroaniline	ND (10.0)	ND (16.0)	ND (140)
Hexachlorobutadiene	ND (10.0)	ND (16.0)	ND (140)
2– Methylnaphthalene	ND (5.0)	670.0	720
Hexachlorocyclopentadiene	ND (10.0)	ND (16.0)	ND (140)
2–Chloronaphthalene	ND (5.0)	ND (8.0)	ND (140)
2–Nitroaniline	ND (30.0)	ND (48.0)	ND (840)
Dimethyl Phthalate	ND (5.0)	ND (8.0)	ND (140)
Acenaphthylene	ND (5.0)	ND (8.0)	ND (140)
3–Nitroaniline	ND (30.0)	ND (48.0)	ND (840)
Acenaphthene	ND (5.0)	ND (8.0)	ND (140)
Dibenzofuran	ND (10.0)	ND (16.0)	ND (140)
2,4–Dinitrotoluene	ND (10.0)	ND (16.0)	ND (140)
2,6–Dinitrotoluene	ND (10.0)	ND (16.0)	ND (140)
Diethyl Phthalate	ND (5.0)	ND (8.0)	ND (140)
4–Chlorophenyl Phenyl Ether	ND (10.0)	ND (16.0)	ND (140)
Fluorene	ND (5.0)	ND (8.0)	ND (140)
4–Nitroaniline	ND (30.0)	ND (48.0)	ND (840)
N–Nitrosodiphenylamine	ND (10.0)	ND (16.0)	ND (140)
4–Bromophenyl Phenyl Ether	ND (10.0)	ND (16.0)	ND (140)
Hexachlorobenzene	ND (5.0)	ND (8.0)	ND (140)
Phenanthrene	28.7	ND (8.0)	ND (140)
Anthracene	ND (5.0)	ND (8.0)	ND (140)
Di–n–butyl phthalate	121.9 B	102.5 B	ND (140)

Table II FT. Richardson Pol Lab Tank November 1992 Semi–Volatile Organic Compounds. SW 846 Method 8270

LOCATION:	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL–	05SL	06SL	07SL
TESTING LABORATORY:	NPD	NPD	CAS
LABORATORY SAMPLE #:	2002	2003	K7563–2
DATE RECEIVED:	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/08/92	12/08/92	12/16/92
CONCENTRATION UNITS:	mg/kg	mg/kg	mg/kg
Fluoranthene	ND (5.0)	ND (8.0)	ND (140)
Pyrene	ND (5.0)	ND (8.0)	ND (140)
Butylbenzyl Phthalate	7.6	ND (8.0)	ND (140)
3, 3'–Dichlorobenzidine	ND (30.0)	ND (48.0)	ND (140)
Benz (a) anthracene	ND (5.0)	ND (8.0)	ND (140)
Bis (2–ethylhexyl) Phthalate	794.0	ND (8.0)	b 1,440
Chrysene	ND (5.0)	ND (8.0)	ND (140)
Di–n–octyl Phthalate	16.9	ND (8.0)	ND (140)
Benzo (b) fluoranthene	ND (5.0)	ND (8.0)	ND (140)
Benzo (k) fluoranthene	ND (5.0)	ND (8.0)	ND (140)
Benzo (a) pyrene	ND (5.0)	ND (8.0)	ND (140)
ndeno (1,2,3,–c,d)pyrene	ND (5.0)	ND (8.0)	ND (140)
Dibenz (a,h) anthracene	ND (5.0)	ND (8.0)	ND (140)
Benzo (g,h,i)perylene	ND (5.0)	ND (8.0)	ND (140)
Phenol	ND (10.0)	ND (16.0)	ND (140)
2–Chlorophenol	ND (10.0)	ND (16.0)	ND (140)
Benzo Alcohol	ND (10.0)	ND (16.0)	ND (140)
2–Methylphenol	ND (10.0)	ND (16.0)	ND (140)
3–and 4–Methylphenol	ND (10.0)	ND (16.0)	ND (140)
2–Nitrophenol	ND (10.0)	ND (16.0)	ND (140)
2,4–Dimethylphenol	ND (10.0)	ND (16.0)	ND (140)
Benzoic Acid	ND (30.0)	ND (48.0)	ND (840)
2,4–Dichlorophenol	ND (10.0)	ND (16.0)	ND (140)
4–Chloro–3–methylphenol	ND (10.0)	ND (16.0)	ND (140)
2, 4, 6–Trichlorophenol	ND (10.0)	ND (16.0)	ND (140)
2, 4, 5–Trichlorophenol	ND (10.0)	ND (16.0)	ND (140)
2, 4–Dinitrophenol	ND (30.0)	ND (48.0)	ND (840)
4–Nitrophenol	ND (30.0)	ND (48.0)	ND (840)
2–Methyl–4, 6–dinitrophenol	ND (30.0)	ND (48.0)	ND (840)
Pentachlorophenol	ND (30.0)	ND (48.0)	ND (840)
TICs:	10	NR	20
Cum. Est.	3023.3	NR	48,300

NOTE: TICs are tentatively identified compounds: the number of tics and the total amount are listed. CAS: Columbia Analytical Services, Inc. Kelso, WA. NPD: NPD Troutdale, Or. ARDL: ARDL Mt. Vernon. ll. J: Quantified below detection Limit. B: Present in lethod Blank. ND: not detected. NR: not reported. The value in parenthesis is the Method Reporting Limit.

Table III
FT. Richardson Pol Lab Tank
November 1992
Method 8015 Modified

LOCATION:	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL-	01WA	02WA	03WA	04WA
TESTING LABORATORY:	NPD	NPD	NPD	CAS
LABORATORY SAMPLE #:	1999	2000	2001	K7563-1
DATE RECEIVED:	12/03/92	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/07/92	12/07/92	12/08/92	12/09/92
CONCENTRATION UNITS:	mg/L (ppm)	mg/L (ppm)	mg/L (ppm)	mg/L (ppm)
Gasoline	ND (500)	ND (500)	ND (50.0)	ND (a 500)
Mineral Spirits	NR	NR	NR	ND (a 500)
Jet Fuel	31,000	36,000	120,000	ND (a 500)
Kerosene	ND (500)	ND (500)	ND (50.0)	ND (a 500)
Diesel Fuel (# 2.)	ND (500)	ND (500)	ND (50.0)	b 110,000
Bunker Oil (Diesel Fuel #6)	ND (500)	ND (500)	ND (50.0)	NR
Heavy Fuel	170,000	380,000	230,000	NR
Other (30 weight motor oil)	NR	NR	NR	76,000

Note: CAS:Columbia Analytical Services, Inc. Kelso, Wa. ARDL: ARDL Mt. Vernon II. NPD: Troutdale Ore. a: MRL is elevated because the sample required diluting. b: Fingerprint matches stove oil. ND: not detected NR: not reported. The Results in parenthesis is the Method Reporting Limit

Table III
FT. Richardson Pol Lab Tank
November 1992
Method 8015 Modified

		QC Dup	QA Dup
LOCATION:	DRY WELL	DRY WELL	DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL–	05SL	06SL	07SL
TESTING LABORATORY:	NPD	NPD	CAS
LABORATORY SAMPLE #:	2002	2003	K7563–2
DATE RECEIVED:	12/03/92	12/03/92	12/03/92
DATE TESTED:	12/07/92	12/07/92	12/09/92
CONCENTRATION UNITS:	mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)
Gasoline	ND (50)	ND (50)	ND (a 400)
Mineral Spirits	NR	NR	ND (a 400)
Jet Fuel	120,000	120,000	ND (a 400)
Kerosene	ND (50)	ND (50)	ND (a 400)
Diesel Fuel (# 2.)	ND (50)	ND (50)	19,000
Bunker Oil (Diesel Fuel #6)	ND (50)	ND (50)	NR
Heavy Fuel	70,000	73,000	NR
Other (30 weight motor oil)	NR	NR	5170

Note: CAS:Columbia Analytical Services, Inc. Kelso, Wa. ARDL: ARDL Mt. Vernon Il. NPD: Troutdale Ore. a: MRL is elevated because the sample required diluting. b: Fingerprint matches stove oil. ND: not detected NR: not reported. The Results in parenthesis is the Method Reporting Limit.

Table IV FT. Richardson Pol
.ab Tank November 1992
Pesticides and
Polychlorinated Biphenyls
(PCBs) Method 8080

LOCATION:	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water
FIELD SAMPLE NUMBER:92FRPOL–	01WA	02WA	03WA	04WA
TESTING LABORATORY:	ARDL	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305–1	9305–2	9305–3	K7563–1
DATE RECEIVED:	12/04/92	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/10/92	12/10/92	12/10/92	12/10/92
CONCENTRATION UNITS:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Alpha–BHC	ND (0.04)	ND (0.03)	ND (0.03)	ND (0.04)
Gamma–BHC	ND (0.06)	ND (0.04)	ND (0.04)	ND (0.04)
Beta–BHC	ND (0.09)	0.79	ND (0.07)	ND (0.1)
Heptachlor	ND (0.04)	ND (0.03)	ND (0.03)	ND (0.04)
Delta–BHC	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.04)
Aldrin	ND (0.06)	ND (0.04)	ND (0.03)	ND (0.04)
Heptachlor Epoxide	ND (1.2)	ND (0.92)	ND (0.92)	ND (0.04)
Endosulfan I	ND (0.20)	ND (0.16)	ND (0.16)	ND (0.04)
4,4'–DDE	ND (0.06)	ND (0.04)	ND (0.02)	ND (0.04)
ieldrin	ND (0.03)	ND (0.02)	ND (0.02)	ND (0.04)
Endrin	ND (0.09)	ND (0.07)	ND (0.07)	ND (0.04)
4,4'–DDD	ND (0.16)	ND (0.12)	ND (0.12)	ND (0.04)
Endosulfan II	ND (0.06)	ND (0.04)	ND (0.04)	ND (0.04)
4,4'–DDT	ND (0.17)	ND (0.13)	ND (0.13)	ND (0.04)
Endrin Aldehyde	ND (0.33)	ND (0.26)	ND (0.26)	ND (0.04)
Endosulfan Sulfate	ND (0.94)	ND (0.73)	ND (0.73)	ND (0.04)
Methoxychlor	ND (2.6)	ND (2.0)	ND (2.0)	ND (0.1)
Toxaphene	ND (3.4)	ND (2.7)	ND (2.7)	ND (1)
Chlordane	NR	NR	NR	ND (0.5)
Endrin Ketone	ND (0.14)	ND (0.11)	ND (0.11)	NR
alpha–Chlordane	ND (0.20)	ND (0.16)	ND (0.16)	NR
gamma–Chlordane	ND (0.20)	ND (0.16)	ND (0.16)	NR
PCBs:				
Aroclor 1016	ND (0.71)	ND (0.56)	ND (0.56)	ND (0.2)
Aroclor 1221	ND (0.71)	ND (0.56)	ND (0.56)	ND (0.2)
Aroclor 1232	ND (0.71)	ND (0.56)	ND (0.56)	ND (0.2)
Aroclor 1242	ND (0.71)	ND (0.56)	ND (0.56)	ND (0.2)
Aroclor 1248	ND (0.71)	ND (0.56)	ND (0.56)	ND (0.2)
Aroclor 1254	ND (1.4)	ND (1.1)	ND (1.1)	ND (0.2)
Aroclor 1260	ND (1.4)	ND (1.1)	ND (1.1)	ND (0.2)

Note: CAS: Columbia Analytical Services, Kelso, Wa. ARDL:
ARDL Mt. Vernon, Il. NPD: NPD Troutdale, OR. ND: not detected.
R: not reported. The value in parenthesis is the Method
Reporting Limit.

Table IV FT. Richardson Pol
.ab Tank November 1992
Pesticides and
Polychlorinated Biphenyls
(PCBs) Method 8080

		QC Dup	QA Dup
LOCATION:	DRY WELL	DRY WELL	DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER:92FRPOL-	05SL	06SL	07SL
TESTING LABORATORY:	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305-4	9350-5	K7563-2
DATE RECEIVED:	12/04/92	12/04/92	12/03/92
DATE TESTED:	12/11/92	12/10/92	12/10/92
CONCENTRATION UNITS:	ug/kg (ppb)	ug/kg (ppb)	ug/kg (ppb)
Alpha-BHC	ND (250)	ND (200)	a ND(100)
Gamma-BHC	ND (330)	ND (260)	a ND(100)
Beta-BHC	ND (500)	ND (390)	a ND(300)
Heptachlor	ND (250)	ND (200)	a ND(100)
Delta-BHC	ND (780)	ND (610)	a ND(100)
Aldrin	ND (330)	ND (260)	a ND(100)
Heptachlor Epoxide	ND (6700)	ND (5200)	a ND(100)
Endosulfan I	ND (1200)	ND (910)	a ND(100)
4,4'-DDE	ND (330)	ND (260)	a ND(100)
Dieldrin	ND (170)	ND (130)	a ND(100)
Endrin	ND (500)	ND (390)	a ND(100)
4,4'-DDD	ND (940)	ND (260)	a ND(100)
Endosulfan II	ND (330)	ND (260)	a ND(100)
4,4'-DDT	ND (1000)	ND (780)	a ND(100)
Endrin Aldehyde	ND (1900)	ND (1500)	a ND(100)
Endosulfan Sulfate	ND (5500)	ND (4300)	a ND(100)
Methoxychlor	ND (14000)	ND (11000)	a ND(200)
Toxaphene	ND (20000)	ND (16000)	a ND(300)
Chlordane	NR	NR	a ND(100)
Endrin Ketone	ND (890)	ND (700)	NR
alpha-Chlordane	ND (1200)	ND (910)	NR
gamma-Chlordane	ND (1200)	ND (910)	NR
PCBs:			
Aroclor 1016	ND (4400)	ND (3500)	a ND(100)
Aroclor 1221	ND (4400)	ND (3500)	a ND(100)
Aroclor 1232	ND (4400)	ND (3500)	a ND(100)
Aroclor 1242	ND (4400)	ND (3500)	a ND(100)
Aroclor 1248	ND (4400)	ND (3500)	a ND(100)
Aroclor 1254	ND (8900)	ND (7000)	a ND(100)
Aroclor 1260	ND (8900)	ND (7000)	a ND(100)

Note: CAS: Columbia Analytical Services, Kelso, Wa. ARDL: ARDL Mt. Vernon, Il. NPD: NPD Troutdale, OR. ND: not detected. R: not reported. The value in parenthesis is the Method Reporting Limit.

Table V
FT. Richardson Pol Lab Tank
November 1992
Total Metals

LOCATION:	DRY WELL	DRY WELL	QC Dup DRY WELL	QA Dup DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	water	water	water	water
FIELD SAMPLE NUMBER: 92FRPOL-	01WA	02WA	03WA	04WA
TESTING LABORATORY:	ARDL	ARDL	ARDL	CAS
LABORATORY SAMPLE #:	9305-1	9305-2	9305-3	K7563-1
DATE RECEIVED:	12/04/92	12/04/92	12/04/92	12/03/92
CONCENTRATION UNITS:	mg/L (ppm)	mg/L (ppm)	mg/L (ppm)	mg/L (ppm)
COMPOUND				
Arsenic	0.027	0.016	0.017	0.007
Barium	18.2	17.8	13.5	6.230
Cadmium	0.070	0.051	0.036	0.022
Chromium	4.2	3.2	2.0	1.590
Lead	17.1	11.7	8.5	4.720
Mercury	0.86	0.80	0.54	0.938
Selenium	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.005)
Silver	0.68	0.67	0.11	0.154

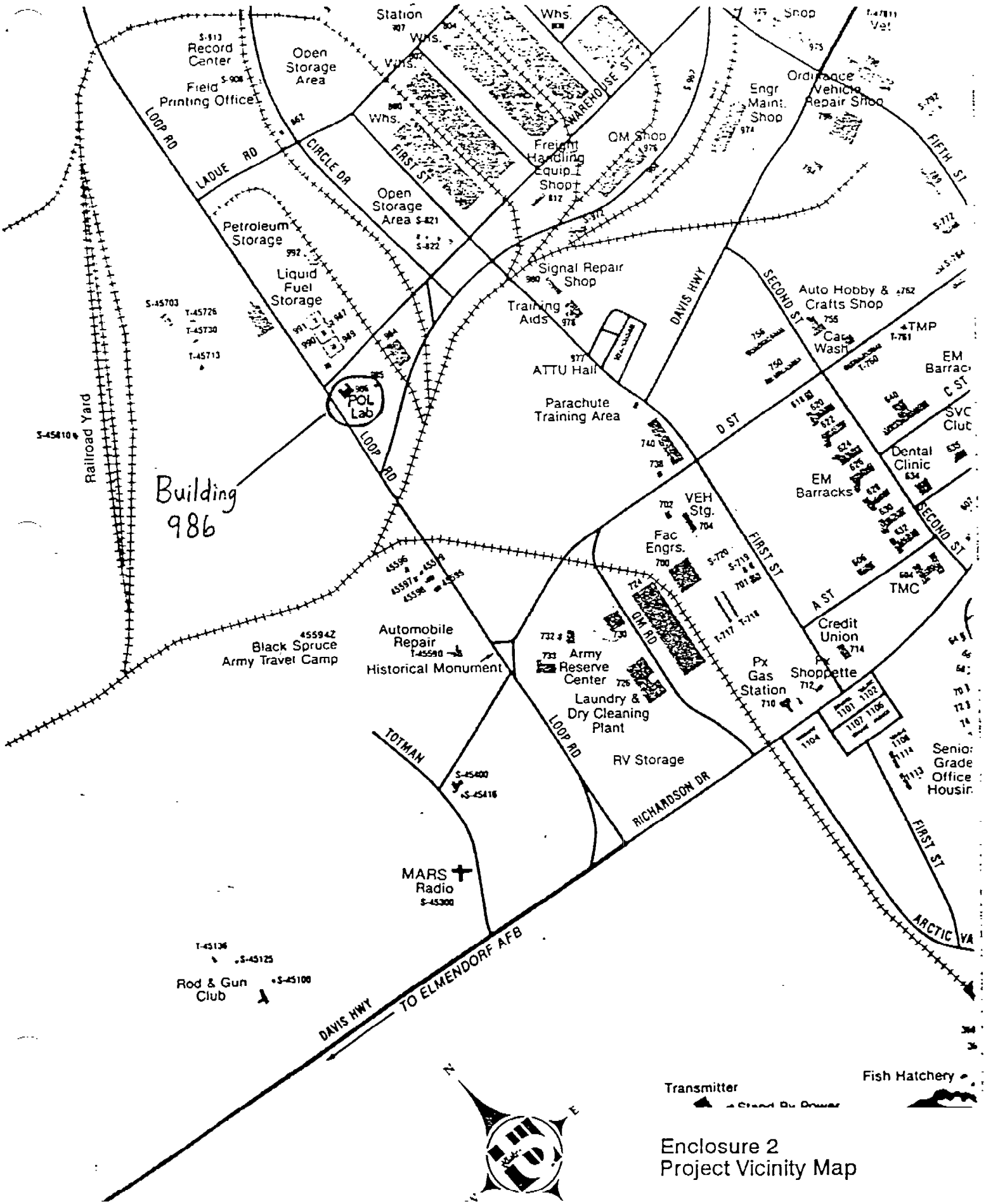
CAS: Columbia Analytical Services, Kelso WA.
ARDL: ARDL Mt. Vernon, IL. ND: not detected.
NR: not reported. The value in parenthesis is the Method Reporting Limit. B means method reporting limit was elevated beacuase of matrix interferences.

Table V
T. Richardson Pol Lab Tank
November 1992
Total Metals

		QC Dup	QA Dup
LOCATION:	DRY WELL	DRY WELL	DRY WELL
DATE OF SAMPLING:	11/30/92	11/30/92	11/30/92
TYPE OF SAMPLE:	sludge	sludge	sludge
FIELD SAMPLE NUMBER: 92FRPOL-	05SL	06SL	07SL
TESTING LABORATORY:	ARDL	ARDL	CAS.
LABORATORY SAMPLE #:	9305-4	9305-5	K7563-2
DATE RECEIVED:	12/04/92	12/04/92	12/03/92
CONCENTRATION UNITS:	mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)
COMPOUND			
Arsenic	2.5	3.4	B ND(5)
Barium	6920	5820	4200
Cadmium	6.6	4.0	5
Chromium	4590	3190	3440
Lead	9220	7180	8900
Mercury	315	317	309
Selenium	4.2	3.4	ND (2)
Silver	775	484	1510

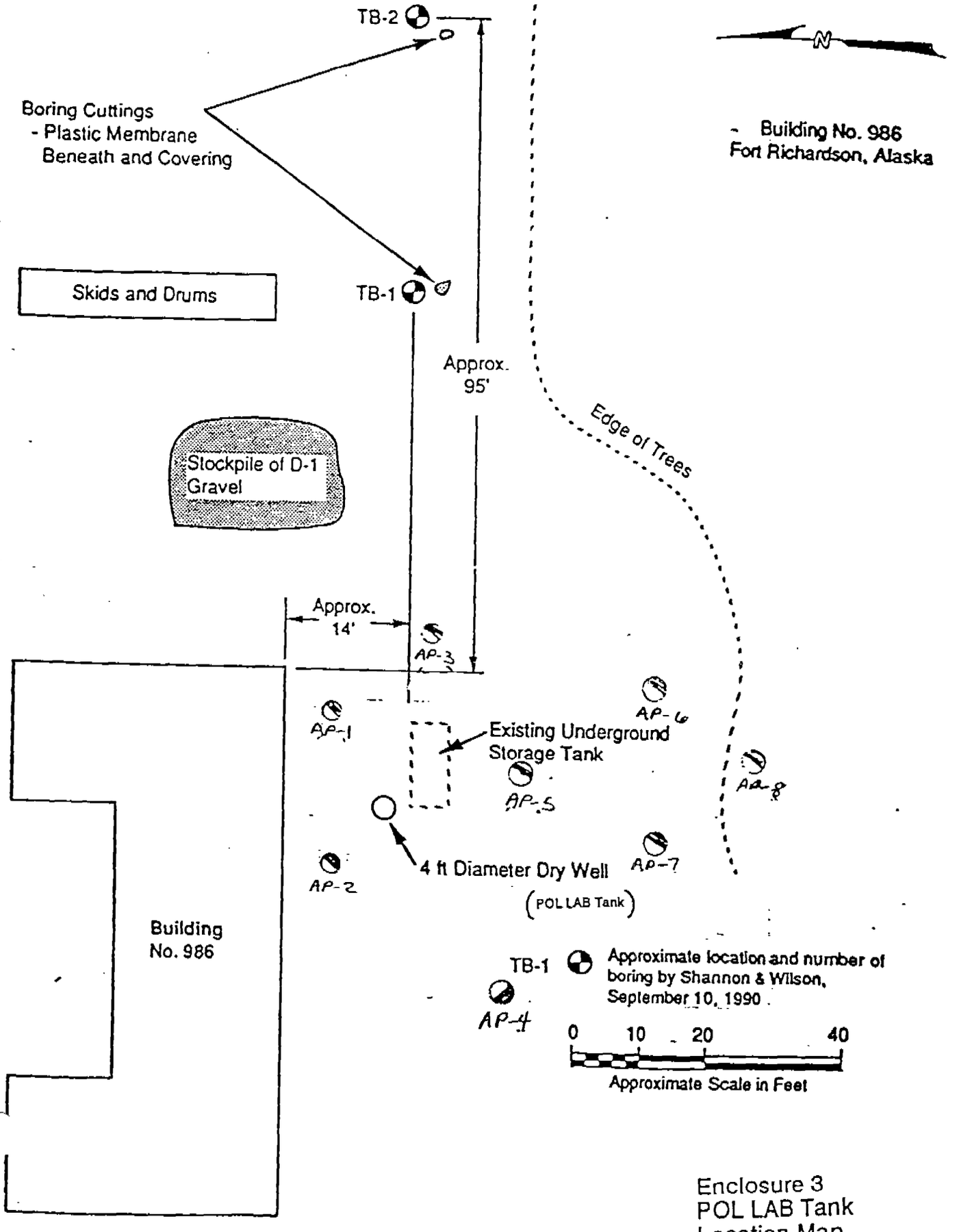
CAS: Columbia Analytical Services, Kelso WA.
ARDL: ARDL Mt. Vernon, IL. ND: not detected.
NR: not reported. The value in parenthesis is the Method Reporting Limit. B means method reporting limit was elevated beacuase of matrix interferences.

ENCLOSURE 2



Enclosure 2
Project Vicinity Map

ENCLOSURE 3



Enclosure 3
POL LAB Tank
Location Map

ENCLOSURE 4

DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION LABORATORY
CORPS OF ENGINEERS
1491 N.W. GRAHAM AVENUE
TROUTDALE, OREGON 97060-9503

CENPD-PE-GT-L (1110-1-8100c) 9 Feb 93

MEMORANDUM FOR Commander, Alaska District, ATTN: CENPA-EN-G-MI (Pekar)

SUBJECT: W.O. 93-HM-472, Results of Chemical Analysis

Project: FT. RICHARDSON POL LAB TANK
Intended use: Evaluate site
Source of Material: Reference Chain of Custody Records
Submitted by: CENPA-EN-G-MI
Date Sampled: 30 Nov; 1 Dec 92 Date Received: 3, 4 Dec 92
Method of Test or Specification: Reference Enclosure 1
References: a) DD Form 448, MIPR No. E87-93-0013, dated 7 Jan 93
b) Report numbner 9305 from ARDL, report number 253 from CENPD-PE-GT-L, and report number K927563A from Columbia Analytical Services, along with all diskettes, submitted to your office on 15 Jan 93

1. Enclosed are results of analyses and quality assurance data for environmental samples collected from the above site. Included are:

a. Enclosure 1, Chemical Quality Assurance Report.

b. Enclosure 2, Faxed addendum, dated 8 Feb 93, from Columbia Analytical Services, Inc.

c. Enclosure 3, Chain of Custody and Cooler Receipt forms.

2. If you have any questions or comments regarding the Chemical Quality Assurance Report, please contact Dr. Ajmal M. Ilias at (503) 665-4166.

3. This completes all work requested for this project.

Timothy J. Seeman

TIMOTHY J. SEEMAN
Director

Enclosures

Copy Furnished: CENPD-PE-GT
CEMRD-EP-EC
CEMP-RT

MFR: The laboratories had a difficult time analyzing samples in this tier of analyses due to the complex sample matrix. About one-half of the project and QA data agree. Complete copy in office files.

CENPD-PE-GT-L (93-HM-472) 9 Feb 93

CHEMICAL QUALITY ASSURANCE REPORT

FT. RICHARDSON POL LAB TANK

1. SUMMARY:

a. The project laboratories data should be considered estimates due to the inability of the laboratories to successfully analyze the complex sample matrix submitted for analyses. About one-half of the internal quality control (QC) of the laboratories did not meet EPA QC requirements due to the difficult nature of the sample matrix.

b. The project and quality assurance (QA) data comparisons are shown in Tables II and III. All data in Table III agree except for fuel data in Table III-4 due, in part, to non-homogeneous samples and non-identical sample aliquots used by the laboratories. Most detected data in one of two project samples in Table II did not agree with either the QA data or the blind duplicate data except for metals, excluding silver.

2. BACKGROUND: The samples were collected on November 30 and December 1, 1992 and were received by the analytical laboratories on December 3 and 4, 1992.

3. OBJECTIVES;

a. One soil sample and two water samples, including two blind duplicates and one trip blank were collected from various locations to determine the extent of chemical contamination on the site.

b. Two QA samples and one trip blank were submitted to evaluate the project laboratory's data.

4. PROJECT ORGANIZATION:

a. The samples were collected by North Pacific Division/Alaska District staff.

b. The project samples were analyzed by North Pacific Division Laboratory (CENPD-PE-GT-L), Troutdale, Oregon and ARDL, Inc., Mt. Vernon, Illinois.

c. The QA samples were analyzed by Columbia Analytical Services, Inc., (CAS), Kelso, Washington.

CENPD-PE-GT-L (93-HM-472)

5. ANALYTICAL REFERENCES:

Number	Title	Date
a. SW-846, Third Edition	Test Methods for Evaluating Solid Waste	11/86
b. CENPD-PE-GT-L Proposed Modified Method 8015	Fuel Quantitation and Identification	1989
1) Method D-3328-78	Annual Book of ASTM Standards, Part 31	1980
2) Method D-2600	Annual Book of ASTM Standards, Part 24	1980
c. EPA-600/4-79-020	Methods for Chemical Analysis of Water and Wastes	3/83

6. EVALUATION OF THE PROJECT LABORATORIES' DATA: Elevated detection limits were used for all parameters due to low percent solids in soil/sediment samples and the presence of fuel in the water samples. Laboratory blanks were free from targeted analytes except for the blank of semi-volatiles (BNA), which were contaminated with di-n-butylphthalate. Trip blank data are shown in Table I. Chloroform was detected in the project trip blank. Standard performance, tuning and mass calibration and holding times met method requirements. Surrogate recoveries of water VOC samples -02WA and -03WA were within EPA QC limits and acceptable. Water sample -01WA and soil blind duplicate samples were outside EPA QC limits due to matrix interference and are not acceptable. The surrogates of chlorinated pesticides/PCBs and BNAs were within QC limits except for the following: One out of six surrogates of BNA samples -01WA and -06SL was below QC limits, data of this sample were accepted based on five other acceptable surrogate recoveries. Three out of six surrogates of BNA sample -05SL were above upper EPA QC limits due to matrix interference, but were not encountered in its blind duplicate sample -06SL, data of this sample should be considered over estimates. All surrogate recoveries of fuel analyses were diluted out due to the presence of high levels of fuel in the water and soil/sediment samples. Matrix spike (MS) and matrix spike duplicate (MSD) recoveries, MS recoveries of water VOC samples were within EPA QC limits, no MSD were done due to insufficient sample volume remaining after MS analyses. Soil/sediment VOC MS/MSD were not performed due, in part, to the laboratories inability to maintain linearity of targeted compounds. MS/MSD of recoveries of water BNA were within QC limits but were either diluted out or were outside QC limits due to matrix interferences in other organic methods. MS/MSD recoveries of silver in water were outside the QC limits; the remaining RCRA metals were either not considered significant due to sample concentration being greater than a factor of four to the spike amount or were within EPA QC limits. RCRA metal recoveries in soil/sediment were similar to that of water samples except cadmium, instead of silver, was outside the QC limits. Relative

percent differences (RPDs) of fuel and VOCs were not calculated as the MS/MSD were either diluted out, not performed or were not calculable due to matrix interference. The RPD of BNA in water was within QC limits, but BNA in soil and pesticides/PCBs in both matrices were outside EPA QC limits. The RPDs of RCRA metals in water and soil/sediment were within QC limits except for cadmium and silver in the latter matrix were outside the QC limits. The project blind duplicate data are shown in Tables II and III. All data agree except for the following: Data in Table II did not agree due, in part, to incompatible water blind duplicate samples submitted. Overall, the project data should be considered estimates due to difficulties encountered in the analyses of complex matrices (fuel in water and soil/sediment samples) and failure of about one-half of the internal QC.

7. **EVALUATION OF THE QA LABORATORY'S DATA:** The QA laboratory also encountered similar problems as experienced by the project laboratory.

8. **PROJECT AND QA LABORATORIES' DATA:** All data comparisons are shown in Tables II and III. Detected analytes of one of the project blind duplicates of Table II-1 through II-4 and silver of Table II-5 did not agree with the QA data or its blind duplicate due, in part, to non-homogeneous water samples submitted as replicates. All data agree in Table III except for fuel data in Table III-4 due, in part, either to non-identical samples or non-homogeneous aliquots used by the laboratories.

CENPD-PE-GT-L (93-HM-472)

COMPARISON OF PROJECT AND QA RESULTS

TABLE I

TRIP BLANKS

Project: FT. RICHARDSON FOL LAB TANK Matrix: water Prefix: 93FRPDL
Project Laboratory: APDL QA Laboratory: CAS

Method: Volatile Organics Units: ug/L (ppb)

Analytes Detected	Project Lab 09WA	Detection Limits --	QA Lab 09WA	Detection Limits
Chloroform	5.8	--	4.6	0.5
Acetone	--	1.5	4B	2

Tentatively Identified Compounds

Unknowns	10, from 0.3J-2JB

-- = Not reported
J = Detected below method detection limits
B = Detected in method blank

SUMMARY: The chloroform detected in the project and QA trip blank could be due to contaminated deionized water used for trip blanks, as seen in numerous trip blanks of past projects. Acetone detected by the QA laboratory is due to laboratory contamination. The absence of other targeted analytes indicates that no cross-contamination occurred during shipment and storage.

CENPD-PE-GT-L (93-HM-472)

COMPARISON OF PROJECT AND QA RESULTS

TABLE II

Project: FT. RICHARDSON POL LAB TANK Matrix: water Prefix: 92FRPOL
QA Laboratory: Columbia Analytical Services

1. Method: Volatile Organics (EPA 8260) Units: ug/L (ppb)
Project Laboratory: ARDL

Analytes Detected	Project Lab 92WA	03WA	Detection Limits	QA Lab 04WA	Detection Limits
Chloroform	2.3	1.8	--	1.6	0.5
Ethylbenzene	ND	1.9	0.8	1.8	0.5
Total Xylenes	ND	13.3	1.7	11	0.5
n-propylbenzene	ND	1.8	1.1	ND	2
1,2,4-trimethylbenzene	ND	8.2	1.0	17	2
p-isopropyltoluene	ND	14	1.1	3	2
1,2-dichlorobenzene	ND	2.6	1.0	3.5	0.5
Methylene chloride	ND	ND	1.5	3B	1
Toluene	ND	ND	0.6	1.6	0.5
1,3,5-trimethylbenzene	ND	ND	1.0	10	2
Naphthalene	ND	ND	1.2	3	2
1,4-dichlorobenzene	ND	ND	1.0	1.0	0.5
Tentatively Identified Compounds					
Unknowns	10, from 4-12	4, from 0.7-0.9		--	
Methylcyclohexane	ND	1		ND	
Ethylmethylbenzene	ND	1.7		ND	
Methylpropylbenzene	ND	1		ND	
Ethyl-dimethylbenzene	ND	0.6		ND	
Tetramethylbenzene	ND	0.8		ND	

ND = None detected
-- = Not reported
B = Found in method blank

SUMMARY: The project blind duplicate data did not agree except for chloroform. Data of targeted analytes and tentatively identified compounds of the project blind duplicate indicates non-identical samples. The project data of sample -03WA and the QA data agree within a factor of three to each other or their detection limits except for p-isopropyltoluene, methylene chloride and 1,3,5-trimethylbenzene. The methylene chloride disagreement is due to laboratory contamination of the QA laboratory. The QA laboratory had two out of three surrogates above upper EPA QC limits due to matrix interference; therefore, data discrepancies could also be attributed due to matrix interference.

CENPD-PE-GT-L (93-HM-472)
Table II

2. Method: Semi-Volatile Organics (EPA 8270) Units: ug/L (ppb)
Project Laboratory: CENPD-PE-GT-L

Analytes Detected	Project Lab 02WA	Project Lab 03WA	Detection Limits	QA Lab 04WA	Detection Limits
Di-n-butylphthalate	18.4B	23.5B	10	ND	270
Di-n-octylphthalate	44.0	53.4	10	370	270
2-methylnaphthalene	ND	14.1	10	660	270
Tentatively Identified Compounds					
Unknowns	11, from 27.1-91.0	18, from 30.4-351.6		9, from 1800-2800	
1,2-benzenedicarboxylic acid,bis(2-Ethylhexyl)-ester	899.5	516.5		ND	
1,2-benzenedicarboxylic acid,dibutyl ester	58.8	ND		ND	
Nonane	ND	ND		3000	
Decane	ND	ND		4400	
Decahydronaphthalene isomer	ND	ND		4800	
Undecane	ND	ND		4200	
Dodecane	ND	ND		5300	
Tridecane	ND	ND		6200	
Tetradecane	ND	ND		5900	
Pentadecane	ND	ND		4000	
Hexadecane	ND	ND		1700	
Hexadecanoic acid	ND	ND		4800	

SUMMARY: The project blind duplicate data agree within a factor of three to each other or with the detection limits. The project and QA data also agree exept for the above phthalates and 2-methylnaphthalene. The di-n-butylphthalate discrepancy is due to laboratory contamination of the project laboratory. The QA laboratory had difficulty in analyzing the QA samples; therefore, the QA data are questionable. The project data are acceptable, except for di-n-butylphthalate, based on blind duplicate agreement.

CENPD-PE-GT-L (93-HM-472)
Table II

3. Method: Pesticides/PCBs (EPA 3090) Units: ug/L (ppb)
Project Laboratory: ARDL

Analytes Detected	Project Lab 02WA	03WA	Detection Limits	QA Lab 04WA	Detection Limits
beta-BHC	0.79	ND	0.07	ND	0.1

SUMMARY: The project blind duplicate data agree for all targeted analytes except for beta-BHC. The project and QA data also agree except for one out of two project data of beta-BHC. The project data of sample -02WA appears to be due to laboratory artifacts, as the data did not agree either with its blind duplicate or with the QA data.

4. Method: Hydrocarbon Identification//Quantitation (Mod. 8015)
Project Laboratory: CENPD-PE-GT-L Units: ug/L (ppb)

Analytes Detected	Project Lab 02WA	03WA	Detection Limits	QA Lab 04WA	Detection Limits
Gasoline	ND	ND	500	ND	500
Mineral spirits	--	--	--	ND	500
Jet fuel	36000	120000	500	ND	500
Kerosene	ND	ND	500	ND	500
Diesel fuel #2	ND	ND	500	111000	500
Bunker C (diesel #6)	ND	ND	500	--	--
Heavy oil	360000	230000	500	--	--
Other*	--	--	--	76000	500

* = Using 30 weight motor oil as standard

SUMMARY: The project blind duplicate data did not agree for jet fuel, but does agree for heavy oil. The QA laboratory's chromatogram indicates the presence of some lighter fuel such as jet fuel, which was quantitated as diesel fuel #2. The QA laboratory's diesel fuel #2 data agree with the jet fuel data of project sample -03WA and are considered comparable in quantitation. The fuel disagreements between the blind duplicate and QA data are due, in part, to varying degrees of floating fuel in the samples.

CENPD-PE-GT-L (93-HM-472)
Table II

E. Method: Total Metals (EPA 6000/7000) Units: ug/L (ppb)
Project Laboratory: ARDL

Analytes Detected	Project Lab 02WA	Project Lab 03WA	Detection Limits	QA Lab 04WA	Detection Limits
Arsenic	16	17	--	7	5
Barium	17900	18500	--	6230	5
Cadmium	51	36	--	22	3
Chromium	3200	2000	--	1590	5
Lead	11700	8500	--	4270	50
Mercury	800	540	--	938	0.5
Selenium	ND	ND	25	ND	5
Silver	670	110	--	154	10

SUMMARY: The project blind duplicate and QA data agree within a factor of three to each other or their detection limits except for data of silver, where the project laboratory's silver data are questionable based on blind duplicate disagreements and unacceptable internal QC data.

CENPD-PE-GT-L (93-HM-472)

COMPARISON OF PROJECT AND QA RESULTS

TABLE III

Project: FT. RICHARDSON POL LAB TANK Matrix: soil/sludge
QA Laboratory: Columbia Analytical Services Prefix: 92FRPOL

1. Method: Volatile Organics (EPA 8260) Units: mg/Kg (ppm)
Project Laboratory: APDL

Analytes Detected	Project Lab 05SL	Project Lab 06SL	Detection Limits	QA Lab 07SL# Wet Wt.	QA Lab 07SL# Dry Wt.	Detection Limits
Toluene	73	180	--	25E	109	2.5
Total xylenes	480	1160	--	100	435	2.5
1,2,4-trimethylbenzene	490	260	--	130	565	10
p-isopropyltoluene	360	300	--	20	86	10
n-butylbenzene	71	150	--	18	78	10
Naphthalene	170	270	--	ND		10
Ethylbenzene	78	180	--	29	126	2.5
sec-butylbenzene	ND	90	35	13	56	10
4-methyl-2-pentanone	--	--	--	19	83	5
Isopropylbenzene	ND	ND	35,27	18	78	10
n-propylbenzene	ND	ND	35,27	28	121	10
1,3,5-trimethylbenzene	ND	ND	35,27	42	183	10
1,2-dichlorobenzene	ND	ND	35,27	4.4	19	2.5
Hexachlorobutadiene	ND	ND	35,27	52	226	10
Percent solids	18.4	22.9		23.6		
Tentatively Identified Compounds						
Unknowns	8, from 200-800	8, from 91-510		--		
Dimethylcyclohexane	200	ND		--		
Ethylmethylbenzene	230	ND		--		
1-ethyl-3-methylbenzene	ND	540		--		
Tetramethylbenzene	ND	200		--		

ND = None detected
-- = Not reported
# = Results reported on a "as-received" basis
E = Exceeded calibration range

SUMMARY: The project blind duplicate and QA data agree close to a factor of five to each other or their detection limits and are considered comparable for low percent non-homogeneous solids.

CENPD-PE-GT-L (93-HM-472)
Table III

2. Method: Semi-Volatile Organics (EPA 8270) Units: mg/Kg (ppm)
Project Laboratory: CENPD-PE-GT-L

Analytes Detected	Project Lab 05SL	Project Lab 06SL	Detection* Limits	QA Lab 07SL	Detection Limits
Phenanthrene	28.7	ND	350-600	ND	140
Di-n-butylphthalate	121.92	102.53	350-600	ND	140
Butylbenzenephthalate	7.6	ND	350-600	ND	140
Bis(2-Ethylhexyl)phthalate	794.0	ND	350-600	1440	140
Di-n-octylphthalate	16.9	ND	350-600	ND	140
1,2-dichlorobenzene	ND	34.1	350-600	ND	140
Naphthalene	ND	247.2	350-600	290	140
2-methylnaphthalene	ND	570.0	350-600	720	140
Percent solids	19.7	18.0		23.6	
Tentatively Identified Compounds					
Unknowns	10, from 74.5-1491.0	--		8, from 1400-2800 1800-	
Nonane	ND	--		1700	
1,methylbenzene isomer	ND	--		2100	
Trimethylbenzene isomer	ND	--		5000	
Decane	ND	--		1700	
Cyclohexane isomer	ND	--		3200	
Decahydronaphthalene isomer	ND	--		2000	
Undecane	ND	--		2200	
Tridecane	ND	--		2200	
Tetradecane	ND	--		1600	
Pentadecane	ND	--		1600	
Hexadecanoic acid	ND	--		5900	

* = Detection limits are estimates

SUMMARY: The project blind duplicate data agree within a factor of five to each other or their detection limits and are considered comparable. All project laboratory data were reported as estimates.

3. Method: Pesticides/PCBs (EPA 8080) Units: ug/L (ppb)
Project Laboratory: ARDL

Analytes Detected	Project Lab 05SL	Project Lab 06SL	Detection Limits	QA Lab 07SL	Detection Limits
	ND	ND	.20-2000	ND	1000-30000

SUMMARY: The project blind duplicate data agree for all targeted analytes and are comparable.

CENPD-PE-GT-L (93-HM-472)
Table III

4. Method: Hydrocarbon Identification//Quantitation (Mod. 8015)
Project Laboratory: CENPD-PE-GT-L Units: mg/Kg (ppm)

Analytes Detected	Project Lab 05SL	Project Lab 06SL	Detection Limits	QA Lab 07SL	Detection Limits
Gasoline	ND	ND	50.0	ND	400
Mineral spirits	--	--	--	ND	400
Jet fuel	120000	120000	50.0	ND	400
Kerosene	ND	ND	50.0	ND	400
Diesel fuel #2	ND	ND	50.0	19000	400
Bunker I (diesel #6)	ND	ND	50.0	--	--
Heavy oil	70000	73000	50.0	--	--
Other*	--	--	--	5170	400
Percent solids	19.7	18.0		23.6	

* = Using 30 weight motor oil as standard

SUMMARY: The project blind duplicate data agree. The project and QA data did not agree due, in part, to non-homogeneous, low percent solid samples and probably non-identical sample aliquots used for analysis for both laboratories.

5. Method: Total Metals (EPA 6000/7000 Units: mg/Kg (ppm)
Project Laboratory: ARDL

Analytes Detected	Project Lab 05SL	Project Lab 06SL	Detection Limits	QA Lab 07SL	Detection Limits
Arsenic	2.5	3.4	--	ND	5
Barium	6920	5820	--	4200	2
Cadmium	5.5	4.0	--	5	2
Chromium	4590	3190	--	3440	4
Lead	9220	7180	--	8900	40
Mercury	315	317	--	309	0.2
Selenium	4.2	3.4	--	ND	2
Silver	775	704	--	1510	

SUMMARY: The project blind duplicate and QA data agree within a factor of five to each other or their detection limits and are comparable.